Republic of Tunisia Ministry of Development, Investment, and International Cooperation (MDICI), South Development Office (ODS)

Project on Regional Development Planning of the Southern Region in the Republic of Tunisia

Final Report

Part 1

Current Status of Tunisia and the Southern Region

November, 2015

JICA (Japan International Cooperation Agency)

Yachiyo Engineering Co., Ltd. Kaihatsu Management Consulting, Inc. INGÉROSEC Corporation



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Tanisia and surrounding countries



Target Area (Six Governorates in the Southern Region)

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List of Abbriviations

Abbr	English	French
AADT	Annual Average Daily Traffic	Trafic Moyen Journalier Annuel
AFD	French Development Agency	Agence Française de Développement
AFT	Tourism Real Estate Agency	Agence Foncière Touristique
AG	Agriculture, fishery, livestock breeding and	Agriculture, pêche, élevage et transformation
	1000 processing	des produits alimentaires
AMVPPC	de la Promotion Culturelle	la Promotion Culturelle
ANGED	National Agency of Waste Management	Agence Nationale de Gestion des Déchets
ANME	National Agency for Energy Conservation	Agence Nationale pour la Maîtrise de l'Energie
ANPE	National Agency for Environmental Protection	Agence Nationale de Protection de l'Environnement
AOT	Regulatory Transport Authority	Autorité organisatrice des transports
APIA	Agency of Promotion of Agricultural Investments	Agence de Promotion des Investissements Agricoles
APII	Agency of Promotion of Industry and Innovation	Agence de Promotion de l'Industrie et de l'Innovation
AR	Augmented Reality	Réalité augmentée
AfDB	African Development Bank	Banque Africaine de Développement
ATTT or A3T	Land Transport Agency	Agence Technique des Transports Terrestres
BAD	African Development Bank	Banque Africaine de Développement
BEI	European Investment Bank	Banque Européenne d'Investissement
BFPME	Bank for Financing of Small and Medium Enterprises	Banque de financement des petites et moyennes entreprises
BNA	National Agricultural Bank	Banque Nationale Agricole
BOD	Biological Oxygen Demand	Demande Biologique en Oxygène
BRT	Bus rapid transit	Bus à haut niveau de service (BHNS)
BTS	Tunisian Solidarity Bank	Banque Tunisienne de Solidarité
C/P	Public consultation	Consultation Publique
CBT	Community Based Tourism	Tourisme communautaire
CDC	Deposit and Consignment Vehicle	Caisse de Dépôts et de Consignation
CEPEX	Tunisian Export Promotion Center	Centre de Promotion des Exportations de la Tunisie
CERT	Research and Studies Telecommunications Centre	Centre d'Etudes et de Recherche des Télécommunications
CES	Conservation of Water and Soil	Conservation des Eaux et des Sols
CITET	Tunis International Center for Environmental Technologies	Centre International des Technologies de l'Environnement de Tunis
CONECT	Confederation of Citizen Enterprises of Tunisia	Confédération des Entreprises Citoyennes de Tunisie
CPG	Phosphate Company of Gafsa	Compagnie des Phosphates de Gafsa
CPV	Concentrating Photo Voltaics	Photovoltaïque concentré
CRDA	Regional Commissionor's Office of Agricultural Develo- pment	Commissariat Régional de Développement Agricole
CRPD	Provisional Regional Council for Development	Conseil Régional Provisoire pour le Développement
CRTEn	Research and Technology Center of Energy	Centre de Recherche et des Technologies de

Abbr	English	French							
		l'Energie							
CSP	Concentrated Solar Power	Energie Solaire Concentrée							
СТ	Complexe Terminal	Complexe Terminal							
DBO	Biological Oxygen Demand	Demande Biologique en Oxygène							
DF/R	Draf t Final Report	Rapport intermédiaire							
DG	Director General	Directeur général							
DGAC	General Directorate for Civil Aviation	Direction générale de l'aviation civile							
DGRE	Directorate General of Water Resources	Direction Générale des Ressources en Eau							
DMO	Destination Management Organizations	Organisations de gestion des destinations							
DPS	Directorate of Planning and Statistics	Direction de la Plantification et des Statistiques							
DR	Demand Response	Effacement							
DR	Regional Director	Directeur Régional							
DRA	Demand Response Aggregator	Agrégateurs d'effacement							
DRD	Regional Directorate of Development	Direction Régionale du Développement							
DRE	Regional Directorates of Ministry of Equipment	Direction Régionale de l'Equipement							
DRT	Regional Directorates of Ministry of Transport	Direction Régionale du Transport							
DT	Tunisian Dinar	Dinar tunisien							
ECOSO	East, Center West, South West corridor	Couloir Est, Centre Ouest, Sud Ouest							
EES	Strategic Environmental Assessment	Evaluation Environnementale Stratégique							
EIA	Environmental Impact Assessment	Etude d'Impacts sur l'Environnement							
EIB	European Investment Bank	Banque Européenne d'Investissement							
EIS	Environmental impact study	Etude d'impact environnemental							
EIU	Economic Intellience Unit	Unité d'Intelligence Economique							
EOJ	Embassy of Japan	Ambassade du Japon							
ETAP	Entreprise Tunisienne d'Activités Pétrolières	Entreprise Tunisienne d'Activités Pétrolières							
EU	European Union	Union Européenne							
EUR	Euro	Euro							
F/R	Final Report	Rapport Final							
F/S	Feasibility Study	Étude de faisabilité							
FAMEX	Export Market Access Fund	Fonds d'Accès aux Marchés d'Exportation							
FAO	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'alimentation et l'agriculture							
FDI	Foreign Direct Investment	Investissement Direct Etranger							
FEZ	Free Economic Zone	Zone économique de libre-échange							
FIPA	Foreign Investment Promotion Agency	Agence de Promotion de l'Investissement Extérieur							
FMI	International Monetary Fund	Fonds monétaire international							
FNME	National Fund for Energy Saving	Fonds national de maîtrise de l'énergie							
FONAPR	Fonds National de Promotion de l'Artisanat	Fonds National de Promotion de l'Artisanat et							
AM	et des Petits Metiers	des Petits Métiers							
FOPRODI	Fund for Industrial Promotion and	Fonds de Promotion et de Décentralisation							
EOGDA	Decentralisation	Industrielle							
FUSDA	Special Fund of Agricultural Development	Accord de Libre-áchange							
1°1A	Tunisian Federation of Travel Agencies and	Fédération Tunisienne des Agences de							
FTAV	Tourism	Voyages et de Tourisme							

Abbr	English	French
FTH	Tunisian Federation of Hotels	Fédération Tunisienne de l'Hôtellerie
GCT	Tunisian Chemical Groupe	Groupe Chimique Tunisien
GDA	Gross Domestic Product	Broduit Intérieur Brut
GECE	Gross Fixed Capital Formation	Formation brute de capital fixe
	German Federal Enterprise for International	Agence de Coopération Internationale
GIZ	Cooperation	Allemande pour le Développement
GRDP	Gross Regional Domestic Product	Produit Intérieur Brut Régional
GW	Giga Watt	Giga Watt
GWh	Giga Watt hour	Giga Watt heure
Gbps	Giga bit per second	Gigabit par seconde
GdT	Government of Tunisia	Gouvernement de la Tunisie
GoT	Government of Tunisia	Gouvernement de la Tunisie
HC	Handicrafts	Secteur artisanal
IC/R	Inception Report	Rapport de commencement
ICG	Chemical Industry of Gafsa	Industrie Chimique de Gafsa
ICT	Information, Communication and Technology	Technologies de l'Information et de la Communication
IDE	Foreign Direct Investment	Investissement Direct Etranger
IEA	International Energy Agency	Agence internationale de l'énergie
IME	Investment, marketing, and export	Investissement, marketing, et de l'exportation
IMF	International Monetary Fund	Fonds monétaire international
INP	National Heritage Institute	Institut National du Patrimoine
INS	National Statistics Institute	Institut de la Statistique
IPP	Independent Power Producer	Producteur indépendant d'électricité
IRA	Arid Regions Institute	Institut des Régions Arides
IRACOV	Regional Indicators of Improvement of	Indicateurs Régionaux d'Amélioration
	Living Conditions	des Conditions de Vie
IT/R	Interim Report	Rapport intermédiaire
IT/R	Interim Report	Rapport intermédiaire
ITCEQ	Tunisian Institute of Competitiveness and	Institut Tunisien de la Compétitivité et des
	Quantitative Studies	Etudes Quantitatives
IUCN	Nature	nature
JATA	Japan Association of Travel Agents	Association japonaise des agences de voyages
JET	JICA Expert Team	Equipe d'experts de la JICA
ЛСА	Japan International Cooperation Agency	Agence Japonaise de Coopération Internationale
KfW	Reconstruction Credit Institute	Etablissement de crédit pour la reconstruction (Allemagne)
LAN	Local Area Network	Micro-réseaux locaux
LGV	High-speed Railway Line	Ligne à Grande Vitesse
LPI	Logistics Performance Index	Indice de performance logistique
LRT	Light rail transport	Métro léger, en Tunisie "Métro"
M/E or S/E	Monitoring/evaluation	Suivi/évaluation
MAF	Ministry of Social Affairs	Ministère des Affaires Sociales
MARHP	Ministry of Agriculture, Water Resources and	Ministère de l'Agriculture, des Ressources

Abbr	English	French						
	Fisheries	Hydrauliques et de la Pêche						
MCSP	Ministry of Culture and Heritage Protection	Ministère de la Culture et du Sauvegarde de la Patrimoine						
MDICI	Ministry of Development, Investment, and International Cooperation	Ministère du Développement de l'Investissement et de la Coopération internationale						
MEATDD	Ministry of Equipment, Housing and Spatial Planning	Ministère de l'Équipement, de l' Aménagement du Territoire						
MEFP	Ministry of Employment and Vocational Training	Ministère de l'Emploi et de la Formation Professionnelle						
MEHAT	Ministry of Construction, Housing and Land Planning	Ministère de l'équipement, de l'habitat et de l'aménagement du territoire						
MENA	Middle East and North Africa	Moyen-Orient et Afrique du Nord						
MESRS	Ministry of Higher Education and Scientific Research	Ministère de l'Enseignement Supérieur et de la Recherche Scientifique						
MEUR	Million Euro	Millions d'Euros						
MI	Ministry of Interior	Ministère de l'Intérieur						
MICE	Meetings, Incentives, Conferences and Exhibitions	Réunions, Congrès, Conventions, et voyages de gratification						
MIEM	Ministry of Industry, Energy and Mines	Ministère de l'Industrie, de l'Energie et des Mines						
MJS	Ministry of Youth and Sports	Ministère de la Jeunesse et du Sport						
MJSFF	Ministry of Woman and Family and Children	Ministère de la Femme, la Famille, et l'Enfance						
MN	Mining and other industrial sectors	Mines et autres secteurs industriels						
MTA	Ministry of Tourism and Handicraft	Ministère du tourisme et de l'Artisanat						
MTR	Ministry of Transport	Ministère du transport						
MRDP	Ministry of Regional Development and Planning	Ministère du Developpement regional et de la Planification						
MW	Mega Watt	Mega Watt						
NESDP or	National Economic and Social Development	Plan national de développement économique et						
PNDES	Plan	social						
NGO	Non-governmental Organization	Organisation Non Gouvernementale						
OACA	National office of the Civil Aviation and Airport	Office de l'Aviation Civile et des Aéroports						
OACI	International Civil Aviation Oganization	Organisation de l'Aviation Civile Internationale						
OD	Origin-Destination	Origine-Destination						
ODA	Official development Assistance	Aide publique au développement (APD)						
ODS	South Development Office	Office de Développement du Sud						
OECD or	Organisation for Economic Co-operation and	Organisation de Coopération et de						
OCDE	Development	Développement Économiques						
OEM	Operation and maintenance	Opération et maintenance						
OMMP	Agency for Merchant Navy and Ports	Office de la Marine Marchande et des Ports						
ONAS	National Office of Drainage	Office National de l'Assainissement						
ONAT	Tunisia National Handicraft Office	Office National de l'Artisanat Tunisien						
ONSR	National Road safety Observatory	Observatoire national de la sécurité routière						
ONTT	National office of the Tunisian Tourism	Office National Tunisien du Tourisme						
OTEDD	Observatoire Tunisien de l'Environnement et du Développement Durable	Observatoire Tunisien de l'Environnement et du Développement Durable						
P/C	Public consultation	Consultation Publique						
	7 arzis Park of Economic Activities	Dara d'Activités Economiques de Zerris						
		r are a Acuvites Economiques de Zarzis						
PAX	Passenger	Passager						

Abbr	English	French						
PDES	Water Master Plan of Sounth	Plan Directeur des Eaux du Sud						
PG/R	Progress Report	Rapport d'avancement						
PIB	Gross Domestic Product	Produit Intérieur Brut						
PIBR	Gross Regional Domestic Product	Produit Intérieur Brut Régional						
	National Program of Handicraft	Le Programme National de Developpment de						
PNDA	Development	l'Artisanat						
PPA	GDP per capita	PIB par habitant						
PPP	Public Private Partnership	Partenariat Public-Privé						
PPP	GDP per capita	PIB par habitant						
PRDA	Regional Programme of handicrafts development	Programme Régional de Développement de l'Artisanat						
PS	Power supply	Approvisonnement en électricité						
PST	Plan Solaire Tunisien	Plan Solaire Tunisien						
PV	Photo Voltaics	Photovoltaïques						
R/A	Progress Report	Rapport d'avancement						
R/C	Inception Report	Rapport de commencement						
R/I	Draft Final Report	Avant-Projet du Rapport Final						
R/I	Interim Report	Rapport intermédiaire						
R&D	Research and development	Recherche et développement						
RA	Augmented Reality	Réalité augmentée						
RC/P	Public consultation meeting	Réunions de consultation publique						
RE	Renewable Energy	Energie Renouvelable						
RER	Regional Express Network	Réseau Express Régional						
RL	Local Road	Route Locale						
RN	National Road	Route Nationale						
RP	Regional Planning	Planification régionale						
RR	Regional Road	Route Régionale						
S3T	South Tunisia Transport infrastructure Taskforce	Mission des transports du sud tunisien						
SDARE	Master Plan of Economic Region	Schéma Directeur d'Aménagement de la Région Economique						
SEA or EES	Strategic Environmental Assessment	Evaluation environnementale stratégique						
SEDCI	Secretary of State for Development and International Cooperation	Secrétaire d'État au Développement et à la Coopération Internationale						
SICAR	Investment Company in Risk Capital	Société d'Investissement à Capital Risque						
SMSA	Mutual Company of Agricultural Services	Société Mutuelle de Services Agricoles						
SMEs	Small and Medium Scale Enterprizes	Petites et moyennes entreprises						
SNCFT	National Company for Railway in Tunisia	Tunisiens						
SNTRI	National Company for Interurban Transport	Société Nationale de Transport Interurbain						
SODIS	the South	du Sud						
SONEDE	National Water Distribution Utility	Société Nationale dExploitation et de Distribution des Eaux						
SRT	Regional Company for Transport	Société Régionale de Transport						
STEG	Tunisian Company of Electricity and Gas	Société Tunisienne de l'Electricité et du Gaz						
STEP	Waste Water Treatment Plants	Stations d'épuration des eaux usées						
SWH	Solar Water Heating	Chauffe-eau solaire						
TC	Telecommunication	Télécommunication						

Abbr	English	French
TIC	Information, Communication and Technology	Technologies de l'Information et de la Communication
TM	Tourism	Tourisme
TMJA	Annual Average Daily Traffic	Trafic Moyen Journalier Annuel
TND	Tunisian Dinar	Dinar tunisien
TR	Transport	Transport
TRAPSA	Transport Pipeline Company in the Sahara	Compagnie des transports par pipe-line au Sahara
TT	Tunisia Telecom	Tunisie Telecom
TTCI	Travel and Tourism Competitiveness Index	Indice de la Compétitivité du Voyage et du Tourisme
UGTT	Tunisian General Work Union	Union Générale Tunisienne du Travail
UMA	Arab Maghreb Union	Union du Maghreb Arabe
UMIC	Upper Middle Income Countries	Pays à revenu intermédiaire (tranche supérieure)
UNCTAD	United Nations Conference on Trade and Development	Conférence des Nations Unies sur le Commerce et le Développement (CNUCED)
UNESCO	United Nations Educational, Scientific and Cultural Organization	Organisation des Nations Unies pour l'éducation, la science et la culture
URAP	Regional Union of Agriculture and Fishery	Union Régional de l'Agriculture et de la Pêche
UTAP	Tunisien Union of Agriculture and Fishery	Union Tunisienne de l'Agriculture et de la Pêche
UTICA	Tunisian Union of Commerce, Industry and Handcraft Industry	Union Tunisienne du Commerce, de l'Industrie et de l'Artisanat
WA	Water supply and waste water treatment	Approvisionnement en eau et traitement des eaux usées
WM	Water resource management	Gestion des ressources en eau
WWTP	Waste Water Treatment Plants	Stations d'épuration des eaux usées
ZSAE	Socio-Agro-Ecological Areas	Zones Socio-Agro-Ecologiques

CHAPTER 1 OUTLINE OF THE PROJECT

1.1 Background of the Project

One of the major challenges in Tunisia is correcting regional disparities through promoting a dynamic convergence across the regions. It could be recognized that *integrated regional development* is the best way to overcome such challenge. The integrated regional development aims, by sustainably utilizing the socio-economic and environmental potential of respective regions, at consolidating the competitiveness of the economic players and regions so that finally the standard of living and quality of life can rise for their populations. For achieving the transition to the democratic and liberal society with participatory approach after Tunisian revolution 2011, the integrated regional development is required to be truly fair, viable and socially and ecologically responsible where possible. The integrated regional development is essential to help alleviate depopulation of regions lagging behind, and to adapt to or stop desertification, which is one of the major problems derived from the climate change.

Ministry of Development, Investment, and International Cooperation (MDICI) is responsible for strategic orientation of relevant inter-ministry partnership, particularly with the ministries in charge of agriculture, industry, tourism, information and communications technology, commerce, handcrafts, transport, equipment, and environment which are vital in supporting integrated regional development. Insufficient public-private partnership, less competitive domestic industries and less attractive logistical and investment environment have resulted in insufficient availability of qualified personnel, a dynamic and effective distribution system and attractive living environment. The Southern Region is a typical region lagging behind which is covered almost by desert except coastal areas. The main products of the region are only agricultural crops (olive, dates and their processed products, etc.) and mining (phosphate, etc.).

The formulation of integrated regional development plan through participatory approach to solve the above situation is needed especially in the Southern Region. At the same time, capacity of planning and administrative management for participatory approach needs to be developed as well.

1.2 Outline of the Project

1.2.1 Title

Title of the Project is as follows:

"Project on Regional Development Planning of the Southern Region in the Republic of Tunisia"

The official French tile of the project is follows:

"Projet de Planification pour le Développement Régional du Sud de la Tunisie"

1.2.2 Overall goal

Overall goal to be achieved after the Project is as follows:

"The institutional capacity of MDICI and South Development Office (ODS) on regional development planning will be developed."

1.2.3 Expected goals after the Project completion

Expected goal to be attained after the project completion is as follows:

"The regional development plan will be developed through public consultation as a participatory approach."

Goals to be attained by utilizing the proposed plan are as follows:

- a) "Sustainable regional development is promoted to reduce regional disparity by utilizing available resources and advantages of the Southern Region."
- b) "Living environment and quality are improved in the southern region."

1.2.4 Outputs

Outputs to be attained by the implementation of project activities are as follows:

- 1) Formulation of regional development strategy for the period 2015 to 2035
- 2) Formulation of regional development plan for the period 2015 to 2025
- 3) Capacity development of planning and administrative management for participatory approach to Tunisian counterpart through the project

1.2.5 Activities

Activities to be implemented in the Project are as follows:

- i) Review of the existing development policies and plans, development projects, studies, both public and private investments, and socio-economic data
- ii) Formulation of future vision and the basic development concept
- iii) Formulation of development strategy
- iv) Formulation of regional development plan
- v) Selection of priority target sectors
- vi) Formulation of implementation action plan
- vii) Technology transfer of development planning and capacity development of human resources

1.2.6 Project Organisation

Project Organisation is formed as shown in Figure 1.2-1 according to the Records of Discussions agreed at the time of the detailed design survey of the Project. MDICI is the responsible agency and ODS is the implementing agency.



Figure 1.2-1 Project Organisation

The following three types of meetings have been held. Generally, after the draft reports were prepared by the JICA Expert Team (JET), they were discussed in a Steering Committee (S/C) meeting, Working Group (W/G) meetings, and Public Consultation (P/C) meetings. Comments were provided from the members of the meetings in parallel.

Meeting Name	Functions	Members
Steering	1) Monitoring and supervising the entire Project	Chair: DG* of Regional Development, MDICI
Committee (S/C)	2) Discussing and approving the reports	Co-chair: DG of ODS
	3) Coordinating among relevant organisations	Members: DGs of MDICI, Representatives of
	4) Reviewing and exchanging views on major issues	the related ministries, DPS of ODS, Leader of JET**
Working Group	1) Carrying out surveys and analysing the current	Chair: DG of ODS
(W/G)	situation of the Project area	Co-chair: Leader of JET
	2) Preparing reports for presentation to the S/C	Members: Directors of ODS
	3) Examining and analysing technical aspects of the reports	
	4) Monitoring and evaluating the Project	
	5) Coordinating the Project with stakeholders	
	6) Dealing with any issues instructed by S/C	
Public	1) Discussing and providing comments and	Members of the National Assembly,
Consultation	opinions to the draft reports	Representatives of relevant public
(P/C)	2 Providing information to JET and ODS	administration organisations, Representatives
		of private sector (business communities, labour
		unions, etc.)/civil societies (NGOs)

Table 1.2-1	Types of meetings
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Note: *DG: Director General, DPS: Director of Planning and Statistics, JET; JICA Expert Team Source: Record of Discussions on the Project

1.3 Change in the schedule of the Project

1.3.1 Revised schedule of the Project

With additional works for public consultation meetings at governorate level (Sub-P/C meetings), delay in a Sub-P/C meeting and subsequent public consultation meeting for the Southern Region, national elections for the President and members of the national assembly, schedule of the Project has been substantially changed as shown in Figure 1.3-1.

1.3.2 Revised assignment schedule of JICA Expert Team

With changed schedule of the Project, assignment schedule of the JICA Experts also has modified as shown in Figure 1.3-2



Figure 1.3-1 Flow of the Project implementation

	Charge	Name	Firm				2013				-					2014				-								201	15							M/M
	Cintigo	Tune	1	6	7	8	9	10	11 16 30	12 4	1 12 12 19	2 3	4	5	18	5 5	7	8	9 1 13	10	11	12	1	2	3	4	5	6 20	7	8	9	20	10	1 1	2 T	unisia Japan
	Leader / Regional Development	Naoki HARA	YEC	-			_		(15)	(9)) (43)			(49)	18			(30)	12			(22	22			17	35)			(1:	2)	–	<u> </u>	⊢	7.17
	Regional Planning	Hiroyasu KUDO	YEC												(12)				(12)				(12)												1.20
	Industrial Promotion	Yukio IKEDA	KMC						(16)	8 1	1 (41)	20	1 (24)	24	4	(34)			16 29					28			23	18 27)								6.13
	Trade Promotion/Marketing/ Investment Promotion	Takako MOCHIZUKI	КМС						25	13 1 9)	1 (44)	23		(48)	6				(28)				31	(30)			20	17 29)								6.60
	Agro/Fishery-Processing 1	Seiji SUGIMOTO	KMC											(42)	31				(27)				1	(19)												2.93
	Agro/Fishery-Processing 2 / Assistant of Regional Development	Masaya SUGITA	YEC						25	18 4 24)	(58)	2	1 (32	2	4	(34)								(22)			20	17 25)								6.50
	Participatory Approach 1	Mika KAWAMOTO	KMC						19 30		29	15																								1.00
	Participatory Approach 3	Kahori HIRANO	YEC												(20)	7			13 (22)	15							17	20 30)								2.40
	Tourism	Akira OHARA	ING						16 30		(36)	22		17	31 8	3 4 27)			20 10				31	(30)			19	17								5.80
misia	Transport	Frank CHARMAISON	ING								2	22			8	4			14 10				31	(30)			21	19								4.50
y jn Tı	Logistic and Traffic Survey / Transport 2	Makoto MATSUURA	ING								2 (21)	22							20 4																	1.20
Surve	Water Supply / Sewage System	Junichi KAMIMURA	ING								18 4				8	4							8	22			23	7								2.53
	Power Supply / Telecommunication	Kengo MIYAMOTO	YEC								18 1	5			8	4											24	20								2.80
	Human Resource Development	Ryoto UCHIDA	KMC												2	28							1	27												1.80
	Environmental and Social Considerations/ Natural and Social Condition Survey	Antoine SAURAT	ING								18	22			8	4			14 10				8	22			23	7								3.97
	Safety and Security Control	Ichiro MIYAMOTO	YEC						19	18																						20				1.40
	Project Administration 1 / Institutional System	Maki UCHIYAMA	YEC							,	1	5 2																								0.53
	Project Administration 2 / Spatial Plan	Kahori HIRANO	YEC						16 5					1 (22)	22																					1.40
	Project Administration 3	Akira SOMEYA	YEC						(20)					(22)	3	21																				0.63
	Project Administration 4	Esmael Mohamed	YEC																13 12																	0.47
	Project Administration 5	Masaya SUGITA	YEC																				31													0.26
																							(0)											Sub	-total	61.22
	Leader / Regional Development	Naoki HARA	YEC			(6)							(6)	_		(9)		-				(9)										(6	F	1.80
	Industrial Promotion	****	****														(6)		-				(6)		-											0.60
	Trade Promotion/Marketing/Investment Promotion	****	****					(8)		(3)		(4)																								0.7:
Jan	Agro/Fishery-Processing 2 / Assistant of Regional Davalogment	****	****			(4)	_										(6)															Ħ	Ħ	6	Ħ	1.6:
in Jaț	Transport / Infrastructure	*****	****			(4)	+																												\square	0.90
Work	Power Supply / Telecommunication	*****	****				+					(0)	=				(6)																		\square	0.4:
	Safety and Security Control	*****	****					(3)																												0.35
	Training in Japan 1	****	****								(4)					(2)					(2)	-													0.40
	Training in Japan 2	****	****								(4)																									0.20
<u> </u>			Report						IC/P						PC	/R			IT/R											DF/₽				Sub-	total	7.10
	P	ublic Consultation	Meeting						IC/K						U I				. 1/ 1											D1/K						\searrow
<u> </u>	Weak	Steering Committe	e Meeting						A			•		•	A	A			A			•									-	<u> </u>			-	\nearrow
L	WOrk	ang Group/ODS teat			v 1 · ~				-	•		-		•	-				-			-				-									+	61.22 7.10
		<legend></legend>		: V	vork in Tu	nisia	¦:V	Vork in Japa	an			DUCTOR OF	FOC																				Total M/N	Л	⊢	68.32
		YEC: Yachive	o Engineeri	ng Co., Ltc	1.	KMC	: Kaihats	su Managen	nent Consult	ing. Inc.	ING	INGEROS	EC Corpo	oration																					1	

Figure 1.3-2 Assignment Schedule of the JICA Experts

CHAPTER 2 CURRENT NATIONAL AND REGIONAL DEVELOPMENT

POLICY

2.1 National Economic and Social Development Plans

XIth and XIIth National Economic and Social Development Plans as well as the Jasmin Plan (Economic and Social Programme) are analysed with the following objectives.

- * The regional development strategy and plan for the Southern Region should follow the policies and strategies described in the national development plans as superior plans.
- * The regional development vision and strategy for the Southern Region have target period of 2015-2035, while the national economic and social development plans have been targeted for five years. With the analysis of the two national development plans and the Jasmin Plan, including the achievement over the target years of the previous plans, long-term trends and tendencies of policies and strategies are analysed by picking up detailed strategies and action plans.
- * As the regional development strategy and plan for the Southern Region is focussing on promotion of the productive sectors as well as infrastructure development to support the promotion of the productive sectors, policies and strategies for economic development are mainly analysed.

2.1.1 XIth National Economic and Social Development Plan (2007 – 2011)

(1) Introduction

In the following description in Section 2.1 of this chapter, key objectives/aims as well as measures/actions are highlighted to comprehend common ones and their trends. Phrases <u>underlined</u> show objectives or aims and those of *italic* letters are measures or actions to realise the objectives/aims.

The introduction sets the following guiding principle:

- Coping with rapid transformation to immaterial economy with <u>growing knowledge and</u> <u>technology</u> in expanding globalisation
- Continuous efforts for socio-economic gains acknowledged by the international community
- Creation and distribution of wealth in <u>modern and balanced society</u>, offering <u>equal opportunity</u> to all the nations
- Intensification of reforms towards <u>high level of integration to the world economy</u> and the conquest of <u>new market positions</u> in deteriorated world security

(2) Accomplishments of Xth Plan (2002 – 2006)

During the period of 2002-2006, the followings were attained:

 Reforms and policies implemented for i) <u>improving the performance</u> of the national economy,
 ii) <u>developing of its structure</u>, iii) <u>enhancing the competitiveness</u>, iv) <u>opening to the international</u> <u>environment</u> and v) <u>adapting to the world transformations</u>

- Supports i) to upgrade of industrial service companies, ii) to restructure hotel units, iii) to improve performance of the agricultural sector, iv) to promote human resource development v) to facilitate access to new technologies, vi) to streamline productive systems, vii) to improve distribution networks, viii) to improve road and communication infrastructure, ix) to establish and develop industrial and tourist zones, x) to enhance the competitiveness and to xi) to facilitate integration of the economy into the world economy
- With increased interest in <u>private investment</u>, intensive efforts i) to provide supports for entrepreneurs, ii) to improve services by the supporting institution, iii) to simplify procedures for creation of new businesses, iv) to cancel authorisation systems, v) to institute networks of business incubators and business centres
- For promotion of private investment, major steps i) to promote and establish regional structure for business creation and promotion of innovative projects, ii) to set up one-stop-shop for investments, iii) to create technological parks, iv) to establish of the Bank for Financing Small-and-Medium-Sized Enterprises and revising Fund for Industrial Promotion and Decentralisation (FOPRODI) and to doubling the SICAR capital (venture capital investment company)
- For <u>export promotion</u>, reforms i) to provide appropriate supports for exporters, ii) to encourage marketing operations for prospecting and new markets, iii) to advance the process of integration in regional and international environment, iv) to implement the partnership with European Union, v) to actively participate in the Euro-Mediterranean, Arab and African partnership, vi) to cooperate with friendly countries
- In <u>favour of sectors affected by the decline of international demands and exacerbated</u> <u>competition</u> *such as textile and tourism sectors*
- For accelerating job creation, i) to ensure adequacy to the new employment demand, ii) to diversify employment mechanisms for improving the job seeker's employability, iii) to provide incentives for recruitment of higher education graduates, iv) to encourage employment of managerial staff in companies
- For establishing foundations of knowledge economy and optimising the use of intelligence and leaning capacities, i) to modernise the systems of the higher education, and professional education and training, ii) to grade up communication infrastructure, iii) to level up computer science, iv) to strengthen research laboratories and v) to gradually expand remote services
- For <u>quality improvement</u> and <u>streamlining the performance of productive sectors</u>, i) to *renew production systems and cost control*, ii) *to reinforce professional structure*, iii) to *ensure business grouping*, iv) to *integrate into international production and marketing networks*, v) to *restructure the economy* for *innovative activities* with *greater use of intelligence and modern technologies*
- As <u>qualitative reforms in the financial sector for improving business climate</u>, , i) to develop taxation system, ii) to apply open-market instruments, iii) to optimise liquidity control operations, iv) to adopt a flexible exchange policy, v) to reinforce financial liberalisation, in such ways as vi) to facilitate the transactions of national companies abroad and vii) to drain more foreign investments, viii) to reinforce technical and financial capabilities, ix) to restructure banking sector, x) to modernise the institutional and legal framework, xi) to reinforce the insurance sector and xii) to improve its service.

• As <u>reforms in education</u>, vocational training and higher education, i) to modernise teaching methods, ii) to improve quality indicators and the effectiveness, and iii) to revise the legal framework on vocational training and higher education taking account of the new requirements, and iv) to consolidate information and communication technologies in the sector.

Quantitative achievement during the X^{th} Plan are summarised in Table 2.1-4. During the period, outstanding economic results and social gains were achieved in spite of the unfavourable international and regional situation, particularly high prices of commodities and political instability of the Arab region.

(3) Development Plan for the period 2007 2011

With the recognition that Tunisia tackled a new and crucial stage of the development, and in view of the profound transformation, principle targets of the XI^{th} Plan (2007 – 2011) were set as follows:

- Accelerated growth to raise per capita income and reduce unemployment rate
- Pursuance of a policy of income distribution aimed at improving the rate of human development, upgrading the status of the middle class and reducing poverty

The following on-going efforts were planned to be continued:

- Strengthening integration into the world economy by opting for export promotion and foreign direct investment
- Promoting promising labour-intensive sectors
- Optimising resource allocation
- Preserving internal and external financial stability
- Guaranteeing social peace and better income distribution policy

Targets of the development scheme were as shown in Table 2.1-4.

(4) **Development policies (2007 – 2011)**

In order to achieve above objectives, the following development policies were formulated:

- a) <u>Boosting employment</u> as absolute priority
- b) <u>Investment promotion</u> and acceleration of <u>new business creation</u>
- c) <u>Export promotion</u> and strengthening of <u>integration into the world economy</u>
- d) <u>Preservation of balances</u> and <u>development of financial policies</u>
- e) <u>Valorisation of human resources</u> and <u>strengthening of social progress</u>

To realise the development policies the following measures and actions were planned.

Table 2.1-1 Measures and actions to realise development policies planned in XIth Plan (2007 – 2011)

Development Policy	a) Boosting employment as absolute priority						
Measures/actions							
Actions to speed up the	process of job creation and control unemployment;						
* Accelerate the rate	e of growth						
* Improve performan	ce of the employment policy mechanism						
* Encourage self-emp	ployment and private initiative						
* Complement betwee	en the systems of education vocational training and higher education, and the job market						

*	Strengthen regional contribution to job creation
*	Improve monitoring of the job market
De	velopment Policy b) Investment promotion and acceleration of new business creation
	Measures/actions
<u>Re</u>	forms to develop business environment;
*	Improve visibility for investors
*	Streamline relevant regulations
*	Adopt international standards
*	Simplify investment procedures
*	Reinforce capacities of the banking sector
*	Strengthen its intervention in project financing
Th	ese reforms will concern
*	Establishment of training and research systems adequate to the requirement of the market
*	Development of modern infrastructure
*	Support of companies' adherence to quality systems
*	Limitation of scattering of companies
*	Encouragement of groupings
*	Support of small- and medium-sized enterprises
Ne	ecessary measures to accelerate businesses creation;
*	Identify new investment opportunities in promising, innovative and labour-intensive sectors
*	Disseminate the culture of private initiative among youth, particularly higher education and vocational training graduates
*	Institute a national and regional network for supporting investors and project promoters
*	Set up groups in business centres
*	Accelerate implementation of the national spin-off programme
Ne	cessary efforts to enhance the pace of investment;
*	Set up technological parks and to attract FDI
*	Form partnership in high-value-added activities
*	Preserve foreign companies operating in Tunisia
*	Create various mechanism of investment promotion
De	evelopment Policy c) Export promotion and strengthening of integration into the world economy
	Measures/actions
Pla	ans to promote export;
*	Continue facilitation of foreign trade procedure
*	Develop export support services
*	Promote E-commerce through the corporate capacities in the field of immaterial economy
*	Export diversification through the augmentation of the share of promising sectors
*	Diversify and conquest new market
*	Consolidate Tunisia's share in traditional market
Ne	ecessary actions to promote export;
*	Support export-oriented companies
*	Strengthen support structure
*	Develop financing and export insurance mechanism
*	Modernise working procedures and organisational methods in the company
*	Make plans to facilitate commercial establishments abroad
*	Improve performance of trade and diplomatic representations overseas
*	Instil the culture of exports into relevant actors

Development Policy d) Preservation of balances and development of financial policies								
Measures/actions								
Efforts to develop tax systems to reduce companies burden and to improve the tax output;								
* Modernise the levying modes								
* Reinforce control								
* Introduce quality systems in the tax administration,								
* Improve efficiency in public finance through gradual institution of budget management by objectives								
Monetary and financial reforms;								
* Modernise banking sector through reinforcement of financial basis and technical capacities								
* Develop risk analysis and control								
* Modernise service quality in conformity with international standards,								
* Institute effective partnerships with regional and international financial institutions								
The reforms to develop financial market;								
* Strengthen supply and demand								
* Enhance transparency and the security of financial transactions								
* Expand market openness to foreign investors								
* Encourage companies to open up their capital to the public								
* Mobilise institutional savings								
* Develop mechanisms of collective investment in securities								
Development Policy e) Valorisation of human resources and strengthening of social progress								
Measures/actions								
Reforms to raise the standard of living and the quality of life;								
* Strengthen performance of the education, vocational training and higher education system								
* Promote social services								
Actions on Education;								
* Ensure quality consolidation								
* Improve teaching conditions								
* Establish information society								
* Diversify disciplines in the promising high-employability sectors								
* Enhance interaction of education and training establishments with their environment								
Actions on Health/ Culture / Sport:								
* Reinforce the health care system								
* Improve the quality of its services								
* Extend the social security coverage to all categories of people								
* Strengthen the support and integration programmes in favour of vulnerable classes								
* Consolidate cultural and sport policies to bring them closer to the citizen								
(Source: XIth National Social and Economic Development Plan)								

(5) Financing requirements of the 2007-2011 period

Financial requirements for implementation the XIth plan were estimated as shown in Table 2.1-5

2.1.2 XIIth National Economic and Social Development Plan (2010 – 2014)

(1) Introduction

Upon the occurrence of the Lehman Shock and the subsequent world regression, the XIIth National Economic and Social Development was formulated to cope with the crisis of world economy though the planning period of was XIth Plan had not finished. The introduction of the Plan stated that Tunisia had succeeded in building and reforming comprehensive and balanced development. The XIIth Plan was

formulated to prepare the new stage of the development process, aiming at catching up the developed countries and achieving social welfare and economic prosperity. Despite pressure on available resources and negative repercussion

(2) Achievements of XI^{th} Plan (2007 – 2009)

Quantitative achievements attained during the period of 2007-2009 are shown in Table 2.1-4 and qualitative achievements are summarised as follows:

- Enhancing the private investment and improvement of business climate;
 - i) Developing legislations compatible with international standards, such as promulgation of the concession law, the security of financial transaction law and

the economic initiative law for significant shift in the liberalisation of investment field, and ii)*Facilitating the procedures of enterprises creation*.

- Efforts to develop sector policies;
 - i) Upgrading and modernise industrial production units,
 - ii) Reinforcing the professional structures,
 - iii) Developing distribution ways,
 - iv) Focusing on the quality system and
 - v) Adopting specific programme to support the other sectors.
- <u>Reforms improve the infrastructure;</u>
 - i) *Reinforcing the basic network of road and bridges*, andii) *Expanding communication network and improve the utilities level*,
- <u>Reforms to strengthen financial sector;</u>
 - i) Reinforcing financial foundations of the banks,
 - ii) Improving the financial services and the financial markets,
 - iii) Creating alternative markets for SME and
 - iv) Developing insurance sector by reforming its legislation and organisation.
- <u>Reforms to implement the second export development programme;</u>
 - i) Adopting the external access mechanism,
 - ii) Promulgating the new custom codes,
 - iii) Adopting the transport bundle,
 - iv) Facilitating and develop logistic services,
 - v) Reducing the number and rates of the custom tariffs and
 - vi) Establishing a unique custom system for all imports.
- <u>Promotion of employment;</u>
 - i) Intensifying job creation,
 - ii) Accelerating the growth rate and to encourage the investment impulse and initiative.
- <u>Concretisation of the social and economic development for further improvement of the human</u> resources and for establishment of the knowledge economy components;
 - i) Promulgating the orientation law of education,
 - ii) Revising higher education diploma,

- iii) Reinforcing the capacity of vocational training centres, and
- iv) Improving the structure of the national system for scientific research.
- <u>Reinforcement of the social policies and programmes to reduce the poverty rate and to reinforce</u> the medium class and to enlarge the social and healthcare coverage;
 - * Redistribute wages,
- <u>Regional development efforts;</u>
 - i) Reinforcing the infrastructure and utilities,
 - ii) Launching the several specific programmes in the priority regions and
 - iii) Concretising the solidarity and the complementarities between regions to make the region an active pole of development.

(3) Development strategy of the period 2010-2014

Aiming at engaging Tunisia in an advanced stage to catch up the developed countries, objectives of the new development strategy were set as follows. Target indicators of XIIth Plan are shown in Table 2.1-4.

- Establishing a qualitatively new contents for growth based on innovation
- Increasing per capita income and reducing the poverty
- Exploiting all potential to stimulate the employment and reducing the unemployment among the university graduates
- Adopting appropriated educational and learning system to build a community of intelligence and know-how
- Strengthening the social gains
- <u>Tightening the integration of the various regions to promote their integration</u>
- Establishing the foundations of environmental economics and improving further the quality of life

(4) **Development policies**

To achieve the objectives, the following development policies have been formulated:

- a) Developing the structure of the economy,
- b) Establishing a new approach for investment,
- c) Promoting the employment,
- d) Deepening the process of integration and impulse further exports,
- e) Enhancing/conferring greater efficiency of financial policy,
- f) Reinforcing the social development,
- g) Investing in the human capital,
- h) Stimulating of the regional development, and
- i) Establishing the environmental economy pillars.

To realise the above development policies, measures and actions were planned as follows:

Table 2.1-2 Measures and actions to realise development policies planned in XIth Plan (2007 – 2011)

Development Policy a) Development of the structure of the economy									
Measures/actions									
Aims of the economic policies;									
* Establish a new model for growth based on innovation, the intensive use of technology, creation and building a strong economy and positioning in the international technological map.									
* Use the above model to increase the share of promising and high-value-added sectors in the GDP and to further offer opportunity for export and employment									
* Establish several technological zones to attract high tech investment in the field of agriculture, food-processing, biotechnology, ICT, electric and aircraft components, textile and clothing, environment and renewable energy.									
Actions to upgrade and modernise programmes for industrial enterprises;									
* Focus on the investment in innovation and technological development and quality inside enterprises									
* Promote industrial infrastructure to the international standards, in order to create a development pole and an industrial technological centre in each governorate.									
* Incite enterprises for integrating the new techniques in their production systems									
* Enhance their ability to develop technologies to be updated with the new technical development for further valorisation of the competitive skills in the advanced fields.									
<u>Reforms in the service sector:</u>									
* Create new and sustainable growth sources, making Tunisia a regional financial and business centre									
* Upgrade 100 innovative enterprises at the level of innovation									
* Liberalise service sector especially ICT, logistic services, healthcare services, business services and off-shore services									
Aims to modernise the traditional sectors:									
* Exploit their production capacities									
* Improve their performance, by utilising and improving their comparative advantages, by detecting the promising activities to face international demand development									
* Reinforce their positions in the traditional markets and access to new markets									
Actions to improve agricultural competitiveness									
* Improve quality of the agricultural products and establish Tunisian standards									
* Develop biological or organic agriculture									
* Reinforce programmes related to the tourism, handcrafts and trade aiming at creating up-to-date, modern trade activity.									
Development Policy b) Establishment of a new approach for investment									
Measures/actions									
Aim of investment reforms;									
* Adopt a new and developed approach by reviewing incentive system and orient the system to the promising and high-value-added sectors and in developing regional zones									
Actions to improve business climate and competitiveness of business;									
* Simplify the investment procedures									
* Develop the business support mechanism through the adoption of a unique procedure of administrative services to the business creation to reduce the number of business creation procedures from ten to five									
* Generalise enterprise space in the regions,									
* Reinforce the electronic administration and to reduce administrative licenses									
Actions on infrastructure development;									
* Adopt national programme to upgrade/create the industrial zones									
* Expand transportation network									
* Establish logistic zones with international standards									
* Improve the quality of Tunisian product under the national programme of quality									
* Upgrade programme of services and to modernise traditional sectors									

Juridical and organisational Reforms;

* Adopt the same standards with the ones applied by developed countries

 <i>Establish the fundaments of judicious management and transparency inside the enterprise</i> <i>Reinforce the protection of investors</i> 	
Juridical and organisational Deformer	
* A dont the same standards with the ones applied by developed countries	
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Establish the jundaments of judicious management and transparency inside the enterprise Beinforce the protection of investors	
Reinforce the protection of investors	
Measures/actions	
Aims of the employment policy:	
* Cover additional employment demand	
* Reduce the unemployment rate by one point and a half by 2014	
* Create jobs for the growing number of higher education graduates	
* Tackle with the long term unemployment for reducing the unemployment pariod to less than two years	
* Ungrade training upon graduation	
A pprovedue of amployment policy	
Approaches of employment poincy, * Make education system and vocational training more appropriate to the requirements of the enterprises and the	
needs of investors	
* Develop professional integration mechanisms	
* Strengthen the roles of the regions in promotion of employment	
* Strengthen the employment policy abroad	
* Develop work legislation in line with the economic reality	
* Provide all forms of assistance and briefing to project creators, and financial supports and rehabilitation to promote independent jobs and the private initiative	
* Support the job seekers from low-income families and facilitate their integration to the job market	
* Enhance the contribution of associations in employment promotion	
Development Policy d) Deepening the process of integration and export promotion	
Development Policy d) Deepening the process of integration and export promotion Measures/actions	
Development Policy d) Deepening the process of integration and export promotion Measures/actions Efforts to expand the integration into global economy and to benefit from globalisation	
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* Develop the management of the public debt by the creation of Tunisia Treasure Agency and Deposits and Guarantee Fund	
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* Establish a methodology to manage the budget by objective	
Efforts to secure adequate financing of the economy;	
* Give more flexibility to monetary policy through targeting inflation policy	
* Improve the performance of the financial sector up to the international level	
Efforts to ensure the quality of banking services to strengthen the financial capacity of financial institutions;	
* Create "Tunisia Holding (a public bank pole)" and a financial pole specialised in financing small and medium enterprises	
* Attract internationally renowned banking institutions	
* Revitalise the transaction in the financial market	
* Improve the functions of the market	
* Devote modes of governance and transparency of financial transactions	
* Further develop the insurance sector	
* Improve the performance of insurance institutions and their service auality	
Efforts to establish <i>full liberalisation of the dinar</i> :	
* Pursue capital liberalisation	
* Facilitate access to external financing resources with the most concessional terms	
* Enrich financial arena with outputs and new financial mechanism with launch of Tunisia Financial Harbour	
* Invite internationally renowned investors	
* Continue attracting more FDI	
Development D. P. S. Constant of a stable state of the st	
Development Policy 1) Reinforcement of social development	
Measures/actions	
<u>Reforms to promote social gain and ensure higher quality of life of the citizen in the solidarity approach based on</u> synergy, equal opportunities, non-exclusion and non-marginalisation;	
* Support social transfer policy	
* Ensure distribution and orientation towards those who are entitled to full coverage of social security system	
* Intensify social safety networks and develop a social alert system, using a 20% of the GDP.	
Aims of the Reform on pension system;	
* Guarantee the rights of secured person	
* Achieve full balancing of social funds	
* Strengthen contractual wage policy	
* Ensure health security and development of health vigilance mechanisms	
Actions on rural development programmes and integral urban development;	
* Upgrade public utilities	
* Increase the proportion of households owning a home	
* Strengthen cultural, sports and vouth programmes	
Development Policy g) Investment in the human capital	
Development Foncy g) investment in the number capital	
Measures/actions	
Aims of Human Development strategy;	
* Provide necessary skills and competencies	
* Provide adequate infrastructure to develop the knowledge economy	
Focus of Human Development reforms;	
* Improve quality of the education system and learning up to the international standards	
* Develop and disseminate evaluation and certification functions	
* Develop appropriate specialties with the needs of the economy	
* Focus on providing the skilled manpower to promising fields responding the needs of the enterprises and large projects	
* Enhance openness of universities and strengthen their partnership with foreign universities	
* Achieve highest ratio of joint degrees between Tunisian universities and counterparts in developed countries	

- * Increase the cost-effectiveness of the vocational training system
- * Initiate applied training to students
- * Develop functions of guidance, direction and briefing
- * Develop volunteerism, initiative and teamwork culture in all phase of education
- * Upgrade the various indicators of education especially to reduce illiteracy rate

Aims of above reforms;

- * Increase the number of technical skills and scientific talent
- * Strengthen engineering training with the promotion of the number of engineering graduates from 4,500 (2009) to 7,000 engineers (2011), and to 9,000 engineer (2014).
- * Increase the number of graduates from science and engineering courses from 26 thousands (2009) to 37 thousands (2014).

Efforts to develop research and technology system;

- * Provide necessary funds through the activation of the innovation and technology development intervention fund for enterprises
- * Encourage the enterprises to use the above-mentioned fund to develop new products and services in promising/innovative projects
- * Incite national enterprises to allocate 1% of their transactions for research and development, to raise the share of scientific and technologic research in GDP from 1.25% (2009) to 1.5% (2014)

Actions to promote partnership contract in the field of R&D between productive enterprises, academic institutions and research centres and to establish sector networks;

- * *Renew and establish the quality management in research centres*
- * Encourage the private sector to intensively use of new technologies,
- * Expand the network of incubators in higher education institutes and to expand it to engineering schools, technological institutes and development complex

Development Policy h) Stimulation of the regional development

Measures/actions

Renewed vision incorporated in regional development policy to support competitiveness of the regions;

- * Promote integration and complementarity between the governorates,
- * Strengthen of roles of each region in development programmes and projects according to their **intrinsic potentials and comparative advantages**.

Efforts for regional development;

- * Support for access to financial resources
- * Strengthen human resources
- * Provide all appropriate conditions to give an effective dynamics for private investment according to the requirements and needs of the regions
- * Promote utilities, investment in infrastructure and develop incentive system
- * Adopt approaches for the valorisation of the regional potential to promote regional and local economy, and to improve living conditions and regional balance.

Focus of the reforms;

- * Diversify the economy
- * Disseminate technological poles and industrial complex
- * Support higher education and vocational training
- * Promote specific programmes in priority areas

Development Policy i) Establishment of the environmental economy pillars

Measures/actions

Reform to establish a modern approach in environmental policy and protection of natural resources;

* Dedicate the optimum use of natural resources and maintain the ecological balance

- * Allocate 1.25% of the GDP to programmes for preservation and valuation of natural resources
- * Maintain the balance of water resources
- * Tighten exploitation of available natural resources
- * Rationalise the use and protection of biological diversity

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- * Support the programmes of resistance to erosion and desertification
- * Intensify implementation of programmes regarding alternative energy in transport sector
- * Empower the major cities by structured network equipped with modern facilities, to ease traffic and reduce congestion and pollution

Actions to reduce negative effects of climate change;

- * Reduce pollution in cities
- * Develop control mechanism of air pollution
- * Increase green spaces
- * Diffuse sanitation services
- * Establish environment-friendly economic enterprises
- * Activate environmental label
- * Support the environmental rehabilitation.

(Source: XIIth National Social and Economic Development Plan)

2.1.3 Economic and Social Programme for 2011-2016

(1) The Jasmine Plan

Economic and Social Programme, so called the Jasmin Plan, was published in September 2011 by the Ministry of Finance. At the same time, the full texts of "Strategy of Economic and Social Development 2012" was issued, whose preface was closed with the name of the Prime Minister. Although the plan was not approved by the National Constituent Assembly, the contents of the plan are analysed to understand the direction of the policy and strategy of the Interim Government.

The Jasmine Plan has been articulated along a three-pronged approach:

- a) Post-revolution crisis management and political reform,
- b) Carrying out the transition towards democracy, and
- c) Setting the conditions of sustained social and economic development in the medium term.

Short-term emergency measures, which have contributed to stabilising the socio-economic conditions, include the followings:

- Job-support programmes,
- Enhanced financial support for social and regional development,
- Assistance to adversely affected enterprises by social disturbance,
- Financial incentives for reactivating the economy,
- A complete overhaul of the regulatory framework on microfinance,
- Private equity for the immediate impacts on job creation,
- Promotion of small businesses particularly in rural areas, and
- Fixing regulations on Public Private Partnership (PPP) and support of SMEs.

The plan has aimed at resuming a robust economic growth (5% per annum) and initiating the necessary political, social and economic reforms during the transitional period (1012-2013), and at achieving economic growth rate in excess of 7%, and convergence process with European Union and other developed countries.

The medium term programme has set the following ten strategic targets:

1) Establishing trust through transparency, social responsibility, and the citizen's participation

- 2) Ensuring all-inclusive and equitable development shared among different strata of the society
- 3) Promoting knowledge-based economy with significantly enhanced science and technology
- 4) Creating favourable conditions for the promotion of productivity and free entrepreneur-ship
- 5) Fostering integration to the world economy
- 6) Investing in human capital through education and training, and fostering professional competency in all fields
- 7) Promoting social justice and equal opportunity
- 8) Ensuring adequate, balanced and viable financing to the economy
- 9) Rehabilitating the public service and civil actions
- 10) Optimising utilisation of resources and preserving the environment

The mid-term programme has set the policy of *gradual disengagement of the State* from those activities that can be handled by the private sector. In the meanwhile, however, the State has to play a critical role in setting forth the successful factors to reach the plan objectives, to be principal catalyst for the economic development and social equity for *individual liberty*, *social justice and cohesion*, to encourage *free initiative*, to maintain *stable and constructive labour relations* as principal engine for the economic development, and to promote a *climate of cooperation and constructive cohesion* among different components of the society.

The programme set the top priority on *tackling unemployment*, particularly *amongst graduates in the less-developed regions*, to reduce unemployment rate that exceeded 18% in the interior regions, and was 31-48% amongst graduates in the interior compared to 23% nationwide. While the short-term measures introduced have *alleviated the pressure on the labour markets* of the graduates, the long-term solution can only work out through investment programmes emphasising on the less-developed areas.

Target economic and social indicators of the Plan are shown in Table 2.1-4. The 2012-2016 plan called for investments of DT 125 (US\$ 100) billion at current prices with annual growth rates of over 15%, in excess of the 9% consumption growth, and reaching 28% of GDP. Public investments were estimated at DT 50 (US\$ 40) billion of which DT 44 billion were from the government budget. Private investments were expected to reach DT 75 billion of which foreign direct investment represented 22 billion. Financial requirements for the Plan are given in Table 2.1-4.

To speed-up the investment programme, the interim government was launching two major investment vehicles that was expected to open at the end of 2011; Generational Investment Fund and a Deposit and Consignment Vehicle (**CDC**-Caisse de Depot et de Consignation).

The Jasmin Plan put decisive emphasis on promotion of *new investment by the private sector* and intended to launch a generational investment vehicle (the **Ajyal Fund**) with a significant amount of *seed-money* for investing in projects that meet the criteria of private investors, aiming at helping financing large project and with exit strategy for ultimately leaving and handing over to the private sponsors ensuring acceptable returns. A variety of sub-funds would be launched including private equity funds and sector-specific fund in *infrastructure* (including *renewable energy*), *agriculture* (including *bio and agribusiness*), *technology*, *tourism, real estate and retail*. The fund also aimed at emergence of *a new generation entrepreneurs* in the best practices and financial management. The Ajyal Fund would be structured as fund of funds and aimed to raise equity of DT 5 (US\$ 4) billion within two years and large investors both Tunisian and

foreign, would be invited to invest in sub-funds and be granted privileges including participation in the governance of the fund and co-investment right in the projects. Through the combined leverage and the multiplier effects, the Ajyar Fund would generate investments in excess of DT 35 (US\$ 30) billion and create more than one million direct and indirect jobs within the coming five years. As the main sponsor, the government would play a primary role in its governance, but leave it to the enterprises to carry out their project independently. By pushing down indebtedness to the project level, the government avoided taking on any additional debt and limited its exposure to equity participation in the projects. The fund abided by principle such as safeguard of the environment and engagement in socially responsible activities, and adhered to the Santiago Principles of good governance and transparency.

The **CDC**, whose establishment of was approved by the Cabinet, would mainly engage in financing large infrastructure projects and support of SMEs and would initially get the lion's share with funds from postal deposits and other sources from public pension funds and retirement funds. Investment by CDC in the near term would be over DT 5 billion for *reinforcing the infrastructure*, promoting industrial zones and *fostering SMEs* in the interior regions. Projects financed by CDC would not meet the investment criteria of private investors or exceed their capacity. The CDC would initiate a comprehensive programme to support SMEs and launch new government-sponsored equity and mezzanine funds, and credit enhancement specifically for early-stage support of SMEs.

The areas where Jasmin Plan would initiate significant reforms for its success are the followings:

- Financial system,
- The public sector in general and the state apparatus in particular,
- Overhaul of the education and juridical system,
- A comprehensive Fiscal Reform and
- Review of Investment Code.

The reform of financial system, the banking system in particular includes a complete restructuring of the public banks by the following measures:

- Cleaning up their problematic loans,
- Reinforcing their capital funds,
- Improving their risk management,
- Upgrading their information management systems,
- Enhancing human capitals and
- Improving their governance to compete on equal footings with the private banks.

The government must engage in the promotion of the financial system, capital markets in particular, to create full-fledged capital markets promoting such activities as *fixed income, corporate and project bonds, commodities, long dated foreign exchange, interest rate swaps and new hedging techniques* covering different markets and emergence of new asset classes to mobilize long term saving and to offer new investment opportunities to institutional investors such as insurance companies and pension funds.

Bolstering innovation, research and development, and investment in human capital are essential elements of the Plan. These includes the development of technological infrastructure (e.g. e-governance), encouraging the creation of knowledge-based economy. The government has planned to launch a National Initiative for Industrial and Technological Development in cooperation with the private sector with 80 measures and actions, and an investment of DT 10 (U\$ 8) billion for 2012-2016, combined with

the National Strategy for Research and Innovation Programme aiming at increasing investment for the research and development to 1.75% of GDP.

Tunisia has historically achieved respectable records in the human resources development by allocating over 7% if GDP to education. Despite the advances, Tunisia still suffers inequalities in education, health, disposable income and gender. The Plan has intended to increase disposable income, to reduce poverty, and improve quality of education and healthcare particularly in less-developed regions to reduce inequality and gaps. The Plan also has emphasised cultural development with allocation of 1.5% of the budget.

With implementation of the Plan, Tunisia would consolidate economic and social development to achieve the democratic transition in motion of a virtuous cycle of economic prosperity and political stability. With the Plan, Tunisia has intended to become a haven of peace and prosperity in the Mediterranean region. Through advanced status with European Union and expanded free trade agreements with the partners, Tunisia would become a trade and investment hub bridging commercial, financial and investment opportunities between the regions of Europe, Africa, the Middle and Far East. By implementation the Economic and Social Development Programme, Tunisia would successfully carry out the transition process and lead the outcome of the Arab Spring.

(2) Development strategy of the new Tunisia

The development strategy was issued in May 2012 by the Ministry of Regional Development and Planning. With a recognition that Tunisia has initiated a new decisive phase of its modern history and <u>democratic transition process</u>, the Strategy aims at <u>consolidating the rule of law and institutions</u>, <u>building a new community based on freedom</u>, justice and citizenship with the <u>new reform and modernization approach</u>. To overcome the existing development challenges and the structural imbalances, the Guidelines have been set with the following twelve aims:

- i) Ensuring the foundation of governance,
- ii) Consecration of decentralisation,
- iii) Popular participation,
- iv) Comprehensive development,
- v) Modernisation of the economic structure,
- vi) Consolidation of productivity,
- vii) Establishing of the innovation system,
- viii) Deepening integration process into the global and regional economy,
- ix) Enhancing the national capacity,
- x) Creating a lasting public-private partner partnership,
- xi) Protecting environment, and
- xii) Ensuring the rights of future generations.

With its priority of radical reduction of unemployment, development of inland areas, the Strategy has been set as follows:

- a) Implementation of a new generation of economic and social reform
- b) Modernising Infrastructure
- c) Enshrining a global and balanced regional development
- d) Consolidating human and social development

e) Promoting sustainable development and proper management of natural resources

To realise the strategies, objectives and measures/action are set as follows:

Table 2.1-3 Objectives, and measures/actions to realise development strategies planned

· 1 1		C .1	— · ·
In develo	nment strateg	v of the r	10W 11111010
	Different su alce	v or the r	iew rumsia

Strategy	a) Stimulation of the regional development									
Objective i) Anchoring governance foundation and improving business climate										
	Measures/actions									
Efforts to imp	prove governance/ business climate									
* Give more	* Give more efficiency to the public intervention by making them more accessible to the citizens									
* Reduce th	e discretion of selectivity									
* Consolida	* Consolidate fair competition to support activities of the private sector									
* Stimulate	the private initiative									
To give more	efficiency in the performance of the administration									
* Improve th	he management of public funds									
* Facilitate	access to information on public administration									
* Establish decision-n	mutual trust, shared responsibility and constructive participation of all stakeholders related to the naking process									
Actions aime	d at improving efficiency of the administrative work									
* Reform we	orking methods and administrative practices									
* Build a m	odern administration for providing the services with high quality and low cost in a short time									
* Establish	a regulatory framework and participatory evaluation									
* Simplify a	dministrative procedures									
* Develop e	-government and ethics for public services									
Measures to r	nodernise the civil service and human resource management									
* Develop p	romotion and advancement system based on advantage and competence									
* Establish	performance evaluation system of officials									
* Consolida services	tte analytical skills, to facilitate information exchange and to improve the productivity of the public									
Efforts to mo	dernise the civil service and human resource management									
* Develop p	romotion and advancement system based on advantage and competence									
* Establish	performance evaluation system of officials									
* Consolida	ite analytical skills									
* Facilitate	information exchange									
* Improve th	he productivity of the public services									
Efforts to imp	prove fiscal management;									
* Devote to	the transparency in the public fund management									
* Deepen at	nd extend the system of budget management by objective									
* Strengther	n the public expenditure control									
Efforts to pro	vide competitive environment that encourage investment;									
* Revise the	regulatory framework on public procurement to be more efficient/transparent in its procedure									
* Promote f	air competition and free access to the procurement information									
* Reduce re	gulatory barriers and administrative procedures									
* Develop i	nvestment incentives									
* Facilitate	access to the funding sources									
* Increase of	competition in the domestic market									
* Construct	balanced partnership between the public and private sectors									
* Revise the	Code of Investment Incentives to more simple and transparent one									
* Identify st	rategies for public and private partnership to provide adequate funding for major projects									

Reform the tax system for more tax justice * Improve efficiency and performance of the system Reforms to promote competition in the domestic market Reduce violation of the fair competition rules Strengthen the mechanisms and institutions of social dialogue Strengthen the foundations of the union practice * Promote dialogue of consultation between social partner Develop the contractual system Appropriate the national legislation with international standards Objective ii) Modernising economic structure **Measures/actions** Aims of the reform of economic structure Deepen integration into the global economy Support promising sectors Develop the off-shore activities * Improve the logistics and transportation and to promote training Efforts to modernise economic structure Develop sectoral policies to raise the shares in GDP of promising sectors with high-value-added and innovation Create more technological parks for attracting investment in sectors of high technological contents such as food processing, biotechnology, ICT, electronic industries, environment, health and renewable energy Continue industrial rehabilitation and modernisation programmes * Promote innovative investment and technological development * Consolidate quality control systems Modernise infrastructure and to extend industrial and technological centres to all regions Requirements to develop service sector Fulfil the requirement of the sector rehabilitation * Liberalise activities in ICT and off-shore services Requirements to modernise traditional sectors Exploit their comparative advantages * Enhance diagnosis of new opportunities in agriculture, tourism and trade Efforts to develop national innovation system Integration of innovation factors in the production processes Develop research and development systems by creation of clusters for promising sectors Create technological zones for attracting investment in highly technological sectors, such as manufacturing of aircraft components Measures to develop education, vocational training and higher education system Allocate certification and assessment functions to promising specialties Improve the efficiency in the vocational training system Objective iii) Deepening integration process and developing partnership **Measures/actions** Approach to integrate into the global economy for boosting economy, creating new jobs, ensuring the benefit of technology transfer from expertise and attracting funds for development Shift the integration approach from selective to comprehensive Strengthen bilateral and multilateral cooperation Reduce the differences between preferential and non-preferential rates Strengthen exchanges and partnership through conclusion of new trade agreements with new countries of Africa, Asia and America Reforms to further liberalise capital resources Ensure external financing needs Promote attracting FDI by completing liberalisation of foreign investment

- * Appropriate the funds between on-shore and off-shore sectors
- * Develop partnership between national and foreign companies

Efforts to further promote export

- * Intensively reducing transaction costs and tariffs
- * Improve the regulatory framework
- * Strengthen the integration in global distribution network
- * Promote access to new markets
- * Develop port infrastructure
- * Create national logistic platforms and to establish training programmes for agents of logistic services
- Efforts to advance status of Tunisia
- * Negotiate for advanced status with the European Union
- * Expand talks for bilateral cooperation for promotion of trade and finance and to facilitate movement of people

Objective iv) Developing the financing system

Measures/actions

Approach to improve the efficiency of financial policies

- * Implement monetary policy with target inflation
- * *Consecrate more flexible foreign exchange policy*
- * Generalise budget management by objective
- * Promote public private partnership
- * Appropriate conditions for mobilisation of external financial resources

Action to improve tax, finance, and banking sector

- * Review the tax and custom system to ease burdens on business
- * Promoting economic initiative and improving business climate
- * Raise efficiency of intermediation by banks
- * Develop more dynamic financial market
- * Strengthen participatory financing
- * Improve insurance services
- * Clean up banks' portfolios
- * Restructure the banking sector
- * Consolidate financial and technical capacity of local banks
- * Modernise management and governance
- * Diversify the services such as Islamic finance and to attract international banks

Efforts to promote alternative financing and to enrich securities of the financial market

- * Diversify programmes
- * Encourage initial public offering of new businesses
- * Create cash deposit and recording for funding infrastructure projects in the inland regions
- * Promote new investment on technology and innovation

Reform on the access of small and medium enterprises

- * Consolidate interventions of the BFMPE (Bank for Medium and Small Scale Enterprises)
- * Diversify mechanisms and specific services
- * Develop companies and investment funds
- * Diversify of their operations at various phases of the investment
- * Create and restructure promising activities
- * Strengthen interventions for small projects by Tunisian Solidarity Bank (BTS)
- * Restructure the activity of micro-finance by introducing the new legal and institutional framework
- * Create institutions of micro-finance
- * Diversify financial instruments and services directed to low-income strata

Aims to strengthen the role of insurance sector;

* Strengthen the retention capacity

* Imp	rove performance of the companies										
* Prof	mote insurance schemes with potential savings										
* Imp	rove the quality of the services by the sector										
Strateg	b) Modernising infrastructure										
Objecti	ive i) Transport infrastructure										
	Measures/actions										
* Stre	ngthen integration in the Maghreb region through the continued Maghreb highways project										
* Con	* Construct railways linking Tunisia, Algeria and Libya										
* Initi	iate negotiation with European Union for an agreement to establish a common aviation area										
* Stre Nor	ngthen scientific research for the development of the transport sector in cooperation with European and th American countries										
* Enh	ance main highway networks linking important economic and urban centres										
* Con	nsolidate national, regional and local road networks										
* Stre	ngthen railway infrastructure to promote public transport										
* Esta	ablish a modern infrastructure for connection between logistic, production and distribution centres										
* Con	nstruct new generation ports (deep water ports)										
* Mod	dernise marine ports										
* Stre	ngthen intelligent transport										
* Dev	pelop institution and legislation for public-private partnership										
* Pro	vide necessary funding mechanism										
* Enc	ourage the private sector to finance infrastructure projects by creation of a trust and deposit fund										
* Pro	mote sustainable and green transport										
Objecti	ive ii) Development of industrial zones										
	Measures/actions										
* Esta	ublish new generation zones according to regional specificities with a global vision										
* Enc hou.	ourage private sector participation in the development of industrial cities that include spaces for production, sing, entertainment and logistic services										
* Exp	and use of natural gas										
* Pro	vide sufficient electricity, to strengthen road network leading to the zones										
* Cree	ate an industrial area in each delegation mainly on borders										
Objecti	ive Iii) Tourism										
	Measures/actions										
* Dev	elop tourists route linking various archaeological sites and natural landscapes										
* Plar	n spaces for camping in the Sahara										
* Dev	pelop tourism plan										
* Sup	port specialised ecological and Sahara tourism										
Strateg	c) Enshrining a global and balanced regional development										
Objecti	ive i) Balanced development										
	Measures/actions										
* Red pove	uce differences between regions through distributing public investment with objective criteria of level of erty, unemployment and available utilities and infrastructure in the governorate										
* For	mulate regional development plan taking account of specificities of each region										
* Dev	pelop local production units										
Objecti	ive ii) Living conditions of poor citizens										
	Measures/actions										
* Gen citiz	neralise networks for electrification, drinking water and sanitation by breaking their isolation to attract gens and create development kernels										

* Enhand	e territorial planning and management for reducing territorial disparities and strengthening foundations inable and equitable development and balanced distribution of activities and population								
* Fight a	eainst unplanned urbanisation								
* Ensure	balance between urban and rural areas and between interior and coastal regions								
Objective	iii) Improving compatitivanass								
Objective	Maarumadaatiana								
* 6	Measures/actions								
* Consol	idate investment in the regions								
* Implen networ prioriti	ent major infrastructure programmes for development of road and highway networks, telecommunication k for broadband services, industrial zones, university campuses and hospitals according to the regional es								
* Connee	t the interior regions to other regions								
* Expand	natural gas network								
* Create	industrial and technological base specific to each region and technology parks in all zones								
Objective	iv) Attracting domestic and foreign investment								
	Measures/actions								
* Revise	investment legislation								
* Adopt	a package of incentives								
* Encour econon	age the sectors with high value added based on the human development, elements and characteristics of ic development of each region								
Objective	v) Strengthening the powers of regional and local authorities								
	Measures/actions								
* Consol	idate decentralisation and governance by strengthening and entrenching the local democracy								
* Recons	truct the legitimacy of the public								
* Allow nationa	regional and local councils to participate in the process and initiating proposals for development of I policies								
* Establi	sh political and institutional system for an effective governance system								
* Activat	e effective decentralisation for redistributing resources between the state and regions								
Strategy	d) Consolidating human and social development								
Objective	i) Improving human development indicators								
	Measures/actions								
* Reduce	gaps in household income and combating against poverty								
* Boost e	mployment and delivery of education and health services								
* Enhand	e purchasing power of the people								
Strategy	e) Promoting sustainable development and proper management of natural resources								
Objective	i) Approach to the environmental policy								
	Measures/actions								
* Genero	lise sanitation services in urban areas								
* Promo	e industrial environment management								
* Strengt	* Strengthen environmental monitoring for reducing pollutions								
* Encour technic	age the integration of businesses for upgrading ecological system through incentives to use clean ues								
* Improv	e environment in industrial zones and to develop the environmental legislation								
* Encour	age private investment in the environmental sector in the form of concession								
* Achiev	e the coastal protection programme for protection of maritime and coastal ecosystem in sensitive areas								
* Adopt	green economy as sustainable development model through implementation of national and regional								
strateg	٤،								

O	bjective	ii) Preservation of natural resources							
	Measures/actions								
*	Mobilise c	and optimally use available water resources							
*	* Concentrate on the process of using non-traditional resources, namely desalination of sea water and treated waste water								
*	Rationalis	re water use in agriculture							
O	Objective iii) Renewable energy								
		Measures/actions							
*	Improve s	ystem of energy supply security							
*	Diversify a	its source							
*	Dissemina	te energy substitution in different sectors							
*	Use new a	wailable mechanisms such as bottom of clean technology and clean development mechanism							
*	Implement	t pilot projects with new technology such as heating and cooling with solar energy							
*	Develop c	ogeneration							
*	Promote c	consumption of natural gas and to raise energy efficiency in new buildings							

* Multiply the growth rate of renewable energy (use) in total energy consumption by five in 2014

* Encourage the use of wind and solar energy to generate electricity and in the construction and industrial sectors

(Source: Development Strategy of the New Tunisia, May 2012)

2.1.4 Analysis of the recent policies and strategies

Recent national economic and social development plans have certain trends in objectives, policies and strategies as shown above and as summarised below

- 1) <u>Creation of job opportunity</u> particularly for the <u>youth and graduates of higher education</u> as top priority
- 2) <u>Restructuring the economy</u> toward larger shares of sectors of <u>higher value-added</u> with intensive use of <u>high technology</u> and with more <u>private investment</u> including <u>foreign direct investment</u>
- 3) Further <u>integration to the global and regional economy</u> deepening the traditional markets and searching new markets
- Continuing efforts in education and <u>streamlining of vocational and professional training</u> according to the requirements of the economy and businesses and further <u>promotion of research</u> <u>and development</u>
- 5) Enhancing <u>competitiveness</u> in the traditional sectors as well as in the emerging sectors
- 6) <u>Balanced development</u> emphasising promotion of development in <u>less-developed regions</u> of <u>inland areas</u>
- 7) Further <u>infrastructure development</u> and delivery of public utility services
- 8) <u>Strengthening of the financial sector</u>, namely <u>banking and insurance sectors</u> as well as the equity market, including off-shore operations
- 9) Emphasising <u>sustainable development</u> with <u>optimal use of natural resources</u> whilst preservation and <u>protection of ecosystem and biodiversity</u> and <u>fighting against and adopting with</u> <u>desertification</u>
- 10) Continuous <u>reforms of legislative</u>, <u>regulatory</u>, <u>administrative and institutional regime</u> to achieve the objectives and in line with the policies mentioned above

Detailed strategies, efforts and actions stated in the recent national development plans are also commonly defined as typically and concretely described in "Development Strategy of the New Tunisia" despite its short target period.

As a result of the above analysis, goals of the regional development for the Southern Region have been set as mentioned in Section 1.3 of this report. Regional development vision and concept as well as strategy, plan and action plan to be formulated by the Project are to be planned in line with objectives, policies and strategies of the national economic and social development plans, and to be concretely formulated in the context of the target area taking specificity of the Southern Region.

It would also be carefully be analysed, however, why the recent national development plans have continued to set up the similar strategies and action plans. It could be understood that the national plans has properly recognised the development challenges and set up adequate strategies and action plans to overcome the challenges. It could also be comprehended that the strategies and action plans have not been appropriately implemented as planned with due diligence of the implementers though they have been adequately set, or that strategies and action plans have not been adequate with sufficiently taking capacities and constraints of implementers into account.

At the stage of formulation of the strategy and plan in the Project, it would be necessary to discuss within the Project as well as with other stakeholders, whether the strategy and plan for the development of the Southern Region can be set in line with the recent national economic and social development plans as they have been properly set and been implemented appropriately as a process for a long term, or the strategy and plan should be formulated taking account of some constraints or limits faced during the implementation of the recent national development plans.

Indicators	Achievement by 2006 or 2002-2006	Target for 2011 or 2007-2011	Achievement by 2009 or 2007-2009	Target for 2014 or 2010-2014	Achievement by 2011 or 2007-2011	Target for 2016 or 2012-2016
1. Main demographic and social indicator	2006	2011	2009	2014	2011	2016
Population (1,000)	10,126.3	10,687	10,434	11,025		
Population growth (%)	1.10	1.12	1.19	1.17		
Life expectancy at birth (years)	72.9 (2001) →73.6	76.5	74.4	75.2	74.6	75.6
Youth illiteracy rate (15-29 years) (%)	5.7	1.0				
Illiteracy rate (%)			19.4	14.0	19.0	16.0
Schooling rate in higher education (20-24 years) (%)	23.2 (2001) →34.3	45.5				
Social security coverage (%)	90.4	97.0	95.0	98.0	96.0	98.5
Per capita income (Dinars)	4,064	5,763	$4,855,5~(2007) \rightarrow 5,641$	8,372	6,287	9,746
Per capita income in PPP US\$	7,000					
Adjustment ratio for PPP (%)	23 (1996) →30 (2001)	27.2 (2006)	30.1			
2. GDP growth by sector (%)	2002-2006	2007-2011	2007-2009	2010-2014	2007-2011	2012-2016
GDP	4.5	6.1	4.6	5.5	3.4	6.3
Agriculture and fishery	2.6	2.5	2.0	2.7	1.4	4.7
Manufacturing industries	2.6	4.5	2.4	4.2	3.5	5.7
(Textile, clothing and leather industries)	(- 2.2)	(1.5)	(-3.2)	(2.0)	(1.3)	(1.6)
(Mechanical and electrical industries)	(8.9)	(7.5)	(6.0)	(6.4)	(10.3)	(7.8)
Non-manufacturing industries	3.1	4.2	5.7	6.1	3.1	5.5
Services	7.2	8.7	5.8	6.8	3.3	7.7
(Tourism)	(3.4)	(6.1)	(2.4)	(5.1)	(- 9.3)	(10.3)
(Communications)	(20.6)	(17.5)	(15.1)	(13.0)	(14.3)	(12.0)
(Share of the private sector in GDP, %)	(72)					
(Share of marketable services in GDP, %)	47.1	52.3				
(Contribution Total Production Factor to GDP growth) (%)	41	48				
3. Savings, consumption and investment (%)	2002-2006	2007-2011	2007-2009	2010-2014		2012-2016
Saving rate as % of income	21.7	22.7	22.0*1	23.7*1		25.8*1
Consumption growth	4.8	5.0	4.7	5.3		4.7
Rate of investment as % of GDP	23.4	24.1	23.9 ^{*1}	26.0^{*1}		
Share of private investment of GFCF	56.5 ^{*1}	63.5 ^{*1}	60.3	60.8		
Overall investment (million Dinars)	41,236	63,521	38,543	98,321		125,024

Table 2.1-4	Quantitative results and targets of National E	Economic and Social Development Plans
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Indicators	Achievement by 2006 or 2002-2006	Target for 2011 or 2007-2011	Achievement by 2009 or 2007-2009	Target for 2014 or 2010-2014	Achievement by 2011 or 2007-2011	Target for 2016 or 2012-2016
(Share of investment in GDP, %)	22.2	25	23 (2007) \rightarrow 23.9 (2009)			
(Share of the private sector in GDP. %)	12.5	16	15.5			
(Share of the private sector in investment) (%)	(56.5)	(63.5)	60.3			
Average increase rare of overall investment	5.1		10.8			15.3
4. External Payments (%)	2002-2006	2007-2011	2007-2009	2010-2014	2007-2011	2012-2016
Growth of exports of goods and services ^{*2}	8.6	9.8	7.9	10.4		13.2
(Share of the private sector in exports, %)	95					
(Contribution of export to economic growth, %)	22.2	37.3				40
Growth of imports of goods and services ^{*2}	7.5	9.7	8.7	10.4		12.0
(Share Tunisia in European market, %)	0.7	1				
Current deficit as % of GDP	2.3	2.6	2.7	2.8		
Foreign debt as % of net income ^{*1}	47.9	39.1	38.1	29.5		
External financing needs (million Dinar)	21,382	22,237	15,616	32,040		45,328
Foreign direct investment and participation	8,456	8,465	8,120.8	17,200.0		21,858
(Donations)	(681)	(620)	(459.3)	(765)		
(Government loans)	(6,611)	(5,650)	(5,287.0)	(7,850)		
(Commercial and financial loans)	(5,634)	(7,502)	(1,749.2)	(6,225)		
(Foreign direct investment as % to GDP)		3.3	5			5
5. Public finances (%)	2002-2006	2007-2011	2007-2009	201-2014	2007-2011	2012-2016
Fiscal pressure	20.8	19.8	19.9	17.4		
Budget deficits as % of GDP (average of the period)	3.1	2.5		2.7	5	4
Budget deficits as % of GDP (end of the period)	2.9	2.2	3.0			3.1
5. Others	2006	2011	2009	2014	2011	2016
Inflation rate (%)			3.7			
Number of new job created (average during the period)	372,000	412,000				
Number of new job created in the end year		478,000				500,000
Vocational training graduates in the end year		65,000				
(Share of the private sector in job creation, %)	91	93.6				
% of new jobs to additional employment demand	92.7					
Unemployment rate (%)	15.1 (2001) →14.3	13.4	13.3			10.5
Share of sectors with high technological contents or high-value-added activities (%)	16.8 (2001) →20.4	27.5				30

Indicators	Achievement by 2006 or 2002-2006	Target for 2011 or 2007-2011	Achievement by 2009 or 2007-2009	Target for 2014 or 2010-2014	Achievement by 2011 or 2007-2011	Target for 2016 or 2012-2016
Share of marketable services (%)	40.5 (2001) →45.0					
Number of new companies established with foreign participation	884					

(Note) *1: Figures at the end of the periods

*2: Current prices

(Source) XIth and XIIth National Economic and Social Development Plans

Table 2.1-5 Financial requirements of National Economic and Social Development Plans

Indicators	<u>2002-2006</u> <u>2007-2011</u> <u>2011</u> <u>2012</u> <u>2012-2016</u>				6					
1. Financing Requirements	million Dinar	%	million Dinar	%	million Dinar	%	million Dinar	%	million Dinar	%
Overall investment	41,236.0	69.1	63,521.0	77.5	14,092.3	88.3	15,590.3	80.0		
Stock variation	1,164.6	1.8	2,968.4	3.6	906.7	5.7	56.1	0.3		
Repayment of the debt principal and other expenditures	11,423.1	19.1	12,090.7	14.8	3,566.6	22.3	2,997.2	15.4		
Increase in reserves	5,903.0	10.0	3,359.0	4.1	-2,600.3	-16.3	840	4.3		
Total Requirement	59,726.7	100.0	81,939.1	100.0	15,965.3	100.0	19,483.6	100.0	149,177	100.0
National savings	38,348.4	64.2	59,702.3	72.9	10,252.5	64.2	11,143.6	57.2	100,849	69.6
External financing	21,378.3	35.8	22,236.8	27.2	5,712.8	35.8	8,340.0	42.8	45,328	30.4
Total resources	59,726.7	100.0	81,939.1	100.0	15,965.3	100.0	19,483.6	100.0	149,177	100.0
2. External financing	million Dinar	%	million Dinar	%	million Dinar	%	million Dinar	%	million Dinar	%
Donations	677.8	3.2	620.0	2.8	217.5	3.8	600	7.2		
Foreign investment and participation	8,455.9	39.5	8,465.0	38.0	1,711.3	30.0	2,400	28.8	21,858	48.2
Government loans	6,610.9	31.0	5,650.0	25.4	3,104.0	54.3	3290	39.4	02.470	51.0
Commercial and financial loans	5,633.7	26.3	7,501.8	33.8	680.0	11.9	2050	24.6	23,470	51.8
Total	21,378.3	100.0	22,236.8	100.0	5,712.8	100.0	8340	100.0	45,328	8340

(Source) XIth and XIIth National Economic and Social Development Plans

2.2 Institutional and Legal Framework for Regional Development

2.2.1 Ministry of Development, Investment, and International Cooperation

Ministry of Development, Investment, and International Cooperation (MDICI) was reorganised upon the reshuffling of the ministries made after ratification of the New Constitution by the National Constituent Assembly on 26th January 2014 and the national elections based on the new constitution, succeeding the mission and functions, organisation structure and staff of the Ministry of Development and International Cooperation (MDCI). Although the name of the ministry has changed, functions of the ministry for investment promotion have remained same as Directorate General of Foreign Investment had already established in the ministry.

At the time when Record of Discussions for the Project was signed on 9th October 2012, Ministry of Regional Development and Planning (MRDP) was nominated as responsible organisation for the Project implementation, which was reformed to MDCI in 2013 and whose functions are described below. Despite the organisational change in 2013 and 2014, the functions, organisations and staff of General Directorate of Regional Development and South Development Office generally remained same.

(1) Functions

Decree No. 2011-457 of 30th April, 2011, fixed the attribution of MRDP at the time as follows (Article 2):

- To be responsible for the concept proposal, implementation and following-up of government's orientation in all areas related to regional development
- To elaborate strategies and policies in collaboration with concerned ministries, regional councils, and regional organisations
- To design, elaborate and follow-up the implementation of regional development programmes to support the development of all regions of the country and taking into account their specificities and characteristics
- To ensure consistency between different sectoral projects and programmes and national policy for regional development in collaboration with concerned ministries, their affiliated services, regional councils and local government authorities
- To elaborate studies necessary to achieve balanced regional development and to establish criteria for setting priorities of the intervention in the regions and the orientation of the investment to regions and priority zones
- To propose orientations and practical measures for inciting development in regions and the following-up, evaluation and adjustment, when necessary, with the concerned ministries and professional organisations
- To manage integrated development programmes and specific development programmes which will be determined in collaboration with concerned ministries and regional councils
- To transfer appropriated credits from the budget of the ministry for regional development programmes to the regional councils in charge of the management as their own resources
- To identify partnership opportunities and to establish decentralized international cooperation programmes between regional councils and municipalities, and similar foreign organisations,

while ensuring the following-up of their implementation work in collaboration with the *exacerbate* ministries and organizations

- To support development associations and non-governmental organisations to find financial sources for their programmes and projects, and to follow-up the implementation of the development programmes and projects
- To contribute to the elaboration of programmes and work plans for the promotion and creation of a dynamic private investment in the regions in collaboration with specialized regional services, civil society, professional organisations and local public authorities

The attributions of MRDP focused on the followings (Article 2);

- * To elaborate development plans for the regions in collaboration with the concerned regional councils, ministries and administrative structures
- * To contribution to the elaboration of the state budget related to regional development in collaboration with the concerned regional councils and ministries,
- * To assist regional councils for elaboration of development strategies and action plans to be executed under programme contracts between the State and regional councils and careful following-up and evaluation
- * To participate in the establishment, collection, dissemination, improvement and following-up of indicators of economic and social development related to regions in collaboration with the concerned ministries and organisations

(2) Organisation Structure

Organisation structure of MDCI (MDICI at present) as of October 2013 is shown in the Figure 2.2-1. Director General of Regional Development has chaired the Steering Committee of the Project and Director Generals of ODS have been the co-chair of the Steering Committee.



(Source: MDCI as of November 2013)



2.2.2 South Development Office (Office de Développement du Sud: ODS)

(1) Functions

Law No. 94-83 of 18th July 1994, established the South Development Office (ODS) under the supervision of the Minister of Planning and Regional Development with legal personality and financial autonomy. Article 2 of the law defined the tasks of ODS as follows:

- To collect all useful information, to conduct necessary studies, to propose all possible measures to assist in the definition of development policy, selection of public investment programmes, encouraging private investment, following-up and evaluation of the results of implementation of the policies
- 2) To assist regional authorities in designing and implementing plans and programmes in each governorate and to support for coordination of actions by various stakeholders as well as for execution of following-up of implementation of the plans and programmes
- 3) To ensure harmonization among development plans and programmes
- 4) To elaborate specialized plans and complementary action programmes in collaboration with national and regional organisations to promote and develop areas with specific problems or that have difficulty developing, and to ensure the implementation of plans and programmes
- 5) To participate in the development of plans and programmes of action to promote and stimulate private investment as well as in following-up the stages of implementation in close collaboration with the technical structures, specialized regional services and local public authorities
- 6) To support for the actions of specialized regional structures and local public authorities in the promotion of private investment

ODA is also responsible to perform all other tasks and duties within the scope of the promotion of regional development in the areas of its intervention. Article 3 of the law provided that the jurisdiction of ODS covers the governorates of Tataouine, Kébili, Gabès, Gafsa, Tozeur, Médenine.

Decree No. 98-419 of 18th February 1998 fixed administrative and financial regime of ODS. The supervising minister, Minister of Economic Development at the time of the decree, appoints Director General (DG) of ODS according to Article 1 of the decree. The decree, Article 3 established an advisory council, called "Council of Enterprise", chaired by DG of ODS and whose members are designated by a decree of the supervising minister and were initially set by the decree as representatives of the following ministries and governorates.

- Ministry of Economic Development
- Ministry of Finance
- Ministry of Industry
- Ministry of Agriculture
- Ministry of Tourism and Handicrafts
- Governorate of Médenine
- Governorate of Tataouine
- Governorate of Gafsa
- Governorate of Tozeur
- Governorate of Gabès
- Governorate of Kébili

(2) Organisation Structure

Organisation structure of ODS is shown in Figure 2.2-2. ODS has four technical directorates and six regional directorate under the Director General. Staff allocation of ODS is given in Table 2.2-1. Due to its functions of research, studies, planning, supports, follow-up and coordination, the portion of managers and experts is relatively high.

		DDID		DIDE	Adn	ninistrative	Staff	HQ	DRD	DRD	DRD	DRD	DRD	DRD	DRD	ODS
	DPIP	DPS	DADE	S/DAF	S/DDI	Sub-Tot.	Total	Tat.	Med.	Gab.	Kéb.	Toz.	Gaf.	Total	Total	
Manager	8	4	4	6	2	8	24	5	3	5	5	3	7	28	52	
Experts	2	1	2	16	3	19	24	1		4	2	6	1	14	38	
Practitioner				15	1	16	16	4	2	5	2	4	9	26	42	
Total	10	5	6	37	6	43	64	10	5	14	9	13	14	68	132	
Portion of Managers	80%	80%	66%	16%	33%	18%	37%	37%	60%	36%	55%	23%	41%	41%	39%	

Table 2.2-1Number of ODS by Directorate

(Note) In addition to the above, a manager in charge of one-stop service, and a manager and an expert ti the business centre are allotted separately.

(Source) ODS as of October 2012

Budgets of ODS are shown in Table 2.2-2. More than 90% of the budgets are generally recurrent or functional ones, which might mean that ODS has not implemented development or capital investment projects with its own budget. Development budgets may cover only mobile assets for the office work. Average functional budget allocated for ODS in 2008- 2012 reached only around DT 2.7 million which might merely covers salaries of the staff and ODS cannot implement large scale operation with its own finance

								(Un	it: Tunisian	Dinar)
	2008		2009 20		2010	2010 2011		2012		
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Functional Budget	2,370,000	92	2,522,000	89	2,683,000	90	2,772,000	93	2,985,000	96
Development Budget	208,000	8	317,600	11	292,000	10	221,000	7	120,000	4
Total	2,578,000	100	2,839,600	100	2,975,000	100	2,993,000	100	3,105,000	100

(Source: ODS as of October 2012)



Figure 2.2-2 Organisation Chart of South Development Office

2.2.3 Local administration system

(1) Structure of local authorities

The local government structure in Tunisia is being reformed to reflect the two policy concepts of <u>Deconcetrateded Administration</u> and <u>Decentralized Administration</u>. These concepts are actually realized by separate organisations as shown in Table 2.2-3.

Deconcentrated Administration:

This is the policy to deconcentrate powers of central ministries to their local offices at the governorate level. In this context, particularly from the budget control point of view, Governorates and Delegations are regarded as the local administration offices of Ministry of Interior (MI) that is in charge of local authorities in the government.

Decentralized Administration:

This is the policy to decentralize the power of the State Government to the local authorities so as to allow them for their own local administrative decisions within the legal framework. Therefore, the decentralized administration must be a Public Collectivity, which denotes the representative of the local people, and which is formed by the election.

Deconcentrated Administration (under control of MI)	Decentralized Administration (Public Collectivity)			
Administra	tion / Chief			
Governorate / Governor	Regional Council / Governor ¹			
Delegation / Delegate	Municipal Council / Mayor (currently partially dissolved) Rural Council			
Dudget Approval				
Budget Approval				
General Directorate of State Budget	General Directorate of Public Accounting			
Administration in Ministry of Finance	in Ministry of Finance			

Table 2.2-3	Structure of local authorities
-------------	--------------------------------

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

Currently, Tunisia is composed of 24 governorates, and the governorates are comprised of 264 delegations, which are consisted of 2,083 Imadas. The 24 governorates are also divided into 264 municipalities (not the same divisions as delegations even though the total numbers are identical. A municipality is formed with a main city and the surrounding rural areas.

The budget approval processes are also separate between Deconcentrated Administration and Decentralized Administration. In Ministry of Finance, General Directorate of State Budget Administration is in charge of budget allocation for Deconcentrated Administration (through MI) while General Directorate of Public Accounting is for Decentralized Administration.

¹ Governor is not elected but the President of Regional Council is planned to be elected in future, as described later. That is why Regional Council is categorized in Decentralized Administration.

(2) Deconcentrated administration

The Deconcentrated Administrations take hierarchical structure and do not have their chief elected by a public vote. Governorate is therefore regarded as an "agent" of the state government (i.e., MI).

Governor: Governor is not elected by a public vote but appointed by the Prime Minister with the recommendation of MI.

Delegate: Delegate is appointed by MI.

Omda: Omda is a chief of Imada which is a traditional sector.

With regard to the budget, functioning budget (operational costs except for personnel expenses) is distributed out of the MI budget (allocated from the state budget) with the order of MI and Governor, whereas personnel expenses are directly paid out of the state budget.

(3) Decentralized administration

The Decentralized Administrations are rather independent of each other in comparison with the hierarchical structure of Deconcentrated Administrations. In principle, each council is responsible to formulate and implement the local projects.

The institution of decentralized administration has been and will be reformed after the Revolution where the institutional reform will take the following four stages of the progress, as shown in Table 2.2-4.

- 1) Current "Special Delegations", except Municipal Councils, were dissolved after the Revolution
- 2) In the recovered stage, Mayors will be elected.
- 3) In the following stage, all the members of Regional Councils, including the presidents, will be elected by the local people
- 4) Future plan (no specified target date):
 - District Councils (for example: South District grouping the six governorate) will be formed as decentralized administrations
 - > All Rural Councils will be promoted to Municipal Councils

Special Delegation:

It denotes the transitional state caused by the Revolution where elected president or members are temporarily replaced with the persons appointed by the government due to the dissolution of the Parliament and the majority of Municipal Councils.

N.B., the word "The parliament actually shifted from "Chamber of Deputies" to "National Constituent Assembly" after the Revolution and then to "Assembly of the Representatives of the People (ARP)" after the election on 26 October 2014.

	Special Delegation state	After Mayor elections (at the end of 2015)	After reforms (in 5-7 years)	Future plan in consideration
(District Council)	None	None	None	formation of District Council
Regional Council	President: Governor Members: appointed by the government	President: Governor Members: Deputies and Mayors (elected) + some appointed administrators	All members are to be elected President: elected from among them	\rightarrow
Municipal Council	No Mayor (dissolved after revolution)	Mayor (elected)	\rightarrow	\rightarrow
Rural Council				↑ All Rural Councils are promoted to Municipal Councils

 Table 2.2-4
 Reform process of Decentralized Administrations

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

(a) District council

District Councils is planned to be formed as a Decentralized Administration in future. Although Tunisia is divided into six Districts for economic purposes, they are not administrative divisions. Accordingly, they do not have the budgetary framework either.

(b) Regional council

Regional Council has never been a true Decentralized Administration so far from the viewpoint of public collectivity, because Governor, who is not elected, has been serving as the President of the Regional Council on top of the Governorate chief, which is often described as "Governor wears two hats". However, the members consist of elected Deputies and Mayors except for the Special Delegation state. This is why Regional Council is categorized in Decentralized Administration. Furthermore, the Regional Council members are planned to directly be elected by the local public vote in five to seven years². Then the President is chosen among from them, fulfilling the public collectivity of the Regional Council.

It plays the main role to formulate and implement the regional plan (governorate level) under for the National Economic and Social Development Plan. Describing briefly, the budget for regional projects implementation (Investment Budget) is transferred from the budget of a sectoral ministry, which is responsible for each project, to the Regional Council³ with the order of Ministry of Finance (Transferred Credit).

(c) Municipal council

Municipal Council is a public collectivity because the elected Mayor serves as the President. Although it is currently the Special Delegation after the Revolution, the public collectivity of Municipal Council will be reinstated at the end of 2015 when the Municipal Council member elections are planned. Municipal Council plans and implements the local projects for the municipality, such as electricity, water, road pavement among others.

² This estimated target date was given by General Directorate of Regional Affairs in MI to realize the smooth transition.

³ For some exceptional categories of the regional projects, it is transferred from the ministries to its regional directorate instead of the Regional Council.

(d) Rural council

Rural Council is not truly a Decentralized Administration, because the President is not elected but appointed by Governor from among the RC members normally. Similarly, the members are also chosen by Governor. However, Municipal Councils will cover the territory of all the country in future. In this context, Rural Council is categorized in Decentralized Administration without the public collectivity. Rural Council is formed to reflect the opinions of the rural areas complementarily whereas Municipal Council tends to be influenced by the urban areas. It plans and implements the small rural projects with the approval of the Regional Council President, particularly in the fields such as hygiene, health, water quality and public lighting among others.

2.2.4 Formulation process of the National Economic and Social Development Plan

This section describes formulation process of the National Economic and Social Development Plan based on the information obtained through an interview survey conducted by members of JICA Expert Team until February 2015, and may not include some parts of the formulation process modified after the interview survey.

The National Economic and Social Development Plans are normally formulated every five years and composed of the following three volumes;

- the overall content
- the sectoral content
- the regional content

For the regional contents, the formulation process takes the following two steps, as shown in Figure 2.2-3

- 1) To Formulate a Regional Development Plan Proposal at a governorate level
- 2) To Formulate the National Plan based on the Regional Development Plan Proposals submitted by all the governorates



Cmt : Committee

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

Figure 2.2-3 Plan Formulation Process

(1) Formulation process of a Regional Development Plan Proposal

(a) Relevant councils and committees

(i) Regional council

A Regional Development Plan Proposal is formulate by the Regional Council in each governorate. The member composition of the Regional Council in the current "Special Delegation" state is shown by Table 2.2-5. Regional Directors of the four ministries are added to the permanent (voting) members to substitute for Mayors and Rural Council Presidents who were dissolved after the Revolution.

The four ministries are;

- MDICI
- Ministry of Equipment, Housing and Spatial Planning (MEHAT)
- Ministry of Agriculture
- Ministry of State Property and Land Affairs

The governor does not have a vote in the meetings so far as he/she is supposed to chair the council.

In addition to these permanent members, the President can nominate the advisory members to attend the meetings, usually calling for their expertise. Particularly after the Revolution, regional representatives of industrial unions (e.g., UTICA and UTAP), industry and agriculture promotion agencies (e.g., APII and APIA), and the leaders of NGO's and private sectors were added to the members in order to reflect opinions from wider civil society.

In some transition period after the Revolution, the regional council is renamed the "advisory committee for development" but has now reverted to the original name.

Title	Member			
President	Governor			
Permanent members	Deputies ⁴			
(voting)	RD's of 4 ministries			
Advisory members	appointed by the Governor			
	RD's of other ministries			
	Representatives of industrial unions, agencies, NGO's			
	Leaders of private sectors			

 Table 2.2-5
 Current Member composition of a Regional Council

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

The Regional Council will be, however, under the reforming process shown in the Table 2.2-6. The member composition before the Revolution is defined by Organization Law No. 89-11 of 9th February 1989. Once Municipality is recovered after Municipal Councils members elections planned at the end of 2015, the similar state before the Revolution should be reinstated. Furthermore, it should continually be reformed so that all the members are directly elected by the local public vote. At this stage, the President should be elected from among the elected members so as for a true public

⁴ Deputies denote the elected Members of Parliament for continuity also in this section.

collectivity to be brought to Regional Council. The target period is not clearly decided. MI mentions five to seven years for the smooth transition.

Stage	Before Revolution	>>>	Special Delegation state (current)	After Municipal councils members elections (at the end of 2015)	After reforms (in 5-7 years)
Title	Member composition		Member composition		
President	Governor	\rightarrow	\rightarrow	\rightarrow	chosen from among the elected members
	Deputies	(dissolved)	Deputies	\rightarrow	
Permanent	Mayors	(majority dissolved)		Mayors	All the members are elected by
(voting)	Rural Councils	(dissolved)		Rural Councils	the local public vote
			RD's of 4 ministries	\rightarrow or \times (not decided yet)	

Table 2.2-6Reforming process of a Regional Council

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

The Regional Council collects the project ideas in the form of the planning report submitted by i) Sectoral Committees and ii) Local Councils for the basis to formulate the Regional Development Plan Proposal (refer to Figure 2.2-3). The Regional Director of ODS takes the responsibility to produce the integrated plan report. The integrated plan will be discussed to be validated as the Regional Development Plan Proposal by the Regional Council.

(ii) Sectoral Committees

The sectoral committees typically consist of 10 committees now, although the components (including the total number) and the naming may slightly vary according to the governorate. The typical list is shown below.

- 1) Planning & Finance
- 2) Agriculture & Fishery
- 3) Economic Affairs
- 4) Equipment, Housing & Territorial Development
- 5) Social Affairs& Health
- 6) Education, Culture & Youth
- 7) Investment & Employment
- 8) Desertification
- 9) Sustainable Development

10) International Cooperation & Foreign Relationship

The sectoral committees are formed along the methodologies for the national development plan, in order to take up the issues and the project ideas from the sectoral point of view. Each of these committees produces the planning report to propose the projects and submits it to the regional council (Sectoral report). The president and vice president are appointed among from the permanent members of Regional Council as shown by Table 2.2-7. Usually, the RD (or the local office chief) of the ministry is appointed to the president or vice president of the relevant sectoral committee (e.g., Min of Agriculture for Agriculture & Fishery committee).

The sectoral committees provide important opportunities to coordinate the regional plan proposal and the sectoral plan proposal because the projects listed on both plans are likely to be adopted for the national plan. The RD (or the DRD staff) of ODS tends to attends each of the Sectoral Committees in order to grasp the discussions there. Attendance to a sectoral committee is open to the regional council members.

Title	Member
President, Vice-president	Appointed among from the permanent members of Regional Council, considering the expertise
Participants	Regional Council members

Table 2.2-7Member composition of a Sectoral Committee

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews with related persons

(iii) Local Councils

The local councils are formed in order for the delegations to propose the regional projects from the delegation development point of view. Each of the local councils produces the planning report to propose the projects and submit it to the regional council. (Delegation report)

A local council is usually composed of (but not limited to) the members shown by Table 2.2-8. It is categorized in Deconcentrated Administration.

Title	Member		
President	Delegate(appointed by the government)		
Members	Omda's		
	RD's of ministries		

Table 2.2-8Member composition of a Local Council

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

(iv) Directors of Regional Development of ODS

The regional director of ODS takes the leading role to formulate the regional development plan proposal in each governorate because he is in charge of making the regional plan report integrating the sectoral reports and the delegation reports to be discussed in the Regional Council. Accordingly, the regional directors of ODS take the coordinating responsibility to coordinating between the sectoral committees and the local councils to formulate the regional plan proposals.

(v) ODS (head office in Médenine)

To formulate the regional plan proposal, responsibilities of Directorate of Planning and Statistics (DPS) of ODS are to provide regional information and support planning for the six governorates in the Southern Region. The actual actions in each governorate are generally done by the directorate of regional development (DRD) of ODS. For example, the regional data are collected and distributed by DRD, while DPS sort out and study the data statistically.

(b) Overall process

As shown in Figure 2.2-3, the projects are proposed in the planning reports submitted from the sectoral committees and the local councils and integrated into the regional plan proposal by the regional council. These projects are prioritized with qualitative study on the relevancy to the development policies described in the methodology produced for each national plan, as quantitative analysis is not conducted for the most of the projects. Currently, there is no process for the 6 regional plan proposals at the governorate level to be integrated into one regional plan proposal at the southern regional level.

(2) Formulation process of a National Economic and Social Development Plan

(a) Regional Development Committee

The regional development plan proposals are submitted by all the governorates while the sectoral development plan proposals are submitted by all the sectoral ministries. These plan proposals are integrated into the national economic and social development plan at the central level. A Regional Development Committee is formed in MDICI to examine and reconcile the regional and sectoral plan proposals. In the simple rule, the projects listed on both of the regional and sectoral plan proposals shall have a high priority. Other projects are sorted out through discussions in the Regional Development Committee. The regional development committee is led by DG of Regional Development in MDICI. The member composition is shown in Table 2.2-9.

Category	Member			
	DG and other representatives of general directorates in the development wing ⁵			
MDICI (arbitrator)	Officials of DPS in ODS et al. (including other regional development offices)			
	RDs of ODS et al.			
Sectoral Commissioners	representatives of each sectoral ministry			
	Governors			
Regional Commissioners	Deputies			
	Mayors			

 Table 2.2-9
 Member composition of a Regional Development Committee

(Source) elaborated by JICA Expert Team (JET) according to the results of interviews

With regard to the consensus-building process in the regional development committees, several problems were pointed out as follows:

⁵ Ref: Part I Figure 2.2.-1 Organization Structure of Ministry of Development and International Cooperation

- In many cases, time ran out for the meetings in the regional development committee. Therefore, the conclusion on whether to adopt the projects or not was often not made in the committee but inside of the related sectoral ministry who assigns its own budget to them (e.g., Ministry of Equipment, Territorial Planning and Sustainable Development for road construction projects). Accordingly, the reasons for the rejected projects were not clearly indicated.
- Most of the projects on the regional plan proposal do not have quantitative analyses whereas they are required for the projects on the sectoral plan proposal. Thus the regional projects are difficult to examine in comparison with the sectoral projects.
- There were some projects which were rejected by Ministry of Finance for the budget reason despite the approval by the regional development committee.

In 2012 after the Revolution, the careful discussions are done in an objective manner to sort out the proposed projects of which approach is called Reconciliation Meetings. The civil society members also participated in the discussions, invited by Governors. There are several remarkable features with the consensus-building process in the regional development committee for this year.

- Careful discussions: The meetings for 24 governorates were divided into three groups taking eight full days. The meetings were moderated by DG's in the development wing of MDICI.
- Objective approach: The projects are examined on the quantitative analysis. For preparation, the Tunisian Institute of Competitiveness and Quantitative Studies (ITCEQ) in MDICI made the quantitative analysis of the impacts on the regional development indicators (e.g., unemployment rate, poverty rate, active population rate, budget, etc.) on a project basis beforehand. The budget has been disbursed according to the indicators.
- Transparent process: The discussions involved all the related ministries including Ministry of Finance in particular, so that the conclusion in the regional development committee should not be altered later. However, some adopted projects were rejected later due to the state budget reduction.

With regard to the democratization of the consensus-building process, remarkable improvement was seen for the regional development committee for these years, although it has not been decided whether the similar approach will be taken in 2015 to formulate the next National Economic and Social Development Plan (2016-2020).

(3) Participatory Approach

In the process to formulate the regional plan proposal, local authorities with participation of DRDs of ODS often hold public consultation meetings to hear the civil opinions on various proposed projects. It is said that the participants speak out comments and opinions more freely after the Revolution than before. In their approach, the purpose of the meeting is to collect the public opinions in the setting where any citizens can participate. It is however not clear to what extend the public opinions collected in public consultation meetings are reflected to the regional development plan proposal, because their public consultation approach does not include a discussion process.

2.2.5 Budget allocation and implementation

(1) Most of regional projects

Most of the regional projects in the National Economic and Social Development Plan should be implemented by the Regional Councils in cooperation with the sectoral ministries. However, because the budget for the regional projects (Investment Budget) is not pre-allocated to the Regional Council, the budget to implement the regional projects should be transferred from the budget of the sectoral ministry to the Regional Council with the order of the Governor. This budget is called "Transferred Credit".

In fact, MDICI (including ODS), despite their responsibilities for plan formulation, do not have much investment budget to transfer for the regional projects. The investment budget that MDICI have is for Regional Development Programmes (PDR) which covers small local projects (e.g., public lighting) and region-specific projects (e.g., desertification measures). For a PDR project, if the set of the relevant rules are met, the budget is transferred from MDICI to the regional council with the approval of Prime Minister.

(2) Exceptions of the regional projects

The regional projects categorized in Agriculture or Education should be implemented by regional directorates of the sectoral ministry (i.e., Ministry of Agriculture, Water Resources and Fisheries or Ministry of Education). In these cases, the budget for the project should be transferred from the central ministry to its own regional directorate within the ministry.

2.2.6 Issues and suggestions for the proposed regional projects to be adopted

The JICA Project's long-term development plan (including the strategy) for the southern region is expected to be used as the basis to formulate the regional development plan proposal for the 5 year national development plan. However, there are some issues for the proposed regional projects to be adopted. As MDICI and ODS particularly pointed out the influence of the sectoral ministries on the adoption decision, the interviews with some sectoral ministries were conducted.

- (1) Hearing survey results with the related sectoral ministers
- (a) Ministry of Equipment, Housing and Spatial Planning (MEHAT)
- MEHAT makes middle- to long-term spatial plans.

Promotion of the proposed projects

- From the MEHAT viewpoint, the following criteria are important for the adoption of the national development plan.
 - Economic feasibility: A good result of the cost-benefit analysis recommends the project a lot for the adoption. MEHAT (central ministry or regional directorates) hires private consultants to make micro economic studies on each proposed project. (In any case, the National Committee require quantitative studies on each adopted project larger than 5 million Dinars⁶.)
 - 2) *Political influences*: The projects with the following effects have a big advantage for the adoption;

⁶ Decree 1039, 13 Mar 2014

- ♦ To fill the economic gap between Coastal and Inland areas
- \diamond To enhance the nation's solidarity

Participatory approach

- MEHAT did not particularly see the Regional Development Committee in 2012 a success because the civil society members did not understand the proposed plans and the plan formulation procedure will.
- They however appreciate the importance of their participation in the discussion. In fact, the regional directorates of MEHAT make public presentations about their regional plans to gain the understanding of the civil society.
- MEHAT also holds public consultation meetings on the land acquisition issues. They understand the importance but see the following critical problems;
 - 1) Legal framework to ensure the responsibility and obligation of the participants is required so that they cannot turn over the agreement that they once made.
 - 2) The trust between the government and the civil society needs to be re-established so as to make constructive discussion.
 - 3) In order to build a consensus in a public consultation meeting, the issue must be discussed with the true leaders of the civil organizations. The organization members need to trust their decision to the true leader through beforehand discussions. The nation-wide attempt is required to develop such true leaders in each organization.

(b) Ministry of Agriculture, Water Resources and Fisheries (MARHP)

- Regional Commissioners of Agricultural Development (CRDAs) in Tataouine, Kébili and Tozeur serve as the president or vice president of the Agriculture & Fishery Committee.
- Most of the adopted agricultural projects are budgeted and implemented by MARHP.
- CRDAs make quantitative analyses for the proposed projects hiring private consultants with the ministry budget.
- CRDA in Tataouine expects ODS to find private investors rather than coordination between the region and the sector. In general, CRDA's do not particularly need the coordination with the regional plan because the intervention of the regional council is limited on agricultural projects.

URAP (representing the farmers)

- The leader of URAP in Tozeur expects more involvement with the regional planning as an advisory member of the regional council.
- He plans to run for a permanent member of the regional council when the election system starts.

(c) Ministry of Industry, Energy and Mining (MIEM)

- MIEM mostly handles the private profitable projects financed and implemented by private or public corporations. All they have to do is to give the permission or license.
- The social / environmental / economic analyses are also carried out by the investors.
- APII under the umbrella of MIEM is expected to find investors for some regional projects in the

industry and service sectors. But APII in Tozeur⁷ do not promote the projects actively due to the limited budget which is allocated from the Regional Council instead of MIEM.

• RD of APII in Tozeur attends the sectoral committees of "Economic Affairs Committee" and "Employment & Investment Committee".

(2) Issues and suggestions

(a) Quantitative analysis

The reasoning is important in order to promote a proposed project to be adopted. Quantitative analysis, such as cost-benefit analysis and impact analysis, is a powerful tool. In fact, MEHAT and MARHP make quantitative analysis on the projects listed in their sectoral plan proposals with their own budget. The corroboration of the proposed projects with quantitative analysis is significantly important, because a project without it cannot compete with a project corroborated with quantitative analysis. Therefore the regional council should procure the budget and the human resource to conduct quantitative analysis in order to promote a proposed regional project to be adopted the national development plan.

(b) Public consultation meeting

The public consultation meeting to just collect the comment and ideas is difficult to obtain the participant's involvement and commitment, even though it is relatively easy to manage even with many participants, as described in Section 2.2.4 (3) "Participatory Approach". On the other hand, as pointed out by the comments of MEHAT, the public consultation meeting to build consensus on a contentious matter requires significantly difficult conditions, such as the quality of the participants and the legal frame work for their responsibility, to achieve the goal, even though the achievement is significant if achieved. Thus it is important to set the practical goal of the public consultation meeting balancing with the current conditions so that as much public involvement and commitment as possible should be brought out.

2.3 Regional Development Policy and Strategy

As balanced regional development is emphasised and prioritised in the recent national economic and social development plans, policies and strategies on regional development are well described in the plans. A document titled "The New Strategy for Regional Development" and "Proposals of a Programme of Support to Great South and Great South Development Project are introduced to analyse the current policies and strategies as well as to draw important key elements for formulation of regional development strategy and plan in the Project.

Ministry of Equipment, Housing and Territorial Planning (Ministère de l'equipement, de l'habitat et de l'aménagement du territoire, at present Ministry of Equipment, Territorial Planning and Sustainable Development (Ministère de l'équipement, de l'aménagement du territoire et du développement durable)) has issued reports on Master Plans of Economic Regions of South-east and South-west. As these master plans are quite comprehensive, with comparatively long target period of ten years, the master plans are briefed below.

⁷ This is the only APII office with which the interview was arranged by ODS where the casher answered to the questions as the RD was gone to Tunis.

2.3.1 New Strategy for Regional Development

"The New Strategy for Regional Development", provided to the Detailed Design Study Mission of JICA for the Project in October 2012, was formulated by MRDP with the same recognition on historical political and socio-economic situation Tunisia faces as described in the Jasmine Plan and "Development Strategy for the New Tunisia). The strategy has set the following four primary objectives:

- 1) To correct development discrepancies between the coastal and inland regions and thus to ensure an equitable development of all areas in the country
- 2) To improve competitiveness of the regional economy in Tunisia
- 3) To create jobs, especially for graduates holding a higher education degree
- 4) To improve living conditions and reduce poverty rate

The strategy proposed the following three approach to make the implementation inclusive, collaborative and participatory.

- a) Practical; to involve various social actors that are that are the best able to echo the population's expectations and to express, through their work, aspirations and ambitions, daily life and problems.
- b) Unifying; to call up and affect all actors in society through the achievement work of development, not only during the design and development of policy, but also all along the implementation, follow-up and evaluation processes
- c) Partnership; to work among all sectors (i.e. public and private) and all levels (i.e. national, regional and local), because it is well-known that the success of any development process, as well as the achievement of expected results, strongly depend on a strict clarification of everyone's role (actor and/or economic agent) and on a definition of their respective duties, jurisdiction and means of intervention

The strategy has proposed the following four pillars:

- A public investments stimulating policy, consisting of infrastructures improvement works, public facilities and human resources development plans to improve the living conditions of the population
- ii) An incentive programme addressed to private investors, especially for the benefit of inland regions. Such programme requires legal and constitutional adjustments of the current regulation, specifically revision of Investments Code, administrative reforms and a revision of Taxation Code. Particular attention shall be granted to human resources through the revision of professional training programmes and the setup of higher education curriculums to meet the local labour market needs
- iii) Creation of regional competitive clusters to help regions to set up economic integrated operations systems and value-added chains, in all areas, while enhancing local comparative advantages
- iv) Establishment of a good governance, initiation of a decentralization process and setting-up of participatory approach involving civil society, private sector, civil service, the whole population and professionals

For preparation of supplementary budget of the year 2012, an advisory committee for development had been established for each of the six governorates. The advisory committees were presided by the respective governors and were composed of i) members of National Constituent Assembly, ii) NGO's representatives, iii) members of the civil society, iv) regional technical services units and v) delegates form occupational structures.

The advisory committee carried out the following tasks:

- Evaluate regional economic and social situations.
- Design development strategy for the regions.
- Come up with any proposal of supplementary project in favour of the regions.

Coordination meetings were held to examine harmonisation possibilities between the various regional proposals resulted in sector proposals and projects selected by MRDP entered in the supplementary budget for the year 2012, with participation of members of Regional development advisory committees.

Budget allocation keys, taking into account of three regional factors; i) level of marginalization, ii) economic vulnerability and iii) social vulnerability, were defined with participations of scholars, experts, representatives of the civil society, NGO's delegates and members of professional organisations.

The allocation keys were set as a) overall coherence, b) social and economic efficiency, c) equity, d) transparency and e) simplicity, whose details are given below:

- a) The first key of overall coherence aims at ensuring the followings:
 - National development strategy and national priorities
 - Projects of national interest
 - Consideration for inter-regional cohesion
 - Support the national development undertaking
- b) The second key of social and economic efficiency is composed of the followings:
 - Regional specificities and their comparative benefits, thus ensuring the relevance of regional subsidies they are provided with
 - Efficient use of distributed subsidies within the frame of actions aiming at the reduction of marginalisation level, economic and social vulnerability level, in the poorest regions
 - Sustain regional and national growth
- c) The third key of equity implies of the followings:
 - Concept of fairness or equity consists in providing individuals with the same opportunities so that inequalities shall only result of lapses of performances and efforts
 - The principle of equity consists of ensuring all regions the same opportunities to escape from poverty and unemployment through countermeasures against any structural handicap that would reduce effectiveness their efforts
- d) The fourth key of transparency takes account of the followings:
 - Allocation by a national consensus without any discretionary arbitration by public authorities, and appreciation of the terms of allocation criteria by all regions as communities of people, civil society and elected representatives
- Rightful share of subsidies, calculated with the objective allocation formula, to every region
- Easy availability of allocation results and applied indicators by the public officially and nation-widely
- e) The fifth key of simplicity means the followings:
 - Distribution of subsidies by the political decision of the population
 - Allocation results simply understood by the population as well as rules and principles underlying the decisions must be fully understood by the policy-makers
 - Simple procedure to determine the allocation
 - Clear explanation of the indicators and their meaning to the public

2.3.2 Regional Development Programme and Project

(1) Proposals for Support Programme to Great South (Propositions d'un programme d'appui au Grand Sud)

Support Programme to Great South is composed of the following components:

Rural roads

Construction programme of 500 km of agricultural roads at a cost of DT 120 million for the road pavement ratio of the Southern Region to the national level of 26%

Environmental Protection

- Rural sanitation
 - Currently no national programme for rural sanitation under 4,000 inhabitants
 - Several rural centres are facing environmental risks. A cooperation programme will have a significant impact on the preservation of water resources and the improvement of living conditions in rural areas.
- Reuse of hot spring water in El Hamma
 - 12 springs with thermal water at El Hamma (Gabès) whose discharge is nearly 10,000 m³/day. Very little polluted water in a region where water resources are scarce, while the oasis is being degraded.
 - The project involves collecting water of 6 hot springs (5000 m³/day) at first phase and to build a wastewater treatment plant at a cost of DT 2 million to use the treated water for irrigation in the oasis.

Study on opportunity to establish free trade areas

- Feasibility study on establishing free trade zones near the border Tunisian-Algerian and Tunisian-Libyan with the following objectives:
 - Ensuring the integration of border areas in national territory
 - Repositioning these areas so that they become places of trading with neighbouring countries and creating wealth and thus improvement of the conditions of life of the people there
 - Restructuring the national territory for a new distribution of population and activities

Master plans and development of the southern governorates

- Formulation of a master plan on territorial development of the various southern governorates with the following objectives:
 - Integration of urban and rural territory
 - Modification in the economic domain
 - Modification in the domain of environment and quality of life
 - Promotion of local sustainable development and good governance by involvement of civil society (local democracy), the university and the private sector
 - In inter-communal and complementarity action to formulate a prospective vision of the Great South

Development of agricultural infrastructure

- > Creating oasis and irrigation in the governorate of Tataouine by:
 - achieving deep holes (Lazort, Borj Bourguiba and Bir SEZ)
 - building networks of trails 180 km
 - the creation of 1,000 ha of oases in the first phase to 4,300 ha

Development of tourism infrastructure

- Study on demands for Saharan tourism and its specific implementation of innovative tourism projects and creation of new tourist poles in Tataouine, Ksar Ghilène with the same standards as Tozeur and Djerba
- Development of the tourist zone in Tataouine (DT 5 million), the extension of Tozeur (DT 5 million) and creation of tourist circuits in order to integrate different sites
- > Development with facilities at natural and archaeological sites

Development of artistic and cultural tourism

- Sustainable development of the South and the development of its cultural heritage requires the establishment of a specific process
 - Preservation of the Sahara
 - Establishment of museums on the Sahara and its cultural heritage
 - Creation a research centre
 - Creation of new architectural concept and making it available to investors
 - Valorisation of cultural products around crossroads, hunting tourism based on game farming
 - Developing a place of Sahara film production and implementation of a strategy for film and audio- visual production
 - Appeal to historians and sociologists to study the Sahara.

Research and Development

- Research and development for valorisation of phosphate ores in Tozeur
- Research for physical-chemical analysis and review of processes for the extraction of valuable products in the phosphate ores:

- Rare earths
- Phosphorus
- Uranium

(2) Great South Development Project

Great South Development Project is an integrated development of the South with multi-sectoral components as follows:

- Agricultural development
 - Water resources management
 - o Development and improvement of the grazing system
 - Oasis creation
- Tourism development
- Industrial development
- Scientific and cultural development
- Road network development

The project has objectives

- * To ensure the integration process of wide areas to the development zones, Great South with 58% of national surface area and 15.3% of the total population, 1.5 million people.
- * To utilize available land and to exploit new energy sources.
- * To explore new areas of growth and to enhance the national production capacity throughout the identification of major projects
- * To give to the South a righteous consideration in the national conscience and memory
- * To integrate Great South to the global economy, to improve its political and geo-economic positioning and to confirm its integration to the network of Saharan countries in the world

The project has been planned with the following strategic aspects:

- Non-renewable water resources, shared with Algeria and Libya and whose exploitation involves mutual impacts. Tunisia has to exploit its due share of this asset through implementation of specific projects.
- Lack of access to several regions that can offer opportunities of agricultural, touristic and cultural development, due to basic infrastructure deficiency, despite the presence of investors
- Researches that have been conducted on the topic of water resources leading to rational exploitation thus opening up new perspectives of growth
- Encouraging development project to conduce to new sedentary settlements in various sites empty of population to restrict population emigration in the border regions, thus increasing safety in the Saharan area
- Carrying out projects dedicated to energy production and to opening for future territorial development
- Securing safety of border areas as vital zones of communication and trading

The project has the following sub-components for respective components:

Agricultural development

- Water resources management
 - Water resources as mainstay of the Great South Project
 - Studies conducted in cooperation with Algeria and Libya have outlined the process for optimum exploitation for Tunisia with accurate, balanced and rational instructions.
 - Shared exploitation of groundwater

	Aquifer surface area	Current extraction	Share of extraction
Tunisia	8 %	0.542 billion m ³ /year	24.6 %
Libya	22 %	0.340 billion m ³ /year	15.4 %
Algeria	70 %	1.328 billion m ³ /year	60.0 %

- The map of groundwater resource shows the necessity to set up a strategy for groundwater exploitation in the Saharan area due to rival pressures on water resources among the neighbouring countries. Such a strategy should aim at increasing resource harvesting for an additional quantity of 0.107 billion m³/year, thus bringing the Tunisian total share to 28%, excluding increases of the harvested volume by other countries.
- Seven well sites (catchment areas that are to be exploited) have been located, namely:
 - Catchment area of Borj Bourguiba-el arizt-bir zar-enine-tiaret (1,300 litres per second)
 - Catchment area of Ksar Ghilane-bir soltane (600 litres per second)
 - Catchment area of el borma-sanghor (400 litres per second)
 - Catchment area of chott el fejij (100 litres per second)
 - Catchment area of elmohdeth-tembayen-jebil (400 litres per second)
 - Catchment area of el hotam (300 litres per second)
 - Catchment area of el ouaara (300 litres per second)
- Water resources harvesting takes place in the vicinity of new deep drilling sites, as an implementation of new enhancement water conveyance projects.

 From Borj Bourgiba and other southern sites (El Azirt, Bir Zar and Tiaret)
 To Bir Aamir area, El Oueara area and surroundings

 To northern; Bir Soltane and the plain of Ababsa

 From Ksar Ghilane

To the east; El Farch, Tataouine and the surrounding plains

- > Development and improvement of the grazing system
 - Water resources would be provided to all livestock ranges in the South through the establishment of networks of water points and service centres near wells, storage tanks and sanitary and veterinary facilities.
 - Establishment of irrigated lands of 100 ha in mountain regions, all along water transfer networks through the Dhaher area and within the frame of the Dhaher-Matmata project.

- Modernisation process implemented in the grazing system is based on the outcome of scientific researches conducted by national centres as well as on the results of experiments implemented in similar countries.
- Particular attention will be devoted to afforestation works, especially those involving fodder shrubs, for they are nutrient-rich and can easily adapt themselves to various climates.

Oasis creation

• Creation of 4,430 hectares of oasis as follows:

0	Zone #1:	
	- Htam (near Borj Roumi)	300 ha
	- Fjij (using hot springs)	100 ha
	- El Mahdeth (near Rejim Maatoug)	300 ha
	- Tombaïn	50 ha
0	Zone #2:	
	- El Magren	100 ha
	- Alioua Essabt	50 ha
	- El Kamour	50 ha
	- Ferch & Ghomrassen (east of Tataouine)	300 ha
	- El Borma	300 ha
0	Zone #3:	
	- Borj Bourguiba	100 ha
	- Brigua-Ain Dakouk-Bir Amir	1 000 ha
		1,000 IIa
	- Mountain area of Remada-Brigua	100 ha
	Mountain area of Remada-BriguaSongar	100 ha 100 ha
	Mountain area of Remada-BriguaSongarEl Ouara	100 ha 100 ha 230 ha
	 Mountain area of Remada-Brigua Songar El Ouara Borj El Khadra-Tiyaret 	100 ha 100 ha 230 ha 100 ha
0	 Mountain area of Remada-Brigua Songar El Ouara Borj El Khadra-Tiyaret Zone #4: 	100 ha 100 ha 230 ha 100 ha
0	 Mountain area of Remada-Brigua Songar El Ouara Borj El Khadra-Tiyaret Zone #4: Dhaher-Beni Khedèche-Ababsa 	100 ha 100 ha 230 ha 100 ha 100 ha
0	 Mountain area of Remada-Brigua Songar El Ouara Borj El Khadra-Tiyaret Zone #4: Dhaher-Beni Khedèche-Ababsa Mountain area of Tataouine (Douiret) 	100 ha 100 ha 230 ha 100 ha 100 ha 50 ha

Tourism development

- > Great South offers substantial opportunities for tourism that must be enhanced.
- > Tourism facilities are to be incorporated into the various development projects following the example of water and roads networks, water points, oasis creation projects, famous cultural sites and remarkable natural landscapes, thus creating a synergy among the various components of every project.
 - ➡ Studies of the demand related to Saharan tourism and its particularities will allow the implementation of innovative tourism projects.
 - ⇒ The names of Tataouine and Ksar Ghilane are put forward to become some major touristic destinations following the same standards as Tozeur, Djerba and Douz.
- > Those major tourist destinations should benefit from:

- Natural sites
- Cultural sites and rehabilitated ksours (total number: 150)

Industrial development

- Industrial development must take into account regional potential, as well as agricultural and tourism projects.
- Particular attention will be devoted to renewable energy sources through the construction of solar power plants, thus allowing brackish water desalinisation and providing the area with power supply:
 - Sahara shall be the place of a clean energy production.
- > Development of agro-food processing and medicinal plants
- Sas pipeline projects in the South, particularly a project in Tataouine.

Scientific and cultural development

- Implementation of a sustainable mode of development for the South and the enhancement of its cultural heritage require a specific process.
 - Protection of Sahara
 - Establishment of museum related to Saharan cultural heritage
 - Establishment of research centres
- > Creation of a multidisciplinary technological centre specialized in desert technologies
- > Preparing spaces devoted to construction of health centres primarily dedicated to seniors
- > Enhancement of cultural products and promotion of hunting tourism
- > Achievement of new architectural concept available to investors
- > Defining a strategy to develop film and audio-visual production on Sahara
- > Inviting historians and sociologists to develop Saharan culture knowledge

Road network development

- > Roads and trails network plays an essential role to connect the South with the national economy.
- The interconnection of the southern areas with the rest of the country should improve level of the economic integration and lead to an optimal use of their natural resources.
- > The roads and trails network proposed in the project take into account agricultural, tourism cultural and scientific projects, as well as industrial areas and grazing ranges.
- > Building new roads that would interconnect the plains of Elaaradh, Ababsa, Jefara and Elouâra.
- > Improving access to the plains of Om Shieh, Adhara, Ksar Ghilane, and Sabria
- Building the followings:
 - Interconnection of Mahdath, Tombain and Jbil with Ksar Ghilane.
 - Interconnection between El Borma, Oued Nakhla-Borj Bourguiba and Rmada.
 - Interconnection between Ben Guerdane, Ghrifa and Remada.
 - Interconnection between Borj Bourguiba, ksour and Ksar Ghilane.
 - Interconnection between Tataouine, Ksar Ghilane and Douz.

The design of main roads in neighbouring countries (Libyan and Algerian network) should be taken into account in the plan for interconnections with those roads (Ghdames, Borma and Nalout).

This ambitious project requires substantial mobilization of funds, and it still has to undergo extensive and execution studies. A budget of DT 5 million is required to implement the project.

2.3.3 Master plans on territorial development for economic regions of the south

Master plans on territorial development for the economic regions of the South-east and South-west (Schéma Directeur d'Aménagement de la Région Economique (SDARE) du Sud-Est et du Sud-Ouest) have prepared by General Directorate of Territorial Planning of the Ministry of Equipment, Housing and Territorial Planning (Direction Générale de l'Aménagement du Territoire of Ministère de l'Equipment, de l'Habitat et de l'Aménagement du Territoire) (at the time of the formulation) with the target years of 2010-2020 in August and May 2010, respectively.

(1) Master plan for the economic region of the south-east

The master report is comprised of the following three parts:

- Part I: Overview of the Region
- Part II: Diagnostic Issues and General Directions
- Part III: Strategy for Land Use and Development

In the Part I the following development issues are pointed out:

- 1) Imbalanced Settlement
- 2) Negative Balance and Areas of Traditional Migration
- 3) Importance of Challenges for Employment
- 4) Urbanisation of Weak Control
- 5) Weak Integration of Factors on Competitiveness
- 6) Fragile and Vulnerable Natural Resources

In the Part II, the following trends are analysed for the planning.

- 1) Tendency to Declining Population Growth
- 2) Keeping the Pressure on Labour Market
- 3) Stagnant Chemical and Construction Materials Sector
- 4) More Efficiency and Better Integration in Tourism
- 5) Utilisation of Geo-thermal Water for Job Creation
- 6) Reinforcement of Status of Coastal Urban Areas

The Part III of the report starts with a discussion of development scenario. The alternative scenarios were set with sects of variations of the following factors:

- 1) International openness 2) Role of the State
 - 4) Balance and polarity of the territory
- 5) Large scale infrastructure projects 6) Regional development policy of the State
- 7) Construction of UMA (Maghreb African Union)

Three alternative scenarios were discussed as follows:

3) Large scale economic projects

- Scenario 1: Shared polarisation
- Scenario 2: Concentrated polarisation
- Scenario 3: Shared polycentrism

Infrastructure

c)

The alternatives were evaluated and compared in terms of the following criteria:

- a) Economic de velopment
- b) Polirisatiomnd) Population distribution
- e) Environment and living conditions

After a comparison with the evaluation, Scenario 3 was selected to be applied for the planning

Strategic axes of the master plan are as follows:

- a) Reinforcement of attractiveness of the regional economy
 - Upgrade of railway and highway connections to ports and airports in the region
 - Development of sites for the location of logistics activities near to major transport facilities (ports, airports and railway stations)
 - Completion of the Maghreb Expressway and the extension of the railway to the Libyan border
 - Construction of road sections connecting the South-east to the Maghreb road network (the South-east is concerned with the M3 branch through Borj El Borj Khadhra and connecting Massaouda in Algeria and Ghedames in Libya).
 - Creation of service centres offering high-level services (including Zarzis, Gabès and Médenine)
 - Reinforcement of the capabilities of urban supports, considering of needs arising from the development of logistics activities (living, services, culture, tourism services, etc.)
 - Development of university education and research in the field of logistics
- b) Promotion of favourable conditions for the development of enterprises
 - Satisfaction of needs to attract enterprises
 - Reinforcement of the services of the hosting sites with transport infrastructure and communication and energy networks
 - Valorisation of local potentials
 - Reserving an area to develop agro-food processing business in Zarzis
 - Extension of the industrial zone of Gabès to host companies specializing in electronics and electrical engineering
 - Upgrading and expansion of industrial zones in Médenine to reinforce industries of construction materials
 - Creation of zones of handcraft activities specialized in leather work and weaving in Tataouine
 - Creation of a zone of tertiary activities (consulting, finance, accounting, engineering, etc.) in Djerba
 - Organization and promotion of remote work by construction and equipment of specialized centres, particularly in the three towns of the governorate headquarters

- Strengthening liaisons between the host sites, logistic platforms and urban centres
- Services in the zones to attract enterprises with transport and communication networks
- Development of tourist circuits in partnership with local populations (Circuits of Ksours, desert and oasis)
- Development of platforms for the reception of cruise passengers (port of Gabès and Zarzis)
- Establishment and development of processing industries of raw materials on Médenine-Tataouine axis, focussing on new industries of construction materials
- Opening of extraction of raw materials through the development of transport infrastructure and energy networks at the sites
- Rehabilitation of existing irrigation schemes (oases of Gabès, El Hamma, Mareth, etc.)
- Creation of new small-scale irrigated perimeters in southern Tataouine from fossil water through the construction of water conveyance infrastructure
- Serving new irrigated by transport infrastructure
- Creation of irrigated perimeters with geothermal waters in El Hamma
- Establishment of population centres and service centres around the irrigated perimeters
- c) Structuring the territory by a balanced organisation of polarities
 - Gabès; cluster development and jointing South-East to the national economy
 - Médenine-Tataouine; cluster development and articulation between coast and inland areas of the South-East
 - Djerba-Zarzis-Ben Guerdane; cluster development jointing South-East to the international economy
 - Governorate of Tataouine; Ghomrassen, Bir Lahmar, Dhéhibet, Remeda and Sma, as secondary centres
 - Governorate of Médenine; Sidi Makhlouf and Beni Khedache, as secondary centres
 - Reinforcing liaisons between the three levels of polarity
 - Organize transport and communication networks and in the poles of the first level;
 - Tailoring of service and equipment according to the hierarchy of polarities
- d) Promotion of sustainable development
 - Protection and enhancement of natural resources and local potential
 - Improvement of urban environment and the quality of life of the population
 - Adaptation of land use and activities to the climate change

The master plan has the following direction of projects and actions:

		•
General Objectives	Specific Objectives	Projects/Actions
1. Encourage	1.1 Promote a	 Identify, share and create of regional high-level facilities
urbanisation in the	multi-polar structure	 Develop specific competent regional centres
region		 Reinforce communication networks among the poles
		Create inter-municipal/communal cooperation at the level

Direction 1: Urban frame and polarity of the territory

		of poles (city network)
2. Develop territorial hierarchy	2.1 Reinforce intermediate-level urban framework	 Promote the towns of Menzel Hbib, Smar, Sidi Makhlouf, and Remada Dhebiba as sub- regional service centres
	2.2 Develop lower level urban framework	Reinforce existing rural centres by integrated local development programmes
		• Follow-up for higher value adding of agriculture and tourism in rural zones by creation of population centres and facilities around projects to be created

General Objectives	Specific Objectives	Projects/Actions
1. Promote international openness of the region	1.1 Reinforce motorways and railways links to major poles of trading	 Extend A1 motorway, step by step, until Ras Jdir Rapid road connections (expressway) of Ben Guerdane- Djerba and Médenine-Djerba Extend railways, step by step, to the border with Libya through Médenine and Zarzis
1. Promote international openness of the region	1.2 Develop and organise logistics next to large transport facilities	 Realise a logistic platform of international level in Zarzis, adjacent to the port and a centre of economic activities (free zone and industrial zone) Organise the logistic sector: develop and articulate a flat secondary network of regional and inter-regional levels Connect to the logistic platform of Zarzis by a rapid ramp connected to A1 motorway Connect to the logistic platforms by railway
	1.3 Reinforce and expand links between the border areas, roads, motorways and railways	 Construct, step-by-step, route connecting South-east to M3 of the North African Highway (Borj-Messaouda Ghedames) through Borj El Khadra Reinforce RN 19 between Tataouine and Dhibet in perspective of developing trade with Libya
2. Reinforcing inter-regional links	2.1 Reinforce links between the South-east and the mining area of South-west.	 Rehabilitate RN 15 between Gabès and Gafsa, and RN16 between Gabès and Tozeur Construct a road to open up the western slope of Dahar Ensure liaison between Ksar Beni Khedèche and Ghilène Ensure liaison between Tataouine and Ksar Ghilène
3. Pursuing the internal structure of the region	3.1 Ensure continuity of the road network between Dhaher and Nefzaoua	 Complete the road between El Borma and Remada Ensure road services to population centres Reinforce crosslinks

Direction 2:	Transport :	and logis	stic infr	astructure

Direction 3:	Restructuring econ	omy with innovation
	-	

General Objectives	Specific Objectives	Projects/Actions
1. Satisfy the needs of lands for housing and business location	 1.1 Rehabilitate and expand industrial zones (ZI) 1.2 Create new 	 Extend the industrial zone of Gabès Rehabilitate and extend ZIs of Hamma, Mareth, Matouia Rehabilitate and extend ZIs of Médenine and Houmet Souk Rehabilitate and extend ZI of Zarzis ZI of Bir Lahmar handcraft village in Tataouine. ZIs in the
	industrial zones	secondary centres
2. Promote competitiveness and innovation	2.1 Complete the network of specialized technology parks	 Reinforce the technopole of Médenine Creating a technopole in Gabès Creating a technopole in Zarzis

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General Objectives	Specific Objectives	Projects/Actions
3. Valorise local potentials	3.1 Develop and diversify tourism activities	 Create a tourist station in Chott Hamrouni (Gabès); a station of ecological tourism in Lella Hadhria (Djerba) Pursue realisation of the tourist stations of Lella Mariem (Zarzis) Develop Tunisian-Libyan tourism project in Marsa of Ksiba (Ben Guerdane) Realize a thermal tourism station in El Hamma Extend the tourist zone in Tataouine Create tourist stations in Houmet Souk and Sidi Yahia in Djerba Realize the tourist station Tataouine
	3.2 Develop sailing activity and cruise tourism	 Complete Djerba Marina Construct Lella Mariem Marina Develop docks for cruise in Gabès and Zarzis
3. Valorise local potentials	3.3 Promotion of ecological and cultural tourism	 Develop tourism circuits of "ecology and culture" in mountain villages, Ksours circuits, dune circuits, circuit of olive trees and oasis circuits Create accommodation poles and services on the tourism circuits Create structures to promote and support local tourism associations Create a theme park in El Jorf
	3.4 Maximise the value of potential of useful substances	 Create enterprises for extraction and processing of useful substances Open and provide services at mining sites with energy networks
	3.5 Improve agricultural productivity	 Create 13 new oasis totaling 2130 ha: Chott El Fjej (100 Ha), El Mogren (100 Ha), Kamour (50 Ha), Pleine El Abassa (100 Ha), El Ferch (300 Ha), Borj Bouguiba (100 Ha), Sangher (100 Ha), eastern slopes of Dhabar (800 Ha), Remeda Briga (200 Ha), Ouara (230 Ha), Douiret Chenini (50 Ha), El Borma (300 Ha), Borj El Kahdra (300 Ha) Rehabilitate the irrigation system of the oasis of Gabès, Mareth, and rehabilitate and extend the oasis of El Hamma Extend geothermal agriculture in El Hamma
		• Establish structure of training and extension services of geothermal agriculture

Direction 4:	Environment and	l quality	of life

General Objectives	Specific Objectives	Projects/Actions
1. Protect and valorise the natural environment	1.1 Protect and valorise the coastal zones	 Project of integrated management of sensitive coastal areas (Lagoon of Boughrara, Wetlands of Jellabia, Ras Remel and Bin El Oudiane) Extend irrigated arboriculture Controlled management of intensive cattle raising Fight against desertification
	1.2 Promote integrated development mountain zones	Develop agriculture behind JessoursProject of water and soil conservationCreate small-scale irrigation
	1.3 Fight against desertification and develop ranges lands in the plateau of Erg Oriental and the plain of	 Continue the project to fight against desertification Continue agro-pastoral development projects in Tataouine, Elauara

General Objectives	Specific Objectives	Projects/Actions
	El Ouara	
2. Management of energy	2.1 Promote energy efficiency and renewable energy	 Projects of exploitation of natural gas in electricity generation and industrial production Projects of stations for energy capture
	2.2 Articulate territorial planning with renewable energy	 Pursue the programme of rural electrification using solar energy Equip the new population centres with photovoltaic stations
		• Equip new tourist hosting structures in inland areas with photovoltaic stations
3. Improve urban environment	3.1 Ensure remediation of industrial sites	 Initiate Project for transfer and disposal of phospho-gypsum Programme against industrial pollution Project of integrated waste management (Gabès and Zarzis)
	3.2 Enhance the urban environment	Elaborate of landscape development plansRealise actions to grade up landscape level
4. Satisfy the needs for drinking water	4.1 develop unconventional water resources	 Install desalination plants from seawater and brackish water Utilise solar energy in pumping and desalination of brackish water Control the demand for potable water Reduce losses in infrastructure

Direction 5: Employment and Training

3) Locations

General Objectives	Specific Objectives	Projects/Actions
Adapt the training system to regional development needs		 Establish an institute of transport and logistics in Zarzis Establish an institute for sustainable tourism in Tataouine Establish an institute of renewable energy Médenine Establish an institute of strategic management in Djerba
	1.2 Reinforce qualifications of professionals	 Restructure vocational training centres in Djerba, Gabès and Beni Khedache Create two training centres, one applied technical institute of renewable energy and one of desalination in Médenine and another of sustainable tourism in Dhehiba

Lists of the programmes have been prepared with elements as follows:

- 1) Actions 2) Results of actions
 - 4) Implementation periods (XIth/XIIth/XIIIth Plans)
- 5) Implementing organisations 6) Indicative costs

Territorial development is planned as shown in Figure 2.3-1.

The master plan proposed to establish a steering committee for supervising implementation by sector organisations. The master plan expects ODS, which is the only public administration organisation established as the Southern Region level, to take roles of coordination and follow-up of the implementation of the programmes proposed in the master plan.



(Source: SADRE du Sud-Est)



(2) Master plan for the economic region of the south-west

In Chapter 1 of the master plan reports, results of diagnostic studies are described from the following aspects:

- 1) Trends of the Economic and Social Development in the Region
 - a) Climate and Environmental Changes
 - b) Globalization and deregulation of Trade
 - c) Technological Innovations
 - d) Socio-Demographic Trends
- 2) Economic Potentials and Promising Sectors of the South-west Region
 - a) Oasis Agriculture
 - b) Phosphate Sector
 - c) Saharan Tourism and Handcrafts
 - d) Service Sector
- 3) Environmental Constraints
 - a) Arid Climate and Biding Constraints
 - b) Fossil and Very Little Renewable Water Resources
 - c) Very Weak Soil Resources
 - d) Weak Vegetation Resources and Advanced Desertification
- 4) Conclusion

As a development scenario, the following actions are proposed:

- 1) Environment and Natural Resources Management
- 2) Agriculture and Pastoral Activities
- 3) Industry and Services
- 4) Tourism and Handcrafts
- 5) Cities and Urban Facilities
- 6) Infrastructure Development

The following strategic orientations have been proposed:

- 1) Preservation and Valorisation of All Resources and Specific Region
 - 1.1) Implementation of Actions for Research and Development (R&D)
- 2) Development of Oasis and Irrigated Agriculture
 - 2.1) Pursuing and Generalising Programmes of Economy of Water in Agriculture and Other Sectors
 - 2.2) Stopping All Expansion of Irrigated Agriculture
 - 2.3) Developing Research on Economy of Water and Utilisation of High Salinity Water
 - 2.4) Implementing Programmes of Valorisation of Treated Wastewater
 - 2.5) Encouraging Recovery of Biodiversity through Realisation of Reserves and Natural Parks and Reintroduction of Rare Species
 - 2.6) Developing Oasis Agriculture

- 3) Development of Agriculture in Dry, in Open Irrigated Perimeters and Pastoral Activities
 - 3.1) Objectives of the Sector
 - 3.2) Strategic Directions
 - 3.3) Actions to be Taken
- 4) Better Valorisation of Mineral and Energy Resources
 - 4.1) Phosphate Sector
 - 4.2) Salts
 - 4.3) Carbonates
 - 4.4) Sands
 - 4.5) Petroleum and Gas Resources
 - 4.6) Geothermal Resources.
 - 4.7) Alternative Energy: Solar and Wind
- 5) Diversification of Industrial Structure and Improvement of Performance of Services
 - 5.1) Implementation of a Marketing Strategy for the Products of the South-west
 - 5.2) Creating Zones and Construction Industrial Buildings
 - 5.3) Continued Support for Establishing Enterprises
 - 5.4) Development of an Industry based on Products related to the Exploitation of Solar Energy
 - 5.5) Development of an Industry for Valorisation of Agricultural Products and By-products
 - 5.6) Establishment of a Regional Structure for Promotion and Facilitation of Export of Agricultural Products
- 6) Increasing Competitiveness of Saharan and Oasis Tourism
 - 6.1) Objectives Assigned to the Sector
 - 6.2) Orientations
 - 6.3) Actions to be Undertaken
- 7) Development of Cities and Improvement of Quality of Life in Urban Areas
 - 7.1) Extension of Sewerage Network to All Cities and Secondary Towns
 - 7.2) Implementation of a Programme to Install Wastewater Treatment Plants
 - 7.3) Urban Development
 - 7.4) Creation of Commercial Zones
 - 7.5) Fight against Domestic Pollution
 - 7.6) Creation and Organisation of Urban Parks
 - 7.7) Mapping Areas at Risks
 - 7.8) Evolution of Norms of Urbanisation and Construction, and Realisation of a City of a witness of HQE (High Quality Environment)
- 8) Modernization and Reinforcement of Facilities of Transport and Communication
 - 8.1) Development of Road Network
 - 8.2) Development of Railway Network
 - 8.3) Development of Airport Network

- 8.4) Development of Telecommunications Infrastructure
- 9) Development of Network of Potable Water
- 10) Development of Electric Network
- 11) Development of Network of Gas
- 12) Updating Mapping of the Region of South-west
- 13) Creation of Administrative Entity of in Capital Cities

The following programmes are proposed:

- 1) Techno-pole of Agriculture and Saharan Oasis: Research, Training and Dissemination
- 2) Techno-pole of Mines and Renewable Energy: Research, Training and Dissemination
- 3) Techno-pole of Saharan and Oasis Tourism: Research, Training and Dissemination
- 4) Modernisation and Reinforcement of Road and Motorway Infrastructure
- 5) Valorisation of Airport Infrastructure
- 6) Modernisation and Valorisation of Railway Infrastructure
- 7) Establishment of a Multi-modal Logistic Platform
- 8) Connecting Natural Gas Network to the South-west
- 9) Realisation of Desalination Plants of Brackish Water
- 10) Reinforcement and Modernisation of Telecommunications Network
- 11) Industrial Complex for Manufacturing Components for Utilisation of Renewable Energy
- 12) Restructuring Industrial Zones
- 13) Restructuring of Tourist Zone
- 14) Improvement of Urban Environment
- 15) International Park of Images and Mirages
- 16) World Park of Deserts and Nomad
- 17) Outdoor Museum of Geology and Prehistory
- 18) Restoration and Valorisation of Oasis Medinas
- 19) Restoration and Valorisation of Berber Villages
- 20-1) Realisation of a Wind Power Centre
- 20-2) Realisation of a Solar Power Centre
- 21) Creation of Industrial and Integrated Technological Complex in the Mining Centre
- 22) Preservation and Valorisation of Rangelands
- 23) Fight against Desertification
- 24) Conservation of Water and Soil
- 25) Management and Valorisation of Natural Reserves and Parks
- 26) Expansion of Urban Sanitation and Wastewater Treatment
- 27) Creation of Centres for Collection, Treatment and Recycling of Urban Waste
- 28) Establishment of a Centre for Storage and Transfer of Hazardous Waste
- 29) Creation of Ponds for Collection and Sedimentation of Wash Water of Phosphate

The actions proposed for the short, medium and long terms are illustrated in Figure 2.3-2 -Figure 2.3-4.

For the implementation of the programmes, the master plan proposes to establish a regional commission of regional development at the level of economic region of the South-west and commissions of regional development at governorate level. The regional commission of regional development is to be placed under inter-ministerial committee for spatial planning and to be chaired by a governor of the three governorates of the South-west Region in rotation.



Figure 2.3-2 Actions for the short term proposed in the master plan for the south-west economic region



Figure 2.3-3 Actions for the medium term proposed in the master plan for the south-west economic region



- Restructuration de zones touristiques
- Adduction de gaz naturel
- Modernisation et renforcement des Infrastructures routières et autoroutières
- Chef lieu gouvernorat

Figure 2.3-4 Actions for the long term proposed in the master plan for the south-west economic region

2.4 Major international development partners (donors) active in Tunisia

The major international development partners (donors) active in Tunisia are the World Bank (WB), African Development Bank (AfDB), United Nations Development Programme (UNDP), and European Union (EU). Since the Jasmine Revolution, these donors have assisted Tunisia under interim strategies. Before February 2015, it was expected that the donors would develop long or midterm country assistance strategies upon promulgation of the Constitution and establishment of full-fledged administration through elections based on the new Constitution. At present, however, the donors are waiting for the next round of national economic and social development plans as bases for the assistance strategies they intend to develop.

2.4.1 World Bank (WB)

WB has assisted Tunisia according to Interim Strategy Note for the Period Fy13-14 (May 2012, International Finance Corporation), which contains the following three engagement areas and eight driving objectives:

Area 1: Laying the Foundation for Sustainable Growth and Job Creation
Driving Objective 1: Supporting macroeconomic stability and economic recovery
Driving Objective 2: Strengthening the business environment and deepening integration
Driving Objective 3: Creating an enabling environment for labour market reforms
Driving Objective 4: Improving active labour market programs for the unemployed

Area 2: Promoting Social and Economic Inclusion

Driving Objective 5: Improving access to basic services for underserved communities Driving Objective 6: Improving the efficiency of social safety net programmes

Area 3: Strengthening Governance: Voice, Transparency and Accountability Driving Objective 7: Improving access to information and social accountability Driving Objective 8: Increasing the transparency and accountability of institutions

The following are the WB's major programmes/projects related to the Project:

- 1) Third Governance, Opportunity and Jobs Development Policy Loan (EURO 455.5 million (Equivalent to US\$ 500 million), October 2015)
- 2) Urban Development and Local Governance Programme (EURO 217 million (Equivalent to US\$ 300 million), July 2014)
- 3) Oases Ecosystems and Livelihoods Project (TOELP) (US\$ 5.76 million), June 2014)
- 4) Third Export Development Project (EDP III) (EURO 36.3 million (Equivalent to US\$ 50 million), June 2014)
- 5) Micro, Small and Medium Enterprise Development Project (EURO 72.6 million (Equivalent to US\$ 100 million), April 2014)

2.4.2 African Development Bank (AfDB)

AfDB has supported Tunisia with the Interim Country Strategy Paper 2014-2015 (Document de stratégie pays intérimaire 2014-2015) (March 2014). With the objectives of promoting the creation of high value added jobs for young graduates and enhancing the economic attractiveness of regions, emphasis is laid on support for inclusive private sector development. This support entails the improvement of i) private

sector output (by improving governance) and ii) the provision of production factors (by improving infrastructure).

The Government's thrusts are twofold. First, i) Economic reforms and ii) Infrastructure modernisation are backed by actions carried out under the governance and infrastructure pillars to a) improve the business climate and competitiveness and b) increase value added. Second, iii) Regional rebalancing and iv) Strengthening of the social sectors of education and employment are supported under the governance and infrastructure pillars through actions to c) improve public service delivery in the regions and d) ensure access to employment by developing skills and opportunities in the regions.

The following are the AfDB's major projects related to the Project:

- Integrated Agricultural Development Project (PDAI) GABES II (Total Cost: EURO 30.458 million) (November 2014)
- Gafsa North Integrated Agricultural Development Project (PDAI) (Total Cost: EURO 29.131 million) (February 2013)
- 3) Rural Drinking Water Supply (RDWS) (Total Cost: UA 90.8 million (Equivalent to EURO 112.1 million as of September 2015) (October 2011)
- Gabès Médenine -Ras Jedir Highway Construction Project (Médenine Ras Jedir Section) (Total Cost: EURO 454.78 million, out of the total JICA is financing EURO 136.47 million) (June 2011)
- 5) Road Project VI (Total Cost: EURO 336.74 million) (September 2010)

2.4.3 United Nations Development Programme (UNDP)

UNDP formulated country programme for Tunisia for the period of 2015-2019 in April 2014. The programme contains four outcomes and ten outputs:

Outcome 1: By 2019, civil, political, and administrative institutions are fully operational with respect to observance of universal principles of human rights, democracy, and gender equality.

- Output 1.1: Strengthened capacity of institutions safeguarding the rule of law, providing enhanced access to justice and security, especially for the more vulnerable, in accordance with international norms
- Output 1.2: Citizen participation and the capacities of institutions and opposition forces are strengthened, facilitating enhanced accountability to the people
- Output 1.3: Improving management of public finance

Outcome 2: By 2019, the State is organized according to new decentralized regional divisions meeting Tunisians' aspirations to a democratic governance model based on citizen participation and accountability to the people.

- Output 2.1: A national decentralisation strategy is supported and contributes to an effective local governance system providing better quality services to citizens
- Output 2.2: Support is provided to national actors to develop and implement a good governance strategy, including an effective national integrity system

Outcome 3: By 2019, the Government implements a new model of economic and social development which is equitable, inclusive, sustainable, resilient, and able to generate both wealth and employment.

Output 3.1: Planning, monitoring, and evaluation mechanisms are strengthened to support effective

and equitable public policies.

Output 3.2: Tools for measuring and analysing poverty and vulnerability are maintained and refined to guide the formulation and implementation of effective, efficient, and equitable public policies.

Outcome 4: By 2019, regional players manage regional resources efficiently and make optimal, sustainable, and inclusive use of them.

- Output 4.1: Local development plans taking regional potential into account are drawn up in two pilot areas, and a strategy for replication in the other areas has been formulated.
- Output 4.2: Viable plans developed at the national and local levels for sustainable management of natural resources
- Output 4.3: Strategies for low-carbon-emission development based on greater energy efficiency are supported at the national and local levels
- Output 4.4: Frameworks and systems for disaster risk prevention and management are developed, enhancing community and ecosystem resilience

UNDP has supported regional development of the Southern Region, including the Governorate of Médenine, and has planned a continuous support programme for 2015-2018, i.e., "Support to an Integrated and Sustainable Local Development through the Articulation of Territorial Platforms in Tunisia" (PATT 2015-2018). The programme has the following three objectives:

- Output 1: Establishing a framework to support democratic local governance at all territorial levels
- Output 2: Piloting a process of sustainable and integrated local economic development, especially targeting youth and women
- Output 3: Promoting the establishment or strengthening of strategic partnerships for knowledge-sharing and capacity building

2.4.4 European Union (EU)

The EU has supported Tunisia with a single support framework for the country (2014-2015) containing three intervention sectors and ten outputs:

- Sector 1: Socio-economic reforms for inclusive growth, competitiveness, and integration
- Output 1: Supporting job creation policies and human capital development
- Output 2: Supporting the reinforcement of principles of good governance, respect for the rule of law, and transparency in the economic sphere, in order to make the business environment more conducive to investment
- Output 3: Improving the management of public finance

Sector 2: Consolidation of the constituent elements of democracy

Output 1: Supporting the process of democratisation and consolidation of a pluralist

- Output 2: Supporting the formulation and implementation of judicial reform
- Output 3: Supporting the formulation and implementation of security sector reform.....

Output 4: Consolidating the roles of women in society, and contributing to

Sector 3: Sustainable regional and local development

- Output 1: Supporting the preparation and implementation of a policy and a strategy of balanced regional and territorial development that can reduce regional disparities and combat poverty
- Output 2: Contributing to local social and economic development by involving civil society and local

actors

Output 3: Supporting the implementation of a sustainable development strategy at regional and local levels based on the growth of a low-carbon green economy

The EU has supported cluster development. The EU helped the Ministry of Industry, Energy and (MIEM) formulate the national strategy for cluster development as well as the five-year action plan for cluster development. The EU has also been assisting with the implementation of the action plan.

Apart from the WB, AfDB, UNDP and EU, the ILO has actively supported the development of Tunisia. The ILO has implemented a "Support Programme for the Development of Disadvantaged Areas (AZD)" co-financed by the EU. The programme aims at supporting the economic recovery and labour market integration of unemployed young people, women, and men, especially those with low qualifications, through the creation and consolidation of decent employment. The programme has included projects for "Milk business valuation support Sidi Aich (Gafsa)" and a "Construction Essourour neighbourhood market (Gafsa)".

2.4.5 Other donors

In addition to the multinational cooperation, the following bilateral cooperation has been implemented:

- France French Development Agency (AFD): As the former colonial power, France has comprehensively assisted the development of Tunisia through the AFD. The AFD has been involved in various programmes/projects of multinational cooperation agencies, such as those for cluster development.
- Germany German Corporation for International Cooperation (GIZ)/German Development Bank (KfW): Germany has been implementing various types of assistance programmes/ projects through GIZ and KfW. With regard to the Southern Region, GIZ assisted with the formulation of a regional environment and sustainable development plan (plan régional d'environnement et développement durable, PREDD) targeting a Médenine Governorate and prescribing a participatory approach to planning by holding roundtable meetings where people could freely participate and express their opinions.
- Switzerland Swiss contact: Switzerland has been engaged in a tourism development project whose main target area extends to the Southeast region, aiming at tourism diversification in the area.
- Italy Italian Cooperation: Italy has been implementing various projects, including a project to support small- and medium-scale enterprises and attract Italian partners.

CHAPTER 3 CURRNET CONDITIONS OF TUNISIA

3.1 Economic Conditions

3.1.1 Macroeconomic conditions

As shown in Table 3.1-1, the GDP (PPP) per capita of Tunisia \$9,754; Tunisia is among the wealthiest countries in Africa.

	GDP per Capita (PPP valuation, \$)
Equatorial Guinea	37,853
Seychelles	27,295
Gabon	17,080
Mauritius	15,420
Botswana	15,337
Libya	13,589
South Africa	11,404
Tunisia	9,754
Algeria	7,523
Namibia	7,124
Egypt	6,405
Angola	6,260
Morocco	5,244

 Table 3.1-1
 GDP per capita (PPP), top rank countries in Africa in 2012

Source: African Development Bank

Table 3.1-2 shows the annual real GDP growth rate for Tunisia. It shows that the country had steadily grown in the 2010s, but experienced a contraction in 2011 mainly due to the significant decrease in investment after the revolution. The Tunisian economy rebounded in 2012 with the growth rate of 3.6%. Yet the growth is slowed down in 2013 due to the increasing political and social instability and difficult external environment.

Table 3.1-2	Annual	real GDP	growth	rate
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Year	2000-2009	2010	2011	2012	2013
Annual real GDP growth rate (%)	4.2	3.0	-1.9	3.6	2.6*

* Estimation

Source: African Development Bank

As shown in Table 3.1-3, unemployment rate sharply increased in 2011 after the revolution. It has gradually decreased in the last two years, but has not been dropped to pre-revolution level.

Year	2006	2007	2008	2009	2010	2011	2012	2013
Unemployment rate (%)	12.5	12.4	12.4	13.3	13	18.3	16.7	15.3
a								

Source: World Bank

According to INS, among the total number of unemployed people in 2012, youth between 15 and 29 year old constitute 72.2% of them. The unemployment rate for this age group is 37.6%, which is a lot

higher than the national average rate. Also, the umenplyment rate increases with higher education level and is highest for university graduates.

The causes of the youth uenemployment, especially for higher education level, are resulted from the increase of young population and the number of university graduates, the modest growth rate of some of the youth-labor intensive sectors such as the public administration, and the short-lived nature of employment contract for the youth¹.

3.1.2 Sectorial Analysis of production and Employment

(1) Value added by sector

Table 3.1-4 depicts the amounts of value added by sector between 2010 and 2014, and Figure 3.1-1 is a graphical representation of it. One can see that the service sector represents the largest share in the value added of this country (42% of net value added in 2014). Also, the amount of value added has been increasing more than any other sectors during this period. Manufacturing and non-manufacturing industry sectors constitute 16% and 12% of total net value added in 2014. Agricultural sector represents only a small portion of the net value added (8% in 2014).

			•				1	
	Sector	2010	2011	2012	2013	2014*		% of net Value added 2014
Agriculture an	d fishing	4,749	5,465	6,158	6,263	6,526		8%
Manufacturing	ţ	10,680	10,767	11,515	12,602	13,624		16%
	Food processing	1,768	1,858	2,015	2,187	2,215		3%
	Construction materials, ceramic	867	879	982	1,108	1,278		2%
	Electric and electronic equipment	3,454	3,687	3,820	4,161	4,543		5%
	Oil refining	57	74	246	360	434		1%
	Chemicals and chemical products	1,307	894	1,073	1,155	1,243		1%
	Textile	2,124	2,187	2,108	2,236	2,371		3%
	Tabaco industry	84	87	93	96	102		0%
	Other manufacturing	1,020	1,101	1,178	1,299	1,439		2%
Non-manufact	uring industry	7,936	8,155	8,944	9,469	9,912	1	12%
	Mining	487	272	242	287	334		0%
	Oil and natural gas extraction	4,018	4,285	4,751	4,765	4,623		5%
	Electricity	617	732	821	902	990		1%
	Water	175	180	197	221	246		0%
	Construction	2,639	2,686	2,932	3,295	3,719		4%
Services		26,098	26,266	28,904	31,992	35,527		42%
	Commerce	4,908	5,196	5,502	6,151	6,878		8%
	Transportation	5,431	4,768	5,312	5,718	6,095		7%
	Communication	2,864	3,221	3,688	4,197	4,758		6%

Table 3.1-4 Value added by sector (million TDN)

¹ This analysis is based on "Labor Market Dynamics in Tunisia: The Issue of Youth Unemployment" by Marco Stampini and Audrey Verdier-Chouchane, Working Paper Series No. 123, African Development Bank, February 2011.

Sector	2010	2011	2012	2013	2014*	% of net Value added 2014
Hotels and restaurants	3,163	2,625	3,037	3,249	3,470	4%
Financial services	2,287	2,423	2,636	2,962	3,359	4%
Car repair	227	233	252	283	319	0%
Other services	7,219	7,801	8,476	9,433	10,648	13%
Statistical discrepancy	-817	-870	-931	-997	-1,068	-1%
Non-commercial services	9,953	11,134	12,067	13,494	15,303	18%
Public services	9,689	10,848	11,756	13,147	14,911	18%
Associations	67	74	81	92	105	0%
Domestic services	196	212	230	256	287	0%
Gross value added	58,598	60,918	66,656	72,823	79,824	94%
Net imports and subsidies	4,993	3,970	4,293	4,776	5,279	6%
Net value added	63,591	64,887	70,949	77,599	85,103	100%

^{*}Forecast Source: MDCI



Source: MDCI

Figure 3.1-1 Value added by sector (million TDN)

(2) Number of firms and employees by sector

Table 3.1-5 depicts the numbers and the percentages of enterprises and employees by sector in 2011. It shows that significant portion of the enterprises (83%) falls into service sector. However, the industrial sector attracts biggest share of the employees (about 50%). The number of enterprises and employees in agricultural sector is quite small.

Sector	Enter	rprises	Employees			
Sector	Number	%	Number	%		
Agriculture and fishing	2,591	0.4%	24,735	2.5%		
Industry	72,184	12.0%	486,255	49.7%		
Construction	26,454	4.4%	74,373	7.6%		
Services	500,993	83.2%	393,465	40.2%		
Total	602,222	100.0%	978,828	100.0%		

Table 3.1-5Number of enterprises and employees by sector in 2012

Source: Statistiques Issues du Répertoire National des Entreprises, INS

Table 3.1-6 depicts the ratio of enterprises by scale (in terms of number of employees) and by region. It shows that the most of the enterprises in the country (87%) do not hire any employee, and enterprises with more than 10 employees consist only 1.8% of total enterprises. Also, one can see that significant portion of enterprises is concentrated in the North East and Centre East areas.

Number of employees	0	1-2	3-5	6-9	10-49	<50	Total
North East	41.6%	3.8%	1.4%	0.6%	0.8%	0.4%	48.6%
North West	7.7%	0.4%	0.1%	0.0%	0.0%	0.0%	8.3%
Center East	20.5%	2.4%	0.8%	0.3%	0.5%	0.0%	24.4%
Center West	7.3%	0.3%	0.1%	0.0%	0.0%	0.0%	7.7%
South East	6.1%	0.6%	0.2%	0.1%	0.1%	0.0%	7.0%
South West	3.7%	0.2%	0.1%	0.0%	0.0%	0.0%	4.0%
Total	86.8%	7.7%	2.6%	1.1%	1.4%	0.4%	100.0%

Table 3.1-6Ratio of enterprises by scale (number of employees) and by region in 2012

Source: Statistiques Issues du Répertoire National des Entreprises, INS

Table 3.1-7 depicts the trend in the number of enterprises by region. One can see that the number of enterprises had increased more in the eastern (coastal) area than western (interior) area between 2008 and 2012.

Year	2008	2012	% change 2008-2012
North East	263,334	307,404	16.7%
North West	48,061	50,595	5.3%
Center East	127,212	154,326	21.3%
Center West	42,936	46,608	8.6%
South East	37,953	43,514	14.7%
South West	22,909	23,655	3.3%
TOTAL	542,405	626,102	15.4%

 Table 3.1-7
 Trend in the number of enterprises by region

Source: Statistiques Issues du Répertoire National des Entreprises, INS

(3) Existing national industrial strategy

Ministry of Industry in Tunisia published the report on industrial strategy in Tunisia. Etude de strategie industielle, in 2008. The report points out the following three major issue that Tunisian industry faces.

- The trade agreement with the European Union, which was enforced in 2008, opened up many opportunities for the development for the Tunisian Industry, but at the same time it imposed the severe competitive pressure for Tunisian enterprises.
- Foreign Direct Investment (FDI) has been promoted dynamics in the Tunisian economy; however, the country has increasingly been facing the fierce race for the location of FDI.
- The industrial activities are considerably concentrated on the coastal areas, and the distribution of firms and industries are highly distorted.

The report claims that, faced with these challenges, the country has to promote innovation in its economic activities where the government is responsible for supporting to acquire necessary skills and developing infrastructure. At the sectorial levels, the report recommend the following direction of development.

- The traditional "pillar" industries such as textile, agri-food, electric, material, and chemical industries have to move up the value chains of their business and conduct on higher value-added activities.
- The country has to diversify industrial fabric by bringing in (relatively) new economic activities for Tunisia. These industries include electronic, automotive components, plastic technologies, pharmaceutical and paramedical sectors.
- The country has to prepare for next wave of industries that will regenerate the Tunisian economy by promoting the new activities among sectors. An example would be mechatronics sector which combines mechanics and electronics.

3.1.3 Investment²

(1) General trends

Tunisia's overall investment performance stays in the middle range among countries of the Middle Income Group; nonetheless, many countries – both richer and poorer than Tunisia – allocate larger share of the national income to investment³. While Tunisia constantly secures between 20-25% of its GDP for investments at home, it hasn't taken off any significant increase and has fallen well behind its neighbouring comparator country, Morocco.



Source: Elaboration based on WDI data

Figure 3.1-2 Gross Fixed Capital Formation (% GDP)

(2) FDI Trends⁴

During the first decade after the year 2000, the FDI inflow to Tunisia has more than tripled from approximately 700 million dinars to 2,165 million dinars, with an annual average growth of 11%

² References of section 3.1.3: « BAD. 2013. Vers un nouveau modèle économique pour la Tunisie. Identification des contraintes actives de la Tunisie pour sa croissance générale », « Banque Centrale de Tunisie. Rapport annuel 2012 », « COFACE », « Institut Fraser », « Heritage Foundation », « Jouini, Nizar et N. Rebei. 2013. Les implications de la libéralisation des services sur le bien-être économique dans les pays en développement : Évidence de Tunisie.

Document de travail du FMI », « Les implications de la libération des services sur le bien-être économique », « Transparency International », « UNDP Human Development Index »

³ AfDB (2013). Towards a new economic model for Tunisia. Identifying Tunisia's binding constraints for broad-based growth. pp.29

⁴ Remittances from Tunisians working abroad also provide a steady stream of funds representing approximately 5% of GDP and 11% of total foreign inflows. AfDB (2013).

(Figure 3.1-3). The FDI has a strategic implication for Tunisia's economic growth as it contributes to significant part of the government budget, and also to up to 10% of productive investments, one third of exports, and one sixth of total employment⁵.

While the FDI inflow in Tunisia has experienced yearly variation to some extent⁶, it has upward trends on the whole and remains at healthy level given its income level. Tunisia slightly outperforms the comparator countries of the Middle Income Group as well as the member countries of the Maghreb Association m in terms of the FDI value as share of the GDP (Figure 3.1-4).



Source: Elaboration based on UNCTAD data (2012)





Source: Elaboration based on WDI data.

Figure 3.1-4 FDI inflow of Tunisia and comparator countries (%GDP)

In terms of the distribution of FDI in Tunisia, the primary sector attracts the largest volume of the investments (61% of total FDI inflow), followed by the secondary sector (26%), and the tertiary sector (13%) (Figure 3.1-5).

The investments in the primary sector predominantly prevail in the area of "energy (mining, quarrying, and petroleum)", keeping the share of the "agriculture" and "fishery" marginal. As for the secondary sector, "chemicals and chemical products", which represent Tunisia's important export oriented industries, has become an increasingly attractive fields for foreign investors. The "textiles, clothing and leather", and "mechanics and electrics" also maintain stable investment inflow despite the declining export value because of the drop in demand in Europe. Unlike these two sectors the

⁵ Foreign Investment Promotion Agency (FIPA).

⁶ FDI inflow in Tunisia in 2006 marked exceptionally high due to the partial privatization of Tunisia Telecom (CBT).



investments in the tertiary sector has been moderate. In this segment, "communication" has the larges share of the investments, followed by "tourism/restaurants and real estates" (Table 3.1-8).

Source: Elaboration based on UNCTAD data (2012)



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Primary	336	438	320	284	393	954	1,367	1,954	1,250	1,320
Agriculture, hunting, forestry and fishing	9	11	4	10	7	14	8	20	17	3
Mining, quarrying and petroleum (energy)	327	428	316	274	386	940	1,359	1,934	1,234	1,317
Manufacturing	251	255	283	312	327	347	486	642	772	574
Food products and beverages (agribusiness)	18	26	28	13	14	18	39	15	26	-
Textiles, clothing and leather	97	74	70	76	74	119	117	83	133	-
Chemicals and chemical products (inc. rubber)	7	13	11	18	11	36	92	216	258	-
Manufacture of plastic products	-	-	-	-	-	-	32	16	56	-
Non-metallic mineral products (building material)	25	44	69	89	63	47	40	105	72	-
Machinery and equipment	-	-	-	-	-	-	-	-	87	-
Electrical and electronic equipment (mechanics and electric)	75	76	77	82	142	94	149	102	122	-
Other manufacturing	29	24	28	34	23	35	17	105	18	-
Services	113	474	149	200	296	3101	219	803	257	272
Hotels and restaurants (tourism and real estate)	97	22	19	22	17	18	72	199	86	95
Transport and storage	-	-	-	-	-	-	61	-		-
Post and communications	-	333	105	121	99	3056	80	-	150	-
Finance	-	103	10	38	120	22	-	-	-	-
Business activities (Computer and related activities)	-	-	-	-	-	-	-	-	3	-
Other services	-	16	16	19	60	5	6	605	6	-

Table 3.1-8	FDI flows by	v sector and	industry	(in	million	dinars)
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Source: UNCTAD Country Profile 2012

Approximately two thirds of the FDI in Tunisia come from the EU member countries. The UK, Italy, and France are the largest investors and each of them has distinct sets of interests. The UK mostly invests in the primary sector (more specifically, energy), while the Italian investments concentrate on both the primary and the secondary sectors, and the French focuses largely in the secondary and the tertiary sectors (Figure 3.1-6).

Apart from those top investors, each sector receives substantial investments from different sets of countries. The primary sector receives substantial amount of investments from Austria, Canada and the USA. The secondary sector has Spain as the second largest investor, and albeit in much less amount, South Korea and India comprise an important portion of the investments. The tertiary sector attracts the largest investments from Arab nations, such as Libya, Quatar, and UAE.

Table 3.1-9 shows the countries of origin of FDI in Tunisia over the decade. At large, the same countries dominate the top 10 positions. A closer look at the trends tells an increasing importance of non-traditional investors, such as Arab nations and emerging countries of the Asia & Pacific region (Table 3.1-9). In the context of persisting uncertainties over economic growth and financial fragility, the

developed countries, including the countries that traditionally retained strong presence in the FDI in Tunisia, such as Italy, Spain, and Portgal have curbed their FDI efforts. Such tendency has a strong implication that Tunisia needs to keep diversified sources of FDI.



Source: Elaboration based on UNCTAD data (2012)



	2001-201	0		2006-20	10	Change in	
	Country	Value		Country	Value	share	
1	UK	4,078	1	UAE	3288	7	
2	UAE	3301	2	UK	3,145	7	EU countries
3	France	2,115	3	Italy	1,579	7	Asia Pacific
4	Italy	2,077	4	France	1,391	7	Americas
5	USA	1,113	5	USA	708	\rightarrow	
6	Sweden	698	6	Sweden	659	\rightarrow	League of Arab states excl. Maghreb
7	Canada	674	7	Canada	526	\rightarrow	Maghreb countries
8	Austria	640	8	Austria	492	\rightarrow	
9	Spain	519	9	Spain	323	\rightarrow	
10	Kuwait	507	10	Libya	286	7	
11	Libya	388	11	Turkey	255	7	
12	Netherland	359	12	Netherland	230	\rightarrow	
13	Germany	319	13	Germany	159	\rightarrow	
14	Turkey	261	14	China	158	7	
15	Portugal	185	15	Kuwait	124	7	
16	China	161	16	Switzerland	119	7	
17	Switzerland	155	17	Australia	109	7	
18	Australia	137	18	India	96	7	
19	Egypt	110	19	Portugal	73	7	
20	India	96	20	Quatar	54	7	
21	Belgium	92	21	Egypt	53	7	
22	Saudi Arabia	89	22	South Korea	48	7	
23	Luxembourg	86	23	Luxembourg	42	\rightarrow	
24	Japan	69	24	Belgium	39	7	
25	Morocco	58	25	Jordan	36	7	
26	Norway	56	26	Bahrain	34	7	
27	Quatar	54	27	Vietnam	26	7	
28	South Korea	48	28	Algeria	23	7	
27	Jordan	37	29	Indonesia	22	7	
28	Algeria	34	30	Japan	17	\searrow	
28	Bahrain	34	30	Russia	17	7	
30	Vietnam	26	31	Saudi Arabia	15	\searrow	
30	Malaysia	26					

Table 3.1-9	Ranking: FDI investment amount (in million	dinars)
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Source: Elaboration based on UNCTAD data (2012)

(3) FDI promotion factors

Apart from its substantial weight on the national budget and effects on export and employment generation, FDI has a highly strategic meaning for Tunisia in its pursuit of growth because in essence, the foregin capital would bring in advantages in improving production technologies, management practices, and intelligence of and access to foreign markets.

From investor's perspective, Tunisia possesses some valuable qualities that justify their investment decisions, including: (i) the geographic proximity to Europe as well as FTA with the region (which means a favoured access to the market size of over 500 million people without export tariff on the industrial products); (ii) relatively stable sociopolitical situation (albeit the Arab Spring); (iii) the demonstrated sustainable economic growth rate of over 5% of GDP per year over decades, (iv) disciplined macroeconomic management by the government (i.e. maintaining external and financial deficits and inflation rate under control and reasonable saving rate); (v) availability of fairly educated workforce⁷; and (vi) and access to multiple tax and fiscal benefits, in particular, for the offshore sector (export-oriented firms)⁸.

There are several comparative indicators that highlight the attractiveness of Tunisia as a FDI destination country. Tunisia ranks the 32nd among 139 countries in the world competitiveness ranking, being the best performer in Africa (South Africa 54th, Morocco 75th, Egypt 81st, and Algeria 86th), and also becoming more competitive in comparison with some European countries (e.g. Poland 39th, Portugal 46th). Tunisia is also among the top 10 performers around the world and the only country from the MENA region that has significantly improved the investor protection since 2005⁹. As Figure 3.1-7 shows, Tunisia is positioned fairly well compared to Morocco and to the Upper Middle Income Group. In addition, a set of indicators employed by the Frasier Institute to measure the business climate in a given country validates Tunisia's favorable business climate. All of these positive indications should fully compensate somewhat discounted attractiveness of Tunisia as far as its smaller population size (as a market) is concerned.



Source: Doing Business report 2013.

Figure 3.1-7 Average ranking on sets of Doing Business indicators

There are, however, unsettling elements in Tunisia that may undermine its attractiveness as an investment destination country. With regard to the regulations, current policies impose a number of limitations on foreign investment, including restrictions on foreign investment in commerce, air transport, communications, finance, and certain professional services¹⁰. Such restrictions inflict a

⁷ According to the World Economic Forum, Tunisia ranks among the top 10 in the world in terms of the supply of students in the technical field.

⁸ The national Investment Incentives Code, which governs the FDI regulations, is currently under review. One of the purposes of the review is to narrow the discrepancies between the on-shore and off-shore investments.

⁵ The World Bank and the IFC (2013). Doing Business Report 2013.

¹⁰ As already mentioned, the national Investment Incentives Code is under review with assistance of OECD and IFC, and the current investment constraints are expected to be addressed in the new investment code. Once the new code is drafted, it will require approval of the national assembly. In the meantime, the current regulations remain valid.

substantial cost on the Tunisian economy, mainly by limiting the productivity of goods – for which commercial services represent a large share of total production cost¹¹.

On top of that, inflexible labor market, particularly when open-ended contracts are concerned, raises the costs and risks of employing local workers in the first place. This has strong implications to the investment promotion for the manufacturing sector, which is most relevant in terms of local employment generation on one hand, but on the other hand, of which competitiveness is fairly depend on the availability of cheap labor.

Lastly, albeit to a lesser degree, the prevalence of corruption perceived in the investing country influence the decisionmaking of the potential investors.



Source: Elaboration based on Fraser Institute data

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Figure 3.1-8	Freedom	of doing	business in	Tunisia and	other com	parator cou	ntries 2013

	Global Competitiveness Index ranking (2012-1013)	Human Development Index (2011)	Corruption Perception Index ranking ¹² (2013)	Country risk assessment ¹³	Business climate assessment ¹⁴	
Tunisia	40	High (0.698)	77	В	A4	
Algeria	113	High (0.760)	94	A4	В	
Egypt	107	Medium (0.698)	114	С	В	
Libya	113	High (0.781)	172	D	D	
Morocco	70	Medium (0.582)	91	A4	A4	
Turkey	43	High (0.699)	53	A4	A4	
Jordan	64	Medium (0.698)	66	В	A4	
Malaysia	25	High (0.761)	69	A2	A3	
Romania	78	High (0.781)	69	В	A4	

Table 3.1-10	Selected com	petitiveness	indicators	of Tunisia a	ind com	parator (countries

Source: Elaboration based on various sources.

¹¹ Jouini, Nizar and N. Rebei (2013). The Welfare implications of Services liberalization in developing country: Evidence from Tunisia. IMF Working Paper.

Transparency International data.

¹³ COFACE. Country risk is assessed based on macroeconomic, political, and financial data. This is seven-level ranking, of which ranking is indicated by ascending order of A1, A2, A3, A4, B, C, D. ¹⁴ COEACE Business alignets indicated the article of the article

COFACE. Business climate indicates the quality of private sector governance.

3.1.4 Trade¹⁵

(1) **Export trends**

Exports of goods and services have been a key driver of Tunisia's economic growth, serving as an important single component of the country's aggregate demand over the past 25 years¹⁶. Tunisia's merchandise trade has grown steadily both in terms of volume and value, with the total export value reaching 27,7 billion dinars in 2013¹⁷.

On the whole, Tunisia's trade has experienced an upward trend except in 2009 and in 2011 when temporaly declines occurred due to the economic circumstances of the EU – Tunisia's single most important export market – which was hit hard by the global financial crisis and the sovereign debt crisis, and the social disruption at home in 2011. Though the trade deceleration didn't cause severe impact on the trade value (Figure 3.1-9).



Source: Elaboration based on INS bulletin August 2012

Figure 3.1-9 Tunisia Merchandise trade

Tunisia is a net exporter of "textiles (apparel, hosiery)", "agricultural products (olive oil, citrus, vegetables)", "phosphates", and "chemicals". The "mechanical and electrical goods" and "hydrocarbons" also represent important export products.

In accordance with the international classification using Harmonized System Code (HS Code), top 10 export commodities from 2009 to 2011 were: 1) "petroleum oils and oils obtained from bituminous minerals, crude", 2) "insulated wire, cable", 3) "men's or boys' suits, ensembles, jackets, blazers, trousers", 4) "track suits, ski suits and swimwear; other garments", 5) "electrical apparatus for switching or protecting electrical circuits", 6) "T-shirts, singlet and other vests, knitted or crocheted", 7) "mineral or chemical fertilizers", 8) "reception apparatus for television", 9) "women's or girls' suits, ensembles, jackets, blazers, dresses, skirts", and 10) "electrical apparatus for line telephony or line telegraphy"¹⁸.

All of these commodities increased the total export values as well as of the unit values, except for (5), (7), and $(9)^{19}$. The Figure 3.1-10 dipicts the export trends of individual merchandises by sector.

¹⁵ This section of the report focuses on general trends and competitiveness of Tunisia's export. Later reports of the project will cover other aspects of trade, including the frameworks of the trade agreements and import trends to explore export promotion strategy.

¹⁶ AfDB (2013).

¹⁷ INS data.

¹⁸ UN Comtrade.

¹⁹ Unit value calculation is not applicable to (1), (5) and 1(10).


Source: Elaboration based on INS data

Figure 3.1-10 Tunisia Merchandise exports

Export of services has also grown over time; however, its share in Tunisia's total exports has been declining gradually (Figure 3.1-11). In the services category, the "travel and tourism" remains the significant contributor albeit decreasing share in the total services export. The "communications", "construction", and "computer and information" comprise the fastest-growing components, having increased by 2775%, 614%, and 105% respectively between 2010 and 2011. The "transport" which makes up the second largest service export component refers mainly to freight of merchandise.



Source: Elaboration based on WDI

Figure 3.1-11 Tunisia Export evolution (% GDP)



Source: Elaboration based on UNCTAD data

Figure 3.1-12 Tunisia Service Exports (in million USD at current price)

Tunisia's first trading partners are found in Europe. Amongst the top 10 markets of Tunisia's merchandise exports, seven are European countries. France and Italy alone absorb 52% of Tunisia's total exports, and Germany and Spain another 14% (Figure 3.1-13 and Figure 3.1-14). Outside Europe, Libya, USA and Algeria rank in the top 10.

The share of the EU market has slightly declined, from 66% in 2008 to 58% in 2012²⁰. Still, the EU remains as the prime export markets for Tunisia, with its member countries which ranked in the top 10 are accountable for nearly 73% of the value and 48% in terms of the volume of the total Tunisian exports²¹. Conversely, the declining share of EU has led to an increased diversification of Tunisian export destinations. Turkey, India, Ethiopia, UAE, and Bangladesh have moved up to the top 20 export partner countries in recent years.



Source: Elaboration based on INS data



²⁰ The drop in demand in EU influenced mainly the sectors of textile, apparel, leather and footwear, and mechanical and electrical industries, which account for 60% of Tunisia's total exports, and of which 95% are destined to the EU market. ²¹ Tunisia ranks the 34th as the EU's import origin (0.5% share) and 29th as the export destination (0.7% share). EU's major import partners include, among the comparator countries, Turkey (7th; 2.7%), Libya (13th; 1.8%), Algeria (14th; 1.8%), Malaysia (20th; 1.1%), Morocco (36th; 0.5%), and Egypt (38th; 0.5%).



Source: Elaboration based on INS data



(2) Export competitiveness

Tunisia's export share of GDP both in terms of "Goods and Services" and "Merchandise" alone have largely remained greater than those of Morocco and Turkey (Figure 3.1-15). However, such superior performance is somewhat overshadowed by its less vigorous growth in monetary term when compared to the comparator countries. Between 2000 and 2011, Tunisia has tripled its export value; though Turkey has substantially surpassed it by growing 4.85 times, and Morocco has also achieved the growth level comparable to Tunisia despite the fact that those comparator countries have maintained lower export share of GDP than Tunisia.







As part of its efforts to enhance exports, the government has introduced an array of policy measures based on the principles of liberal trade regime²². Apart from the elimination of tariffs on imported raw materials, equipment and capital goods in a number of sectors, the government has undertaken additional measures, including subsidies related to the cost of social security, input and export insurance, tax exemption for imported inputs, acceleration of procurement procedures, reduction of number of tariff bands, and reduced customs duties to reinforce export growth. However, the Trade Freedom Index and the overall tariff rate indicate that Tunisia's competitiveness in terms of trade environment still falls well behind some of its comparators (Table 3.1-11).

²² A recent study of AfDB (2013) concludes that the net effects of Tunisia's trade policy regime introduced an export bias and a mild pro-agriculture (but anti-arboriculture) bias in the resource allocation.

The government also has implemented a specific export promotion program – the Export Market Access Fund (Fonds d'Accèss aux Marchés d'Exportation: FAMEX)²³ - which aimed at increasing the net export capacity of the Tunisian exporters (and potential exporters) by helping them to identify the right target markets, product segments, and sales channels. The FAMEX provided matching grants to co-finance half of the cost (with a ceiling of 100,000 dinars) to elaborate viable export business plans. The evaluation of the impacts of the FAMEX program indicates that technical assistance concerning the market prospection and promotional activities have positive contribution to the diversification of export markets as well as of products²⁴.

In terms of the infrastructure which reflects the extent of trade facilitation within a country, Tunisia has advanced in creating favorable conditions, positioning itself at 41st in the world ranking (out of 155 countries surveyed) and becoming the top 10 performers amongst the Upper Middle Income Countries group (UMIC) (8th). In sum, Tunisia's logistics performance is above the average of the region as well as that of the UMIC. The logistics indicator in which Tunisia performed the best is related to "customs", while most improvements are needed in infrastructure, international shipments, and competence in the local (supply chain) logistics (Table 3.1-12 and Table 3.1-13).

Country	Trade Freedom Index and world ranking	Average tariff	Major export goods	Major export market
Tunisia	61.8 (153 rd)	14.1%	Apparel, semi-finished goods, textiles, agricultural products, mechanical goods, phosphates and chemicals, hydrocarbon, electrical equipment	France (26.2%), Italy (16%), Germany (9.4%), Libya (7.6%), USA (4.3%)
Algeria	50.8 (164 th)	12.1%	Petroleum, natural gas, petroleum products	Italy (16%), USA (15%), Spain (10.9%), France (8.5%), Holland (7.3%), Canada (7.1%), US (5.1%), Brazil (4.7%)
Egypt	52.9 (135 th)	9.3%	Crude oil and petroleum products, cotton, textiles, metal products, chemicals, processed food	Italy (7/9%), India (6.9%), US (6.8%), UAE (6.2%), Turkey (5.3%), Libya (4.9%)
Libya	Not graded	0	Crude oil, refined petroleum products, natural gas, chemicals	Italy (23.3%), Germany (12.4%), China (11.2%), France (9.7%), Spain (7.6%), UK (4.7%), USA (4.5%)
Morocco	58.8 (164 th)	13.1%	Apparel and textiles, electronic components, inorganic chemicals, transitors, crude miderals, fertilizers (including phosphates), petroleum products, citrus fruits, vegetables, fish	France (21%), Spain (17.3%), Brazil (5.4%), India (4.9%), USA (4.6%)
Turkey	84.5 (51 st)	2.7%	Apparel, food stuffs, textiles, metal manufactures, transport equipment	Germany (8.6%), Iraq (7.1%), Iran (6.5%), USA (5.7%), UAE (5.4%)
Jordan	69.2 (39 th)	5.2%	Apparel, fertilizers, potash, phosphates, vetgetables, pharmaceuticals	USA (16.6%), Iraq (15.1%), UAE (11%), India (10.5%), Indonesia (4.2%)
Malaysia	76.4 (90 th)	4.3%	Semi conductors and electronic equipment, palm oil, petroleum and LNG, wood and wood products, rubber, textiles, chemicals, solar panels	Singapore (13.6%9, China (12.6%), Japan (11.8%), USA (/8.7%), Thailand (5/4%), Hong Kong (4.3%), India (4.2%), Australia (4.1%)
Romania	87.8 (11 th)	1.1%	Mechinery and equipemnt, metals and metal products, textiles and footwear, chemicals, agricultural products, minerals and fuels	Germany (18.9%), Italy (12.3%), France (7.1%), Turkey (5.5%), Hungary (5.5%)

 Table 3.1-11
 Trade environment and characteristics: Tunisia and comparator countries

Source: Elaboration based on various sources.

²³ FAMEX program was implemented under the second phase of the World Bank loan for the Export Development Project (EDP) in Tunisia (the first phase: 2000-2004, and the second phase: 2005-2009).

²⁴ Olivier Cadot, Fernandes A.M. et al. (2012). Are the benefits of export support durable? Evidence from Tunisia. World Bank Policy Research Working Paper No. 6295.

					Logistics		
		Customs	Infrastructure	Int'l	quality and	Tracking and	
Country	LPI rank	rank	rank	shipments	competence	tracing	Timeliness
Tunisia	42	33	54	65	40	40	35
Morocco	50	65	39	46	59	58	53
Algeria	125	117	139	89	145	114	116
Egypt	57	69	45	51	50	66	64
Libya	137	135	152	99	128	123	145
Jordan	102	115	91	63	137	104	106
M alay sia	29	29	27	26	30	28	28
Romania	54	61	87	53	64	53	29
Turkey	27	32	25	30	26	29	27

 Table 3.1-12
 International Logistics Performance Index (LPI) Tunisia and selected countries

Source: Elaboration based on data from the World Bank. Connecting to compete 2012. Trade Logistics in the Global Economy.

Export				Import								
Port or a	irport supp	ly chain	Lan	d supply cl	hain	Port or a	urport supp	oly chain	Lan	d supply cl	hain	
		Lead			Lead			Lead			Lead	
	Distance	time	Cost	Distance	time	Cost	Distance	time	Cost	Distance	time	Cost
	(km)	(days)	(USD)	(km)	(days)	(USD)	(km)	(days)	(USD)	(km)	(days)	(USD)
Tunisia	300	2	250	-	-	-	350	1	250	-	-	-
Morocco	247	3	500	1,025	3	1,118	247	3	500	1,025	3	1,118
Algeria	75	8	1,000	-	-	-	750	39	2,000	-	-	-
Egypt	280	2	773	578	4	1,097	346	3	1,123	1,024	6	1,392
Libya	43	2	548	750	1	150	25	4	671	-	-	-
Jordan	300	3	573	483	5	909	300	5	1,000	-	-	-
M alay sia	73	3	285	172	2	298	84	2	285	105	2	298
Romania	474	2	707	474	5	1,225	474	2	750	474	6	1,061
Turkey	104	2	806	458	3	1,670	122	2	831	562	4	1,362
Turkey	104	2	806	458	3	1,670	122	2	831	562	4	1,362

 Table 3.1-13
 Domestic LPI: Tunisia and selected countries

Source: Elaboration based on data from the World Bank. Connecting to compete 2012. Trade Logistics in the Global Economy.

(3) Import Trends

Since 2000, Tunisia's import of goods has been increasing except in 2009, when the value declined temporarily, which was the same pattern demonstrated by the export (Figure 3.1-16). Between 2000 and 2012, the total import value has more than doubled from 9.1 billion USD in 2000 to 20.1 billion USD in 2012.

Over the same period, machines has remained the largest import category, representing between 22~24% of the total. In this category, "low voltage protection equipment", "insulated wires", "electrical power accessories", and "integrated circuits" are the most important goods. Mineral Products comes next, which include "refined petroleum", "petroleum gas", "crude petroleum", "sulfur", and "petroleum coke". The "refined petroleum" is the single most expensive import merchandise of Tunisia. Textile has the third largest share, however, its import growth has decelerated and the share in the total import goods has diminished. Transportation has "parts" of vehicles and aircrafts, but over two thirds of this category is consisting of finished products, such as cars, ships, tractors, and trucks, etc. Metals, Chemical Products, and Vegetable categories have experienced the largest increase (Table 3.1-14). While the principal import products of the Metal remain consistent ("semi-finished iron", "copper wire", "hot-rolled iron", etc.), those of Chemical Product ("packed

medicaments", "human or animal blood", "cleaning products", "beauty products", etc.) and Vegetable Product ("wheat", "soybean", "corn" etc.) have experienced changes.



Source: Elaboration based on the data on the Observatory of Economic Complexity

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Figure 5.1-10	Tunisia Mercha	laise import d	V product ca	alegory (m	O(O(O(O(O(O(O(O(O(O(O(O(O(O(O(O(O(O(O(
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	2000-2005	2005-2012	2000-2012
Machines	52%	55%	134%
Mineral Products	104%	28%	160%
Textile	23%	-11%	9%
Transportation	17%	72%	101%
Metals	108%	45%	202%
Chemical Products	80%	50%	171%
Vegetable Products	16%	162%	205%
Plastics and Rubbers	85%	45%	168%
Others	53%	61%	146%
TOTAL	54%	44%	120%

Table 3.1-14 Tunisia: Increase in % of Import by product category

Source: Elaboration based on the data on the Observatory of Economic Complexity

As for the origin of imports, four out of top five trading countries are the same as the exports: France (21%), Italy (20%), Germany (8.5%), and Spain (6.4%). Other important shares are taken by China (6.4%) and Turkey (3.9%). Nearly two-thirds of the total import goods of Tunisia originate from these six countries.

3.2 Social and Demographic Conditions

3.2.1 Demography

Table 3.2-1 shows the historical trend of population and its related data of Tunisia between 1993 and 2012. Figure 3.2-1 is the graphical representation of the trend of population and it growth rate. It shows that the population of Tunisia has increased from 8,572,200 in 1993 to 10,777,500 in 2012. However, the annual population growth rate has decreased from 2.5% in 1993 to around 1% in the 2000s, which is resulted from the decrease of crude birth rate and fertility rate.

Year	Population	Annual growth rate	Crude birth rate (per 1,000)	Crude death rate (per 1,000)	Fertility rates
1993	8,572,200		24.0	5.7	3.1
1994	8,785,700	2.5%	22.7	5.7	2.9
1995	8,957,500	2.0%	20.8	5.8	2.7
1996	9,089,300	1.5%	19.7	5.5	2.5
1997	9,214,900	1.4%	18.9	5.6	2.4
1998	9,333,300	1.3%	17.9	5.6	2.2
1999	9,455,900	1.3%	16.9	5.7	2.1
2000	9,552,500	1.0%	17.1	5.6	2.1
2001	9,650,600	1.0%	16.9	5.6	2.1
2002	9,748,900	1.0%	16.7	5.8	2.0
2003	9,839,800	0.9%	17.1	6.1	2.1
2004	9,932,400	0.9%	16.8	6.0	2.0
2005	10,029,000	1.0%	17.1	5.9	2.0
2006	10,127,900	1.0%	17.1	5.6	2.0
2007	10,225,100	1.0%	17.4	5.5	2.0
2008	10,328,900	1.0%	17.7	5.8	2.1
2009	10,439,600	1.1%	17.7	5.7	2.1
2010	10,547,100	1.0%	18.6	5.7	2.1
2011	10,673,800	1.2%	18.8	5.9	2.2
2012	10,777,500	1.0%			

 Table 3.2-1
 Trend of population and related figures in Tunisia

Source: Annual Report on Demographic Situation in Tunisia, INS



Source: Annual Report on Demographic Situation in Tunisia, INS

Figure 3.2-1 Population and population growth of Tunisia

Figure 3.2-2 shows the population pyramid of Tunisia in 2011. One can see that the shape of the population pyramid is a constrictive pyramid, which is typical pattern for a developed countries where both death rate and birth rate are low.



Source: Annuaire Statistique de La Tunisie 2007-2011

Figure 3.2-2 Population pyramid of Tunisia (2011)

3.2.2 Poverty and inequality

Table 3.2-2 shows the trend in the percentage of households under the poverty and extreme poverty lines, which are estimated by household surveys of INS. One can see that both poverty and extreme poverty rates have decreased dramatically between 2000 and 2010, which is mainly resulted from the general increase in income during this period.

Table 3.2-2 Trend in poverty and extreme poverty rates in Tunisia (%)

	Household under poverty line			Household under extreme poverty line			
	2000	2005	2010	2000	2005	2010	
Tunisia	32.4	23.3	15.5	12	7.6	4.6	

Source: INS

Table 3.2-3 depicts the trend in Gini coefficient (an index for inequality measure where higher number indicates higher inequality). One can see the decreasing trend of inequality between 2005 and 2010.

 Table 3.2-3
 Gini inequality indices in total expenditure (%)

	2000	2005	2010
Gini coefficient in total expenditure	40.4	40.8	38.5
Source: INS			

As shown in Table 3.2-4, although the inequalities decreased to a certain extent at national level from a Gini coefficient of 34.4 in 2000 to 32.7 in 2010, they were due more to a decrease in intra-regional inequalities that fell from 23 in 2000 to 20.1 in 2010 than to inter-regional inequalities, which increased from 11.4 in 2000 to 12.6 in 2010.

Table 3.2-4Breakdown of inequality of region (%)

	2000	2005	2010
Inter-regional Inequality	11.4	13.3	12.6
Intra-regional Inequality	23	21.5	20.1
Source: INS			

Source: INS

As shown in Table 3.2-5 and Table 3.2-6, the population groups where family heads are unemployed and/or without formal education are more likely to be poor.

Socio-professional Category	Incidence of poverty (%)
Senior executives and liberal professionals	0.7
Middle-level executives and liberal professionals	3.6
Other employees	8.4
Managers of small trades in industry, commerce and services	7.4
Crafts persons and self-employed in industry, commerce and services	10.8
Non-farm workers	24.2
Farm operators	20
Farm workers	28.9
Unemployed	40.3
Pensioners	5.8
Other non-working persons	15.2
Off-household support	28.9
Total	15.5

Table 3.2-5 Incidence of poverty by socio-professional categories and upper threshold in 2010

Source: INS

 Table 3.2-6
 Incidence of poverty according to head of household's level of education and upper

Incidence
23.4
18.1
7.2
0.4
15.5

threshold in 2010

Source: INS

Additionally, as shown in Table 3.2-7, poverty rates are higher in rural areas and medium-sized municipalities than in major cities.

 Table 3.2-7
 Incidence of poverty by stratum

		Poverty line			Extreme poverty line			
	2000	2005	2010	2000	2005	2010		
Tunisia	32.4	23.3	15.5	12	7.6	4.6		
Cities	21.5	15.4	9	4.3	2.2	1.3		
Medium-sized towns	32.5	22.1	14	10.5	6.5	2.9		
Non-communal areas	40.4	31.5	22.6	19.1	13.4	9.2		

Source: INS

CHAPTER 4 CURRENT CONDITIONS OF THE SOUTHERN REGION

4.1 Economic Conditions

4.1.1 Sectorial Analysis of Production and Employment

(1) Agricultural Sector

Table 4.1-1 shows the distribution of agricultural land in the Southern Region. Most of the areas are categorized as desert, and cultivable area accounts for 9.1% of total area of the South. As for the distribution of crop areas, areas for arboriculture are largest, followed by those of cereals, forage crops, and vegetables.

	Tataouine	Médenine	Gabès	Kébili	Tozeur	Gafsa	South	Tunisia
Total area (ha)	3,888,900	916,700	716,626	2,245,546	559,290	780,775	9,107,837	16,400,000
1-Total agricultural area (ha)	1,607,540	832,700	583,400	621,180	325,560	578,700	4,549,080	10,459,240
1-1 Forest	100	4,340	3,100	3,820	1,730	6,140	19,230	666,300
1-2 Desert	1,514,000	597,980	379,300	567,360	310,000	331,460	3,700,100	4,839,500
1-3 Cultivable area	93,440	230,380	201,000	50,000	13,830	241,100	829,750	4,953,440
1-3-1 Cultivated area	10,140	203,910	88,540	23,940	8,370	146,510	481,410	3,930,900
1-3-2 Fallow land	83,300	26,470	112,460	26,060	5,460	94,590	348,340	1,022,540
Cultivable area/total area (%)	2.4	25.1	28.0	2.2	2.5	30.9	9.1	30.2
2- Distribution of crop areas (ha)								
2-1 Cereals	2,280	6,220	820	6,000	0	24,960	40,280	1,243,800
2-2 Forage crops	340	290	7,000	8,350	600	20,930	37,510	436,030
2-3 Legumes	0	830	400	0	0	230	1,460	84,350
2-4 Vegetables	690	1,510	8,120	2,220	1,270	4,500	18,310	155,140
2-5 Arboriculture	43,630	201,800	83,400	23,860	8,360	102,310	463,360	2,244,520
2-6 Industrial crops and others	0	100	470	0	0	50	620	19,240

Table 4.1-1Distribution of agricultural land (ha)

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010

Table 4.1-2 shows current status of irrigated areas in the Southern Region. Most of the irrigable areas have been already developed, and only Tataouine Governorate has more than 20% of a room for further development. Irrigated areas are mainly used for arboriculture.

Table 4.1-2Irrigated areas

	Tataouine	Médenine	Gabès	Kébili	Tozeur	Gafsa	Sud	Tunisie
Irrigable area (ha)	5,310	2,360	14,200	22,980	8,370	17,240	70,460	450,470
Irrigated area (ha)	4,160	2,230	13,280	22,980	8,370	17,040	68,060	364,370
Cultivated and irrigated area (ha)	4,430	2,780	16,690	23,060	8,370	17,090	72,420	404,410
for arboriculture	4,300	1,860	9,060	22,980	8,370	13,400	59,970	187,220
Irrigated area/Irrigable area (%)	78.3	94.5	93.5	100.0	100.0	98.8	96.6	80.9
Cultivated and irrigated area/Irrigable area (%)	83.4	117.8	117.5	100.3	100.0	99.1	102.8	89.8

Source: Résultats de l'enquête sur les périmètres irrigués 2009

Table 4.1-3 shows land ownership situation of the South. Public lands belong to the State and are, as far as farmland is concerned, often originally occupied by colonizers and were nationalized after independence. Collective lands usually have a vocation of extensive rangeland, and are operated jointly by the members of social communities.

(ha)	Private land	Collective land	Public land	Total
Tataouine	-	-	-	-
Médenine	381,233	527,009	8,355	916,597
Gabès	320,284	204,513	16,500	541,297
Kébili	25,499	636,305	28,914	690,718
Tozeur	3,910	9,258	312,893	326,061
Gafsa	42,878	421,947	255,668	720,493

Table 4.1-3	Land	ownership	situation
1000 4.1 5	Lunu	ownersnip	Situation

Source: Commissariat Régional Au Développement Agricole, 2012

The number of farmers and fishermen joining in UTAP is 111,940 in the Southern Region (see Table 4.1-4). From the viewpoint of agricultural products, farmers who produce olive (in Médenine, Gabès, Gafsa) and other arboriculture (in Tataouine, Kébili, Tozeur) are the majority, followed by cereal and forage (see Table 4.1-5). As for livestock breeding, those who breed goat (Médenine, Gabès, Kébili, and Tozeur) and sheep (Tataouine, Gafsa) are the majority (see Table 4.1-6).

Table 4.1-4 Number of farmers and fishermen joining in UTAP (people)

	Tataouine	Médenine	Gabès	Kébili	Tozeur	Gafsa	Total
	6,000	25,300	23,000	30,790	8,050	18,800	111,940
_		10					

Source: UTAP, 2013

Table 4.1-5 Number of farmers by product (agriculture, multiple answer) (people)

	Cereal	Legume	Forage	Vegetable	Industrial crop	Olive	Other arboriculture
Tataouine	4,737	72	194	1,116		5,883	2,011
Médenine	8,561	1,117	53	1,698	71	23,712	3,946
Gabès	7,383	2,110	7,279	4,508	1,272	15,538	9,883
Kébili	1,396	128	10,137	1,197			30,615
Tozeur	45		2,154	2,698			7,662
Gafsa	12,901	1,150	3,933	2,459	3	15,559	8,728

Source: UTAP, 2013

 Table 4.1-6
 Number of farmers by product (livestock breeding, multiple answer) (people)

	Cattle	Sheep	Goat	Camel	Horse	Poultry	Rabbit	Bee
Tataouine	9	4,686	4,240	668	1,110	1,610	35	2
Médenine	188	13,497	14,898	562	2,621	12,845	348	1
Gabès	641	10,226	10,622	179	6,368	6,666	934	300
Kébili	83	17,903	19,849	457	12,627	4,456	677	11
Tozeur	306	2,556	2,691	98	1,589	414	130	14
Gafsa	2,172	9,677	7,929	128	6,144	6,670	327	336

Source: UTAP, 2013

The number of fishermen is shown in Table 4.1-7. 14,538 fishermen in the South account for more than 25% of total fishermen in Tunisia. As for fishing method, fishermen engaged in coastal fishing are the majority.

	Coastal fishing	Trawling	Light fishing	Tuna fishing	Others	Total
Médenine	6,110	24	525	17	3,133	9,809
Gabès	2,139		990		1,600	4,729
Total	8,249	24	1,515	17	4,733	14,538
Tunisia	34,847	6,298	5,891	624	6,428	54,088

 Table 4.1-7
 Number of fishermen by fishing method (people)

Source: Ministry of Agriculture, General direction of fisheries and aquaculture, 2010

(2) Manufacturing Sector

Table 4.1-8 depicts the number of enterprises by scale (number of employees) and by governorate in manufacturing sector in 2011. It shows that most of the enterprises in the South do not hire any employee (58,586 out of 66,126). Also, the number of enterprises with more than 10 employees is quite small number (598 out of 66,126). One can also see the relative concentration of the location of enterprises in and Gabès and Médenine within the South.

	•••			C			
Number of employees	0	1-2	3-5	6-9	10-49	<50	Total
GABÈS	13,982	1,081	335	135	153	37	15,723
MÉDNINE	17,899	2,122	554	193	171	54	20,993
TATAOUINE	4,789	334	82	24	11	4	5,244
GAFSA	10,323	744	211	80	80	16	11,454
TOZEUR	5,024	241	91	26	29	5	5,416
KÉBILI	6,839	300	84	35	30	8	7,296
South Total	58,856	4,822	1,357	493	474	124	66,126
Tunisia Total	522,960	46,196	15,693	6,352	8,539	2,482	602,222

Table 4.1-8Number of enterprises by scale (number of employees) and
by governorate in manufacturing sector in 2012

Source: INS

Table 4.1-9 and Table 4.1-10 depict the number of enterprises and employees by sector and by governorate in manufacturing sector in 2012 respectively. In terms of the number of enterprises, food processing sector constitute significant portion (44% of total enterprises). In terms of the number of employees, food processing sector still represents the largest portion even though its percentage is lower (33%) than at in the number of enterprises. One can notice the relative concentration of the manufacturing sector in Gabès, which draws about 40% of the total employees in the manufacturing sector such as concentration of food processing sector in Gabès, Médenine, and Tozeur, chemical sector in Gabès and Gafsa, and textile industry in Gabès and Gafsa.

Table 4.1-9	Number of enterprises	by sector and	by governorate in	n manufacturing sector in 2012
-------------	-----------------------	---------------	-------------------	--------------------------------

	Food processing	Construction material	Metal, electric and electronic	Chemical	Textile	Other	Total
Gabès	324	99	187	40	82	279	1,011
Gafsa	29	9	5	7	30	4	84
Kébili	230	22	22	3	25	41	343
Médenine	49	15	8	4	16	6	98
Tataouine	102	45	11	7	19	89	273
Tozeur	126	3	1	3	5	7	145
Total	860	193	234	64	177	420	1,954

Source: Sud en chiffres 2012, ODS

	Food processing	Construction material	Metal, electric and electronic	Chemical	Textile	Other	Total
Gabès	2,707	2,135	1,816	2,979	1,822	986	12,445
Gafsa	626	157	1,210	1,284	1,921	209	5,407
Kébili	1,355	343	104	17	165	189	2,173
Médenine	2,082	784	130	108	836	157	4,097
Tataouine	519	576	37	36	310	205	1,683
Tozeur	3,639	15	6	16	500	20	4,196
Total	10,928	4,010	3,303	4,440	5,554	1,609	30,001

Table 4.1-10 Number of employees by sector and by governorate in manufacturing sector in 2012

Source: Sud en chiffres 2012, ODS

Table 4.1-11 depicts the change in number of employees by sector in the South between 2008 and 2012. One can see the significance increase in employees in chemical and food processing sectors, whereas the number of employees had decreased in textile sector during this period.

 Table 4.1-11
 Change in number of employees by sector in the South between 2008 and 2012

Sector	Food processing	Constructio n material	Metal, electric and electronic	Chemical	Textile	Woodwork and furniture	Other	Total
Change in the number of employees	998	14	455	1,288	-716	72	-392	1,719

Source: Sud en chiffres 2012, ODS

Table 4.1-12 shows the number and the areas of industrial zones in the South. One can see that there is regional discrepancy in the available areas of industrial zones. Also, the areas in the industrial zones which are utilized are only some parts of total available areas, indicating there are some rooms for attracting firms into these industrial zones.

	Number of industrial zone	Total area (ha)	Area equipped with infrastructure (ha) (a)	Area used (ha) (b)	% of area used (a/b)	Total number of lot	Number of lot exploited
Tataouine	1	5.0	5.0	3.2	64%	29	29
Médenine	2	63.0	11.0	3.6	33%	165	15
Gabès	1	828.0	265.0	182.0	69%	150	80
Kébili	8	140.9	65.3	30.5	47%	99	93
Tozeur	11	104.7	-	27.5		212	44
Gafsa	10	247.5	-	85.5		133	28
Sud	33	1,389.1	346.3	332.3		788	289

Table 4.1-12Industrial zones in the Southern region in 2012

Source: Source: Sud en chiffres 2012, ODS

(3) Service Sector

Table 4.1-13 describes the number of employees by sector and governorate in 2012. It shows that retail trade sector draw significant number of workforce. Also, transportation and communication sector draws a fair number of workforce. Further, one can see the regional characteristics in the location of specific sector such as concentration of wholesale and retail trades in Gabès and Médenine, hotels and restaurants in Médenine.

	Car repair and sales	Wholesale trade	Retail trade	Hotels and restaurants	Transpor- tation and communi- cations	Financial services	Education, health and social work	Other services	Total
Gabès	1,210	1,537	6,033	1,078	3,727	46	880	3,788	18,299
Médenine	1,566	1,632	8,950	6,432	4,456	170	1,393	4,468	29,068
Tataouine	369	339	2,317	302	735	14	178	582	4,836
Gafsa	583	706	4,974	919	2,827	38	655	5,219	15,922
Tozeur	247	329	2,047	542	1,095	9	236	803	5,307
Kebili	415	440	2,968	517	1,615	8	269	698	6,929
TOTAL	4,389	4,983	27,290	9,790	14,454	284	3,611	15,558	80,360

 Table 4.1-13
 Number of employees by sector and governorate in 2012

Source: INS

Table 4.1-14 depicts the change in number of employees by sector in the South between 2008 and 2012. One can see the significance increase in employees in transportation and communications sectors, whereas the number of employees had decreased in retail trade and hotels and restaurants sector during this period.

Table 4.1-14Change in number of employees by sector in the South between 2008 and 2012

Car repair and sales	Wholesale trade	Retail trade	Hotels and restaurants	Transportation and communications	Financial services	Education, health and social work	Other services	Total
249	659	-108	-1,124	2,090	62	624	391	80,360

Source: INS

4.1.2 Investments in the Southern Region

(1) Investment potentials of the south regions

(a) **Resources**¹

The south of Tunisia has rich natural resources and human capitals that comprise fundamental assets to consolidate its productive foundations for a wide array of economic activities, including agriculture (i.e. agriculture, fishery, and livestock), manufacturing, mining, and processing industries, and tourism.

In order to capitalize on these assets, the public sector invests in strengthening relevant knowledge and technology application to industry and business development (i.e. IRA, higher education institutions, technopoles), as well as in improving the transportation (mainly road and port) and economic infrastructure (industry zones, free economic zones, business incubator centres, and cyber parks, etc.). It is expected that such efforts by the government would contribute to enhance the attractiveness of the south as investment destination and bolster the private sector investments.

(b) Potential investment opportunities identified by the government

The ODS sheds light on following areas as potential investment opportunities that the south regions can offer.

- > Agriculture
 - 1) Farming with the usage of geothermal technology
 - 2) Organic farming (olive oil, dates, fruits, cow milk)

¹ See more details of resources in the section of the sector analysis of the report.

- 3) Cultivation and commercialization of high value added products (pre-season tree fruits, medicinal and aromatic plants, seaweed)
- 4) Livestock production (camel, sheep, duck, turkey, ostrich, rabbits)
- 5) Intensive and semi-intensive aquaculture (loup, dorado, tilapia), crustace and bivalve mollusk
- > Industry
 - 1) Value addition to primary materials and substances available in the region (gypsum, marble, clay, etc.)
 - 2) Plastic and carton industries
 - 3) ICT
- > Service
 - 1) Services in general and service specifically for innovative industries
 - 2) Tourism (congress tourism, medical tourism, cultural and sports tourisms).

(2) Regional Development Investment Incentives

The official investment framework (Investment Incentives Code) offers various benefits of different extent to investors according to the priority level of locations where an investment project takes place. The principal idea of this approach is to address the issue of investment discrepancies across the regions within the country, by attaching more benefits to the less developed and disadvantaged areas and thereby enhancing their attractiveness as investment destinations.

The classification of priority level is defined at delegation level, and is divided into three categories: the First Group, the Second Group, and the Priority Zone. Most parts of the south regions belong to the Priority Zone, where the most preferential financial and fiscal benefits are granted.

The general and sector-specific incentives are summarized in Table 4.1-15 (standard set). Table 4.1-16, Table 4.1-17 and Table 4.1-18 respectively describes the incentives applicable to Agriculture (Table 4.1-16), the industries, handicrafts, and certain service activities of at least 10 employees (Table 4.1-17), and Tourism (Table 4.1-18).

Incentives	First Group	Second Group	Priority Zone
Full tax exemption on reinvented profits and income. Deduction from the tax base for individual or corporate tax of income or profits on investments.	100% for the first 5 years dating from effective start up of activities.	100% for the first 10 years dating from effective start up of activities.	100% for the first 10 years and up to 50% of such income for the next 10 years.
Government subsidy on the employer's contribution to the legally-constituted social security system as part of the wage package for Tunisian staff financed by investments.	100% during the first 5 years.	100% during the first 5 years, then partial (80-20%) for an additional period of 5 years.	100% during the first 10 years.
Tax exemption without time limit for the contribution to the housing development fund in favor of employees (FOPROLOS) and TFP.	not applicable	applicable	applicable
Possible participation of the Government in infrastructure expenses.	25% of expenditure	75% of expenditure	85% of expenditure

 Table 4.1-15
 General set of incentives by group category

Source: elaboration based on FIPA information

Benefits	Southern regions	Other regions
Full tax exemption on reinvested profits and income. Full tax exemption for the 10 first years of operation. VAT suspended on imported capital goods and that are not locally produced. The government may take part in infrastructure expenses to develop areas meant for fish farming and for cultivations using geothermal water. 7% bonus on investment value.	All	All
Additional bonus of 8% of the investment value.	Gabès, Gafsa, Medénine, Kébili, Tataouine and Tozeur. This premium can go as high as 25% for areas in Gafsa in the process of converting from mining to other activities.	None
Additional bonus of 25% on investment value for fishing projects in the north coastline ports from Bizerte to Tabarka.	None	North coastline ports from Bizerte to Tabarka.

Table 4.1-16	Investment benefits for Agriculture Sector
	U

Source: elaboration based on FIPA information

Table 4.1-17 Incentive scheme for Industries, handicrafts, certain service activities

(at least 10 employees)

	Southern regions	Other regions
First Group		
8% of the investment cost including the working capital within 10% of the project cost. The premium value does not exceed 500,000 dinars.	None	Béja (Medjez el Bab) Sfax (Agareb, Djebeniana, El Amra, El Hancha, El Ghraiba, Skihira) Sousse (Sidi El Hani) Zaghouan (Zaghouan, Bir M'cherga)
15% of the investment cost including the working capital within 10% of the project cost. The premium value not exceeding 1 million dinars.	Gabès (Mareth) Médenine (Médenine nord, Médenine sud, Sidi Maklouf, Ben Guardane)	Béja (Béja nord, Béja sud, Testour, Teboursouk, Goubellat, Tibar), Bizerte (Djoumine, Ghezala), Kairouan (Kairouan nord, Kairouan sud, Hajeb el Ayoun, Echebika, Sbikha, Haffouz, Nasralla, Bouhajla, Cherarda), Mahdia (Ouled Chamekh, Hébira, Essouassi, Chorbane), Sfax (Bir Ali ben Khélifa, Menzel Chaker), Sidi Bouzid (Sidi BOuzid Ouest, Sidi Bouzid Est, Mezzouna, Regueb, Ouled Haffouz), Siliana (Bou Arada, Gaâfour, El Krib, El Aroussa), Zaghouan (Ez-Zriba, El Fahs, Saouaf)
Priority Zones		
25% of the investment cost including the working capital within 10% of the project cost. The premium value not exceeding 1.5 million dinars.	Gabès (Old Matmata, New Matmata, El Hamma, Menzel el Habib) Gafsa (all delegations) Kébili (all delegations) Médenine (Médenine nord, Médenine sud, Sid Maklouf, Ben Guardane, Beni Khedeche) Tataouine (all delegations) Tozeur (all delegations)	Béja (Nefza, Amdoun, Testour, Teboursouk, Goubellat, Tibar), Bizarte (Djoumine, Sejnane, Ghezala), Jendouba (all delegations), Kairouan (El Ala, Hajeb el Ayoun, Echebika, Sbikha, Haffouz, Narallah, Ouelatia, Bouhajla, Cherarda), Kasserine (all delegations), Le Kef (all delegations), Mahdia (Ouled Chamekh, Hebira, Essouassi, Chorbane), Sfax (El Chraiba, El Amra, Agareb, Djebeniana, Bir Ali ben Khelifa, Skihira, Kerkennah), Sidi Bouzid (all delegations), Siliana (all delegations), Sousse (Sidi el Hani, Zaghouan (Ez-Zriba, Ennadhour, Saouaf).

Source: elaboration based on FIPA information

	Southern regions	Other regions
Saharan Tourism		
	Gabès (El Hamma, Menzel Habib) Tozeur	
A premium of 8% for lodging,	Kébili Tataguing (Ramada Dhahiha)	Zaghouan (Zaghouan, El Fahs, Bir
entertainment facinities, and spas	Gafsa (Gafsa nord, Sidi aich, Ksar, Gafsa sud, Guetar, Belkhir, Snad)	M cherga)
Mountain Tourism		
A premium of 8% for lodging, entertainment facilities, and spas	Tataouine (Bir Iahmar, Tataouine nord, Tataouine sud, Ghomrassen, Smar) Médenine (Beni Khedeche) Gabès (New Matmata, Old Matmata)	None
Tourism along the northern coast		
A premium of 8% for lodging, entertainment facilities, and spas	None	Jendouba (Tabarka, Ain Drahem) Beja (Nefza)
Spa Tourism		
A premium of 8% for lodging, entertainment facilities, and spas	None	Zaghouan (Zaghouan, Bir M'charga, Ez-Zriba) El Kef (Western Kef - Hammam Mellègue)
Ecotourism		
25% premium available for projects in areas being reconverted from mining activities.	Gafsa (Om Ilaâres, Métlaoui of redeyef and M'dhilla)	None

Table 4.1-18	Investment scheme for Tourism Sector

Source: elaboration based on FIPA information

(3) Foreign investments²

Today, very limited scale of foreign investments prevail in south regions. The share of the six governorates combined in the total amount reaches merely 3%; both in terms of number of companies invested and of number of employment generated (Table 4.1-19).

Since the Foreign Investment Promotion Agency (FIPA), the principal public agency in charge of investment promotion targeting foreign capital, focuses on the overall inflow of foreign investments in Tunisia, it does not have a separate set of promotion strategy to favour investments in less developed regions³

	Number of companies	Number of employment
Médenine	48	4,012
Gabès	20	1,910
Tataouine	1	18
Tozeur	18	1,384
Gafsa	9	2,122
Kébili	6	230
National total	3,006	329,017

 Table 4.1-19
 Foreign investments in south regions 2012 (excluding energy sector)

Source: Elaboration based on FIPA data

² Excluding bilateral and multilateral grants and loans.

³ Interview with FIPA.

(4) **Recent investment trends**⁴

During the period of 2010 to 2012, little coherency is observed in the investment performances across six governorates or across industries (only agriculture and non-agricultural industry data available in time series).

Gabès has the largest sum overall, with increasing amount of investments in the agriculture sector, while suffering a sharp decline from 2010 to 2011 in the industry sector. In 2010, the investments in industry was over four times of that of agriculture, but the amount in the agriculture surpassed that of the industry by approximately 3.64 million dinars in 2012.

Tozeur shows an upward trends albeit slight decline in both sectors in 2011. It received the second largest total investment amounts for industry in 2012, staying just behind Gàbes.

Médenine has the second largest investment in agriculture in 2012 after Gabès⁵, and maintains relatively large and stable amount of investments in industry over the last three years.

Tataouine has comparable investment values with Tozeur of agriculture. Though its investments in industry have been severely declining, representing the largest change observed during the period.

Kébili also receives relatively large sum of investments, but the amounts are declining in the agriculture and showing considerable fluctuation in industry.

Gafsa does not dispose data of "realized" agricultural investments, but the investment amount of the "approved" projects are increasing over the years, nearly doubling in three years. Its investments in industry have significantly decreased.

As for the investments made by the National Solidarity Bank (BTS), the amounts remained similar between 2010 and 2011 with a few exceptions. Tataouine, Kébili, and Tozeur suffered a nearly 50% cut in the agriculture investment, and Tataouine also had a sharp decline in small business investment. On the contrary, Kébili had substantial increases in investments in small business and handicraft. Although the available data is limited, the BTS's investment scale seem to have raised considerably from 2011 to 2012, excepting for the case of Tozeur.

Agriculture	_			Industry				
	2010	2011	2012		2010	2011	2012	
Gabès	18,638	27,743	33,414	Gabès	80,557	29,580	29,670	
Médenine	n.a.	n.a.	5,412	Médenine	9,928	6,964	9,423	
Tataouine	1,778	1,490	1,451	Tataouine	75,978	9,683	3,502	
Kébili	5,424	4,081	3,325	Kébili	2,455	22,229	8,044	
Tozeur	1,174	998	1,414	Tozeur	3,875	3,000	15,543	
Gafsa	n.a.	n.a.	n.a.	Gafsa	18,361	16,524	3,942	

Table 4.1-20 Investment amount of executed projects (in thousand dinars)

Source: Elaboration based on data available in Governorate en chiffres 2010, 2011, and 2012.

⁴ Further analysis of the trends is expected upon availability of more detailed data.

⁵ The data of "executed" investments are not available for 2010 nor 2011 in Médenine.

BTS	Agriculture			Small business			
	2010	2011	2012	2010	2011	2012	
Gabès	1,134	1,134	n.a	1,176	1,158	n.a	
Médenine	462	462	n.a	1,567	1,567	n.a	
Tataouine	149	75	n.a	703	475	n.a	
Kébili	454	231	1,376	908	1,553	8,623	
Tozeur	1,045	469	125	916	1,088	704	
Gafsa	n.a	n.a.	9,184	n.a	n.a.	14,592	
	Services			Handicraft			
	2010	2011	2012	2010	2011	2012	
Gabès	1,805	1,805	n.a	180	180	n.a.	
Médenine	3,490	3,490	n.a	291	291	n.a	
Tataouine	1,209	1,388	n.a	48	32	n.a	
Kébili	1,208	1,993	10,764	175	467	1,117	
Tozeur	1,627	1,552	920	99	146	194	
Gafsa	n.a	n.a.	30,375	n.a	n.a.	1,676	

 Table 4.1-21
 Investments by BTS (in thousand dinars)

Source: Elaboration based on data available in Governorate en chiffres 2010, 2011, and 2012

(5) Investment of year 2012 and ahead⁶

(a) Gabès

Agriculture. A total of 230 projects were carried out with the investment amount of 33.4 million dinars, generating 288 employments. In addition, 183 projects (15.9 million dinars; 143 jobs) were approved, and 203 projects (28.9 million dinars; 279 jobs) entered the evaluation phase.

Concerning the investments occurred in 2012, the largest share went to the delegation of El Hamma (78%). Five other delegations (Menzel Habib, Métouia, New



Matmata, Mareth, and Gabès Sud) shared the rest, with a comparable level of investments, weighing from 3.0% to 4.5% of the total.

Approximately 98% of the investments went to "agriculture" activities. The average project cost of "agriculture" was about 160,000 dinars. The "agriculture services" and "fishery and aquaculture" received the investments of 488,000 dinars (17 projects) and 93,000 dinars (8 projects) respectively.

Industrial Projects. A total of 134 projects, with the cost of 29.6 million dinars were carried out in 2012, about 60% of which took place in the delegation of Gabès Médina (17.6 million dinars). Gabès Sud and Métouia also received 27 projects (4.4 million dinars) and 15 projects (2.6 million dinars) each.

Excluding the "service" (96 projects; 22.04 million dinars) segment, "chemical industry" (15 projects; 3.12 million dinars) and "agri-food industry" (12 projects; 1.39 million dinars) received the largest investments. "Textile and clothing" and "mechanic and metallurgical engineering"

⁶ The maps used in this section are retrieved from FIPA website.

industries had small scale investments, but had bigger impacts in terms of employment generation. The first had one investment project of value equivalent to 1 million dinars, and generating 41 employment; and the latter with 3 projects, costing 1.07 million dinars, generating 41 employments. Judging from the composition of the projects which went under study phase, the dominant two industries (i.e. "chemical" and "agri-food") expect to maintain substantial investments in the near future. Besides those, investments in "construction materials" industry are expected to increase significantly.

Handicraft. There are 1,777 artisans registered in the National Handicraft Office (ONAT) in Gabès. In 2012, the sector financed a total of 13 projects, costing 135,868 dinars, generating 33 employments. About 43.2% of the investments went to Gabès Sud, 22% to Mareth, 18% to Gabès Médina, 8% to El Hamma, and about 4% to New Matmata and Gabès Ouest respectively.

(b) Médenine

Agriculture. A total of 217 projects were carried out with the investment amount of 5.4 million dinars, generating 141 employments. In addition, 95 projects (9.0 million dinars; 165 jobs) were approved, and 195 projects (18.5 million dinars; 294 jobs) entered the evaluation phase.

Concerning the investments which took place in 2012, the largest share went to the delegation of Zarzis (40.3%), but Ben Guerdane (21%) and Médenine Sud



(15%) also received substantial investments. These three delegations also have the largest shares (jointly 69%) of the approved investment amounts. At the same time, an increasing number of projects (or in terms of investments amount) are under study phase in other delegations including Médenine Nord, Beni Khedache, and Sidi Maklouf.

Approximately 69% of the investments was directed to "agriculture". The average project cost of "agriculture" was about 20,548 dinars. The "agriculture services" and "fishery and aquaculture" received the investments of 0.83 million dinars (21 projects) and 0.85 million dinars (12 projects) respectively.

Industrial Projects. There was a total of 18 projects, costing 9.4 million dinars, generating 129 employment. Apart from the "others" category, which weights half of the total investment amount, "agri-food" is the dominant industry, receiving 4.17 million dinars (44%) to execute 7 projects.

"Mechanic and Electric" and "textile, clothing, and shoes" industries also received 2 investment projects each, albeit with different investment scales (the first category 310,000 dinars, and the latter 43,500 dinars), and yet generating the same number of employments (6 each). There was 1 project for "construction materials, ceramic and glass" and for "chemical industry" respectively.

In terms of location, Sidi Maklouf received the largest investment amount (44%), followed by Médenine Nord (21%), and Zarzis (15%).

Handicraft. The sector received 115,400 dinars and 58 projects were executed. Médenine Nord and Médenine Sud had the largest shares, taking over 60% of the total, followed by Sidi Makhlouf with 19%. In addition, FONAPRAM also invested 1.64 million dinars for 63 projects, benefiting 129 employments.

(c) Tataouine

Agriculture. A total of 167 projects were carried out with the investment amount of 1.45 million dinars, generating 116 employments. In addition, 87 projects (7.13 million dinars; 136 jobs) were approved, and 159 projects (12.78 million dinars; 399 jobs) entered the evaluation phase.

As for 2012, all investments in the sector were directed to "agriculture" segment. The largest share of investments went to the delegation of Tataouine Nord (40.3%),



followed by Remada (30 projects and 16.2% of costs), Smâr (19 projects and 14% of costs), and Tataouine Sud (17 projects and 13% of costs). The other three delegations had 17 projects combined. Tataouine Nord and Smâr remain the main investments recipients in the foreseen future.

Industrial Projects. A total of 22 projects were carried out in 2012, with the investment value equivalent to 3.5 million dinars, generating 98 employment. There was no project approval in 2012, but 45 projects entered the study phase.

Tataouine Nord hosted half of the projects (11), followed by Tataouine Sud (6), and Smâr (2). The delegations of Ghomrassen, Dhehiba, and Remada also received 1 project each.

Concerning the sector, "agri-food" attracted the largest number of projects (14) and the amount of investments (2.6 million dinars: 75% of total). Another important sector is "construction materials, ceramic, and glass", and these two sectors remain the leading investment attraction in the governorate.

Handicraft. There were 66 projects with the cost of 85,820 dinars, generating 66 employment. Only three delegations received investments: Tataouine Sud (48% of the cost), followed by Ghomrassen (36%), and Tataouine Nord (Ghomrassen (16%). The FONAPRAM also invested in 22 projects with the amount equivalent to 426,594 dinars.

(d) Kébili

Agriculture. A total of 72 projects were carried out in 2012, with the investment value equivalent to 3.3 million dinars. These investments were divided by two areas: "agriculture" had 30 projects, with the investment of approximately 1.5 million dinars, generating 10 employments; and "agriculture services" had 42 projects, costing about 1.8 million dinars and generating 41 employment.

Gafsa Souk El Ahmed Gabes Kébili Nord Kébili Sud Faouar Algeria Tataouine

In terms of locations, all of six delegations received investments albeit in different scales. The largest share of

investments in value went to Souk Lahed (38%) and Kébili Sud (23%), followed by Douz Sud (17%), Faouar (12%), Kébili Nord (8%), and Douz Nord (3%).

Industrial Projects. Approximately 8.0 million dinars was invested to execute 21 projects in 2012, generating 164 employment. All the projects were destined to the "agri-food" industry except one in "mechanic and electric" industry. Another 43 projects of more diversified profiles (19 in "agri-food", 15 in "construction materials, ceramics and glass", 3 in "textile, clothing and shoes",

2 "mechanic and electric", 1 "chemical", and 3 "others") started feasibility study, with the combined costs of 25.9 million dinars.

In 2012, Douz Nord (3.6 million dinars for 3 projects) and Kébili Nord (2.9 million dinars for 6 projects) had the large shares of the investments. Three other delegations, although in much smaller scale, also received investments as following: Douz Sud (0.65 million for 5 projects), Souk Lahed (0.53 million dinars for 4 projects), and Kébili Sud (0.24 million dinars for 3 projects).

- Handicrafts. The FONAPRAM invested approximately 0.45 million dinars to execute 15 projects, generating 53 employment. The investment by the BTS reached 1.1 million dinars for 460 projects, and generated 607 employment.
- (e) Tozeur
- <u>Agriculture.</u> A total of 64 projects, costing 1.4 million dinars took place. These investment led to a very small number of employment (18) though. Nearly the same number of projects, but with much higher investment costs (27.6 million dinars) underwent study phase. The expected number of employment from the new projects nearly doubles the employment generated by the projects executed in 2012. The investment in Tozeur at large appear to be capital intensive with small impact on employment generation.



All of five delegations in Tozeur received investments. Among them, the delegations of Tozeur (44 projects, 0.82 million dinars; 58.2% of amount) and Nefta (10 projects, 0.33 million dinars; 24% of amount) had the largest shares. The delegations of Tamaghza, Dgueche, and Hazoua altogether hosted 10 projects, which amounted approximately 0.26 million dinars.

Industrial projects. A total of 35 industrial projects took place in three delegations (Dgueche, Tozeur, and Nefta) with the investment amount equivalent to 15.5 million dinars, generating 590 employment. Dgueche had 15 projects, costing 9.39 million dinars, generating 347 employment; Tozeur had 12 projects, costing 3.91 million dinars, generating 158 employment; and Nefta had 8 projects, costing 2.25 million dinars, generating 85 employment.

In Tozeur, good investment opportunities are rarely perceived with exception of the "agri-food" industry. Out of 35 projects carried out in 2012, 30 were "agri-food" (85%), which generated 464 employment. The "textile and clothing" had 1 project of value equivalent to 0.48 million dinars, and generated 70 employment.

Concentration of investments in "agri-food" industry is likely to continue in Tozeur as it took up nearly 65% of the costs of those projects that underwent study phase. However, the profile of projects shows some diversification; there were 1 project of "mechanic an metallurgic" industry, 4 projects of "textile and clothing", 27 projects of "services", and 3 projects in "others" categories. Dgueche and Tozeur carried out the majority of the projects (94 projects out of 107), with Dgueche executing 17.9 million dinars and Tozeur 9.5 million dinars, followed by Nefta with 4.4 million dinars.

Handicraft. The handicraft sector executed a total of 105 investment projects, costing 169,400 dinars, which generated 106 employment. Tozeur had the largest share of the investments both in terms of the number of projects and in the amount (59%), followed by Dgueche (28%). Nefta and Tamaghza also received 18,000 dinars (9 projects) and 5,000 dinars (3 projects) respectively.

Additionally, the FONAPRM financed 59 projects, with the amount of 1.27 million dinars, contributing to generate 107 employment.

(f) Gafsa

Agriculture. There is no data of project execution in Gafsa in 2012. There are 229 projects in pipeline (approved) with the investment amount equivalent to approximately 28.6 million dinars, expecting to generate 440 employments. Additionally, 216 projects entered the study phase.

Concerning the approved projects, Gafsa Nord and Sidi Aïch have the largest shares, followed by Sned, Gafsa Sud, and Oum Laraïes.



Industrial projects. A total of 9 projects, costing 3.94

million dinars took place, and generated 209 employment. Gafsa Sud received the largest share, executing 6 projects with the investment value equivalent to 3.46 million dinars (88% of total), followed by Metlaoui with 1 project costing 0.22 million dinars, and 2 projects in Guetar with 0.26 million dinars.

The projects in pipeline would scale down to some extent, though 83 projects with sizeable investments (77.6 million dinars) underwent study phase.

Service. The service sector in Gafsa attracts a considerable investments, executing a total of 11 projects with the cost of 0.63 million dinars, and generating 60 employment. The service industry prevailed predominantly in Gafsa Sud, where 8 projects, costing 0.56 million dinars, were carried out and created 49 employment.

The prospects of investment opportunities in the service sector is positive across delegations: a total of 142 projects with the investment value equivalent to 42.5 million dinars underwent study in 11 delegations in the governorate. These investments expect to generate 829 employment.

Handicraft. In 2012, the handicraft sector received approximately 1.67 million dinars investments to carry out 533 projects, and generated 940 jobs.

4.1.3 Export

(1) Regional trade data

A comprehensive export data at governorate level is not readily available. The JET is currently seeking for cooperation from the Tunisian authorities to obtain more structured information. Under this circumstance, this section of the report attempts to put together the pieces of information collected so far; therefore the content is limited in scope and in depth at this point.

(2) General context

As mentioned in other sections of this report, south regions of Tunisia is endowed with rich natural resources and reasonable conditions for commercial agriculture. Products derived from these represent

the principal exportable goods from the regions, excluding a few exceptions of textile/apparel and electronic and electric equipment industries of which production capacities have been installed based on different cost drivers.

The south regions are considered to have advantages concerning the trade with Libya and Algeria for the geographic proximity. Ras Ajdir of Médenine governorate is the main crossing point for trade with Libya⁷. Tozeur has two border points with Algeria: Hezoua and Tamaghza⁸. There is a moderate to high expectation to increase exports to Libya, particularly the demand for construction materials such as gypsum and bricks shall grow as the country accelerates its reconstruction efforts .

The most critical issues commonly faced by exporting businesses across different sectors are: (i) the limited processing capacities to export higher value added products; and (ii) the underdeveloped transport and export logistics. Specifically, following problems have been pointed out by business operators as well as by the government officials.

- The underdeveloped port logistics and limited exporting capacity of the Port of Zarzis. While its location is favourable to export principal exportable goods produced in the south regions (ex. canned fish, fish feeds, olive oil, etc.), its function is limited to bulk export of sea salts and crude oil⁹.
- Concerning the olive oil, the absence of bottling and packaging industries in the south regions hampers the value adding potentials of this product. The olive oil produced in Médenine must be transported to the Port of Sfax which locates over 200 km away for export in bulk.
- Dates processing and exporting companies transport their packaged products to Tunis (more than 400 kilometres away) by trucks for exports to various destinations.
- > Port of Gabes is almost exclusively used by major chemical companies.
- High quality marble is a prominent exportable product with identified demands in Europe, but has not been effectively exploited because of lack of processing capacity in the region. The absence of efficient means to transport heavy products to the exporting ports imposes additional constraints to this industry.
- Gypsum powder has various export destinations though the exporting routes are limited. For Libya, Libyan trucks travel to the processing factory in Tunisia to load the products. For other markets, including those of other African countries, the goods must be transported by land to Tunis of which nearest port has the capacity to export to various destinations.

(3) Trade activities of south governorates

<u>Gabès</u>

There are 23 exporting companies of different industries¹⁰: 6 chemical companies (all in Gabès Médina), 7 agri-food companies (2 in Gabès Médina, 5 in El Hamma, 1 in Metoua), 5 textile and apparel companies (2 in Gabès Médina, 3 in Gabès Sud), 1 "construction materials" company (El Hamma), 1 "mechanic and electronic" company (Gabès Médina), and 1 "other" in Gabès Médina.

⁷ About half of the trade with Libya is estimated to be informal; however, the vast majority of the trade takes place through the official border post. The World Bank (2013).Estimating Informal Trade across Tunisia's Land Borders. Policy Research Working Paper 6731.

⁸ The informality of trade with Algeria is estimated to be very high, and the border posts are minimum use with less than 2% of the volume of goods traded informally occur through the official border post.

⁹ Office de la Marine Marchande et des Ports.

¹⁰ The number of off-shore companies in Gabès that is registered in the API database is 19.

Principle exportable merchandise produced by these businesses are:

- □ D.A.P. In 2012, nearly 83% of the total production (354,400 tons) was exported for value equivalent to 223,1 million dinars.
- □ Calcium Phosphate Acid. Nearly 52% of the total production (28,300 tons) was exported in 2012 for 14,6 million dinars.
- □ Phosphoric acid. Nearly 47% of the total production (163,800 tons) was exported for value equivalent to 33,9 million dinars.
- Dates, processed fish and other seafood, processed fruits and vegetables.
- □ Metal cisterns and reservoirs.
- \Box Under garments.
- \Box Animal feeds
- □ Handicrafts.

<u>Médenine</u>

There are 7 exporting companies: 4 agri-food companies (2 in Zarzis and 2 in Ben Guerdane); and 3 textile and apparel companies in Houmt Essouk. There are also handicraft businesses that export goods abroad. The precise number of companies are unknown because they are small size businesses (under 10 workers) and thereby not registered in the API's database.

- □ Olive oil. The product in oil are exported via Port of Sfax to the destination countries in Europe, predominantly to Italy.
- \Box Sea salt.
- □ Processed fish products, including canned tuna, canned sardines, and fish feed. Fish feed are exported mainly to Asia, including countries such as South Korea, Vietnam, and Malaysia.
- □ Handicraft products (pottery, ceramics, and weaved products such as "tissage") represent important exportable goods from Médenine. In 2012, export products originating in Zarzis, Houmt Essouk, Midoun, and Ajim combined generated value equivalent to approximately 1.2 million dinars.

Tataouine

Tataouine has rich mineral resources, including gypsum, marble, and silicium of high quality.

- □ Gypsum. As for exports to Libya, the Libyan trucks come and load the products directly to transport.
- □ Handicraft (product unspecified). Only from the delegation of Bir Lhmar has exporting data. It generated 0.16 million dinars in 2012.

<u>Kébili</u>

Kébili has a total of 12 exporting companies: 1 "construction material, ceramic and glass" company and 11 "agri-food" exporting companies. The "construction material (specifically, stone)" company locates in Kébili Nord. The "agri-food" companies are distributed in 6 in Kébili Nord, 3 in Douz Nord, 1 each in Kébili Sud and in Souk Lahed.

□ Processed/conditioned/packaged dates. Kébili produces more than 65% of the Deglet Nour dates in Tunisia, but its export volume represents only 6% of the total. This due to the

shortage of processing and packaging capacities in the region. The current installed capacity is up to 20 thousand tons¹¹.

Tozeur

There are a total of 46 exporting companies in Tozeur, of textile and apparel and of agri-food businesses. All of five textile and apparel companies locate in the delegation of Dgueche. The agri-food companies are found in delegations of Nefta (14 companies), Dgueche (14 companies), Tozeur (11 companies), and Hazoua (2 companies).

Processed/conditioned/packaged dates. The export of Tozeur represents approximately 22% in terms of volume, and 21% in value¹² of the national export (as of February 2014). The products are transported by land to Tunis to be exported to the destination countries.

	Feb. 2012	Feb. 2013	Feb. 2014
Volume (ton)	6310	5705	6560
Value (million dinars)	19.4	21	26.1
Source: GIF	-		

 Table 4.1-22
 Evolution of date exports of Tozeur

- Apparel (pants, dress, jackets, etc.) and household linen (chair slips), principally exported to the European markets.
- Handicraft (products unspecified). Export by the delegation of Tozeur generated 1.08 million dinars.

Gafsa

Gafsa has a total of 13 export oriented companies, 6 in Gafsa Sud, 3 in Oum Laraies, 2 in Ksar, and 1 in Gafsa Nord and Sned each. The number of off-shore companies registered in the APII database is different, though: There are 26 companies, 22 in textile and apparel, 2 chemicals and chemical products, 1 electronic and electronic equipment, and 1 "other". The Groupe Chimique Tunisien (GCT) is a major processor and exporter of phosphate products.

- Phosphate. The export volume of phosphate has dropped significantly in recent years; from 0.7 million tons in 2010 to 0.09 million tons in 2012. The share of export in the total sales also has diminished from 10% down to $2\%^{13}$ over the same period. Compared to the sales in the domestic market, the export volume is significantly small, corresponding to 1/50 th to 1/10 th of the local sale. The major export markets are (by order of importance) : Poland, Brazil, Indonesia, Malaysia and New Zealand, which jointly account for 90% of the total export in 2010^{14} .
- □ Triple superphosphate. Over 90% of the production of triple superphosphate has been exported each year from 2010 to 2012.
- Dates¹⁵. Gafsa exported 300 tons of dates in 2009 and in 2010. The export volume more than doubled in 2011 (650 tons). The value per ton has gone up nearly 12% from 3,213 dinars to 3,594 dinars over the same period.

¹¹ CRDA.

¹² GIF.

¹³ Governorat de Gafsa en chiffres 2012.

¹⁴ Consultant report. Study of Gafsa Governorate and other areas in Tataouine, Kébili and Tozeur Governorates near the border of Libya and Algeria. ¹⁵ Ibid.

□ Off-season potatoes and lettuce¹⁶. Exports of off-season lettuce has been rapidly growing in volume, but its value per ton has downward trends (Table 4.1-23). On the contrary, the export volume of the off-season potato has declined while its value has been raised. The main export destinations are the Netherlands and Morocco.

Export	2009	2010	2011	2012
Off-season lettuce (ton)	186	446	1215	2370
Lettuce value (1000 TND)	534	829	2481	4319
Lettuce value (dinars / ton)	2871	1859	2042	1853
Off-season potato (ton)	3100	3600	3800	1100
Potato value (1000 TND)	2181	2134	2926	891
Potato value (dinars / ton)	704	593	770	810

 Table 4.1-23
 Export evolution of off-season lettuce and potatoes

Source: Gafsa consultant report and own calculation

- □ Organic fruits and vegetables. There is a Tunisian-French partnership project in Gafsa Nord, which produces organic fruits and vegetables entirely for export. It exported 127 tons of lettuce and 6 tons of organic melon to Europe, especially to the UK (2009). The same project is yielding late season potatoes for European markets, including Germany.
- □ Handicrafts, such as wall tapestry, "margoum", "kilim", and carpets are exported. Data of the export volume and value is not available.

¹⁶ Ibid.

4.2 Social and Demographic Conditions

4.2.1 Demography

(1) **Population**

Table 4.2-1 shows the evolution of population in the South and its governorates, and the Table 4.2-2 shows its historical trend of population. One can see that the population of the South had been nearly doubled between 1975 and 2011 (786.5 million in 1975 to 1,580.ratemillion in 2011). However, its population growth rates have been decreased significantly during the same period. The historical trend of the population growth rates in the South show similar pattern of that of whole Tunisia. Accordingly, the shares of population in the South to Tunisia have stayed around 15% between 1975 and 2011.

	1975	1984	1994	2004	2011
Tataouine	70.2	100.3	135.2	143.5	148.6
Médenine	222.8	295.9	385.6	432.5	465.5
Gabès	186.0	240.0	310.3	342.6	366.9
South west	479.0	636.2	831.1	918.7	981.0
Kébili	69.7	95.4	131.6	143.2	151.4
Tozeur	52.9	67.9	89.0	97.5	106.0
Gafsa	185.0	235.7	307.7	323.7	342.4
South east	307.5	399.0	528.3	564.5	599.8
South	786.5	1,035.3	1,359.3	1,483.1	1,580.8
Tunisia	5,577.3	6,966.2	8,785.7	9,910.9	10,686.7
% of population of the South to Tunisia	14.1%	14.9%	15.5%	15.0%	14.8%

 Table 4.2-1
 Evolution of population in the South (thousands)

Source: Source: Sud en chiffres 2012, ODS

	-		-	
	1975-1984	1984-1994	1994-2004	2004-2011
Tataouine	4.0%	3.4%	0.7%	0.4%
Médenine	3.2%	3.0%	1.3%	0.8%
Gabès	2.9%	2.9%	1.1%	0.8%
South east	3.2%	3.0%	1.1%	0.7%
Kébili	3.5%	3.6%	0.9%	0.7%
Tozeur	2.8%	3.0%	1.0%	0.9%
Gafsa	2.7%	3.0%	0.6%	0.7%
South west	2.9%	3.2%	0.7%	0.7%
South	3.1%	3.1%	1.0%	0.7%
Tunisia	2.5%	2.6%	1.3%	0.9%

 Table 4.2-2
 Average annual population growth rates in the South

Source: Source: Sud en chiffres 2012, ODS

Figure 4.2-1 and Figure 4.2-2 depict the population pyramids of the South in 1985 and 2011 respectively. It shows that the population patterns in the South had changed from expansive pyramid in 1985 (which indicates high birth and death rates) to constrictive pyramid in 2011 (which indicates low birth and death rates).

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(2) Spatial distribution of the population

The population of the Southern region of Tunisia is characterized by a double concentration, on the shores, with 52.3% of the population living on the coastal areas, and in large cities, compared to inland and rural depopulated territories.

The coastal population represents more than half of the total population of the South, distributed in the only governorates with a coastal line, namely 432,500 inhabitants (29.2%) in Médenine governorate and 342,600 inhabitants (23.1%) in Gabès governorate.

The five most populated delegations count 488,100 inhabitants, i.e. 32.7% of the total population of the South. Those are Gabès (137,200 inhabitants, 9.3%), Gafsa (100,100 inhabitants, 6.7%), the island of Djerba (89,100 inhabitants, 6.0%), Tataouine (88,200 inhabitants, 5.9%) and Zarzis (73,500 inhabitants, 4.9%).





(3) Internal migrations

The persistence of a significant migration loss, i.e.-12,211 inhabitants between 1999 and 2004, shows the low attractiveness of the southern region of Tunisia as a whole.

The governorate with the greatest loss is Gafsa with -7,783 inhabitants which is 63.7% of the total deficit. It is followed by almost equal levels in Tataouine (-2,455 which is 20.1%) and in Gabès (-2,367 which is 19.4%).

Kébili and Tozeur governorates are comparatively closer to equilibrium with - 1,716 inhabitants (14.0%) and - 586 inhabitants (4.8%) respectively, while Médenine is the only governorate to present an attractiveness with +2,696 inhabitants.

It should be noted that even in the deficit governorates, the major urban centres have, almost everywhere, a net positive migration.



Figure 4.2-4 Net migrations 1999-2004

4.2.2 Poverty and inequality

Table 4.2-3 depicts the trend in percentage of household under poverty and extreme poverty lines by geographical region and Figure 4.2-5 and Figure 4.2-6 are graphical representations of them. For the southern regions, poverty and extreme poverty have been somewhat higher than national average but are still lower than North-West and Central-West. Within the Southern region, both the poverty and extreme poverty rates have been higher for South-West than South-East.

	Poverty line			Extreme poverty line		
	2000	2005	2010	2000	2005	2010
Greater Tunis	21%	14.6%	9.1%	4.3%	2.3%	1.1%
North- East	32.1%	21.6%	10.3%	10.5%	5.4%	1.8%
North-West	35.3%	26.9%	25.7%	12.1%	8.9%	8.8%
Centre-East	21.4%	12.6%	8%	6.4%	2.6%	1.6%
Centre-West	49.3%	46.5%	32.3%	25.5%	23.2%	14.3%
South-East	44.3%	29%	17.9%	17.5%	9.6%	4.9%
South-West	47.8%	33.2%	21.5%	21.7%	12.1%	6.4%
Tunisia	32.4%	23.3%	15.5%	12%	7.6%	4.6%

 Table 4.2-3
 Percentage of household under poverty and extreme poverty lines

Source: INS



Table 4.2-4 shows the trends of Gini inequality indices by geographical region. One can see that the inequality level in the Southern region have not been different from other regions of Tunisia. The inequality levels in the South had not changed a lot between 2000 and 2010.

	2000	2005	2010
Greater Tunis	0.38	0.40	0.38
Nord East	0.37	0.37	0.29
North-West	0.39	0.36	0.36
Centre-East	0.38	0.37	0.36
Centre-West	0.39	0.42	0.37
South-East	0.38	0.40	0.36
South-West	0.37	0.38	0.36

 Table 4.2-4
 Gini inequality indices by geographical region (in total expenditure)

Source: INS

4.3 Natural conditions

4.3.1 Topography and geomorphology

In order to describe the environmental features of the study area with the greatest consistency possible, governorate-by-governorate description shall be avoided, since the governorate perimeter only reflects an administrative boundary. It is worth relying on the work already undertaken on categorization of the consistent environmental units of Tunisia, and particularly on the approach of Socio-Agro-Ecological Areas (ZSAE) zoning ¹⁷. These are spatial units which have a physical, ecological and socio-economically homogeneity. The delimitation of the ZSAE is based on the natural regions of

¹⁷ Elaborated in 1996 by the Ministry of Environment and Regional Planning (MEAT).

Tunisia¹⁸ developed by Le Houerou in 1959 as well as on the limits proposed by FAO natural resources management project¹⁹ in 1997 and those developed during the National Action Program to Combat Desertification (PAN-LCD) in 2000. Ultimately, it is a zoning that takes into account two main sets of factors responsible for desertification, which is one of the central issue that social and environmental considerations have to undertake in in the region: environmental factors, including weather conditions and other characteristics of vulnerability and fragility and anthropogenic factors, including mainly the exploitation of natural resources (soil, water, forest and pastoral vegetation, wildlife), as well as natural and agro-ecosystems. Among the ten ZSAE that counts Tunisia, the study area of our project fully covers four zones (Chotts, Grand Eastern Erg, Dahar and Matmata and Jeffara-Ouara zones) and partially covers two zones (the southern part of the High Steppe zone and most of the Atlasic Range zone), as shown on the Figure 4.3-1. Each ZSAE covered by the study area is described below regarding its major physical, that is to say topographical and geological characteristics, as shown on the topographical Figure 4.3-2 and geological Figure 4.3-3, as well as by an introduction on agrarian systems or on the issue of desertification. This illustrated²⁰ part will consist in a general introduction to the natural environment of Southern Tunisia, and the occasion to introduce the definition of particular terms, including some in vernacular language, that describes the complexity of this milieu, and that will be usually used further in the parts 4.3.1 to 4.3.4 of this chapter.



Source: Ministry of Environment

Figure 4.3-1 Socio-Agro-Ecological Areas (ZSAE) over Governorate delimitations

Based on geomorphological criteria by the identification and location of mountain systems, hydrographic networks, major depressions and dune systems, and on biotic criteria.

Based on a study of various Tunisian agricultural systems, this zoning system has identified interactions between bio-ecological systems, represented by the natural environment, and socio-cultural system, through practices gained particularly thanks to agricultural techniques.

Photos are taken from Atlas des paysages de la Tunisia, MEAT, 2009



Source: Topography and Cadastral Office





Source: Geological Map 1/50,000



(1) Hautes Steppes zone²¹



Sidi Aïch

Bouhedma

The part concerned by this project, including only the southern portion of the Hautes Steppes ZSAE, administratively covering the Governorate of Gafsa and representing an area of 86,000 ha, can be described as the high alfa steppes sub-area.

The topography of this area is divided up into four main geomorphological units, ie, the Djebels of the mining region near the Algerian border; the basin of Sidi Aich with border mountains to the northeast; the basin and depressions to the southwest; the isolated Djebels and plains to the southeast.

From a geological point of view, limestone and marlstones from Cretaceous and Eocene periods form the bulk of the relief rocks. In the plains and basins, they are partly covered by recent and ongoing alluvial deposits as well as older ones (with limestone and gypsum crusts from Middle and Upper continental Pleistocene).

The vegetation is characterized by soil and bioclimatic conditions. Typical formations of Mediterranean steppe areas and pre-desert steppe areas cover most of the territory.

Agricultural land is divided between pastures, annual crops, arboriculture and some islands of intensive cultivation in irrigated areas. To the west and south, most of the agricultural land is represented by the pasture lands. The few cultivated areas are located in the centre of the Douara depression and on both sides of the mountain ranges that surround the mining region.

(2) Atlasic Range zone



Bortal Fakhet

Depression, or gap of Gafsa

The Atlasic Range zone covers an area of 693,000 ha (8 %) and forms a natural barrier composed by djebel ranges separated by a continuity of alluvial plains from west to east separating steppic Tunisia to Saharan Tunisian. The small eastern part situated administratively in the governorates of Sidi Bouzid and Sfax, is not included in our project. This natural barrier extends from the Algerian border to Sebkhet Ennaouaiel to the east. It is composed of Djebel El Mghatta (800m) and Djebel El Khrouf near the frontier, while the northern boundary of this area is formed by a mountain range consisting of Djebel Bou Ramli (1,156 m), Djebel Ben Younes (901m), Djebel El Ong and Djebel Bou Dwawa (736

²¹ Most of the photos in this section are cited from "Atlas des Paysages de la Tunisie", Mars 2009

m). To the south and beyond the central Djebel Bou Jerra (812m), there is a series of mountains from variable height between 400 and 600m. This series is formed by Djebel Oum El Oggil, Djebel El Halfaya, Djebel El Battoum, Djebel Oum Ali, Djebel Sif El Laham, Djebel Askar, Djebel El Morra and Djebel Charib.

This zone has an agrarian system based on extensive operating modes represented mainly by the grazing pastures, the arboriculture and, above all, the cereal crops in "seguis" (technique of spreading stormwater catchment on foothills). This zone also has continental oasis with palm trees and irrigation systems operated for market gardening, fruit trees and olive trees.

From the geomorphological point of view, the Atlasic Range has a relief which soil is completely eroded, and where even the rock is severely affected. The foothills of Djebels are corroded by gully erosion and invaded by the accumulation of coarse elements. The highly active erosion dynamics contrast with the almost nil pedogenic energy, due to accentuated aridity allowing no alteration of the rock thrust. This soil degradation caused by adverse environmental conditions, namely topography and precipitation [P <150 mm], has often been exacerbated by the overharvesting of the Alfa and of some woody species, and by overgrazing of annual plants grown in favourable microclimate of micro depressions. The transition from the plains to the Djebels is brutal. The glacis, land of slope between 3 and 8%, between the plains and the Djebels are encrusted (calcareous and gypsum crusts). The alluvial plains are formed of loamy materials that receive a very beneficial supplement of runoff water for annual crops (seguis). The lands mostly affected by desertification are the bare slopes of the hills and foothills formed by coarse colluvium.

(3) Chotts zone



Great Chotts

Satellite oasis of Nefzaoua

The zone covers the vast desert land of Chotts and surrounding dunes made of sand accumulated by wind (lunettes) over an area of 1,980,000 ha (23%). Throughout nearly a hundred kilometres from east to west, Chott Jerid extends to Chott el-Fejaj at its eastern edge. Deployed on an east-west axis, the combination of Chotts covers almost the width of the Tunisian south, between the Gulf of Gabes and the Algerian border, both only twenty kilometres distant from the Chotts. The smaller Chotts of el-Gharsa in Tunisia and Melrhir in Algeria complete this group of high-evaporation closed depressions.

From the viewpoint of topography, the area is located in a synclinal basin at the boundary between Tunisian mountain ranges and Saharan platform. Its current elevation is from 15 to 20 meters above sea level. From the viewpoint of geomorphology^{22,} this zone is characterized by halomorphic soils (solochak and solonetz) developing in the great depressions. The surface within Chotts is that of sebkhas: covered with an unvegetated clay crust, a carpet made of varied saline crystallizations and agglomerated sand, bordered on the outskirts by a halophytic steppe (locally called hamdha). An upper

²² Hédi Ben Ouezdou, Les chotts et le pays des oasis, éd. Simpact, Tunis, 1998
shallow aquifer of variable thickness can be observed in winter, but during the long dry period of the summer, it evaporates and changes into a thin film of salt.

From the point of view of agrarian systems, the area is therefore not suitable for agriculture except at the edge of the Chotts where artesian wells, which have allowed the installation of Oasis such as Nefzaoua, may appear. The edge of the Chotts is occupied by halophilic plant communities, and the rear especially by psammophilous vegetation.

(4) Grand Eastern Erg zone



Eastern Erg

This zone is bordered to the north by the foothills of Djebel Tebaga, to the east by the range of Matmata and Dahars through Dekhlet Bir Aouine and to the west by the Tunisian-Algerian border. It covers an area of about 2,800,000 ha (33 %).

The Erg is a space basically formed by sand dunes separated by small sand depressions where grows a very sparse yet well adapted to aridity vegetation. This limited green resource is consumed by wildlife and in certain spots by camel herds.

The winds, over time, sweep the desert sand in stockpiles, and when a sufficient amount of sand is gathered, a series of hills is formed. Three types of dunes exist in the zone of Grand Erg: one type where the windward slope is gradual, steeply leeward; another type is longitudinal dunes, that is to say long and sharp ridges formed parallel to the prevailing wind direction; and finally "complex" dunes. The Saharan winds are also known to "clear" an area of its sand, leaving only the bare rock (hamada) or gravel (reg).

(5) Dahar and Matmata zone



Dahar

Jbels Matmata

This central zone, covering an area of approximately 1,900,000 ha (22 %), includes the Dahar, a plateau inclined from east to west and thrusting under the Oriental Erg along its entire length. It is penetrated by numerous wadis which accumulates mobile sand. Between the valleys, the surface consists of regs with severely eroded soils that have undergone both surface stripping and wind erosion. Due to a strong aridity gradient from north to south, this zone can be divided into two distinct regions

of limestone-marl ground type. The altitude and latitude determine a favourable climate for mountainous Alfa and even some forest communities.

It includes the northern and southern Dahars. Southern Dahars are characterized by soils that are essentially hamadas and regs, on which the possibility of cultivation is null and water runoffs are rare, while vegetation on crusted soil is still relatively dense on northern Dahars. The wadis are functional and runoff water infiltrating at contact points with the Grand Erg determine a line of low-lying accumulation areas cultivated here and there (Garaet Bouflidja to Ksar Ghilène).

The zone is characterized by rocky soils, also called raw mineral soils, considered as lithosols, which are affected by aeolian (deflation) or fluvial (disintegration) processes and can be found considerably in the Dahar and on the slopes of the border mountains (Chareb, Matmata).

This zone is very sparsely inhabited but is a reservoir for annual transhumance with camels and small ruminants which roam the less degraded course, located mainly in the valleys. It is a largely deserted environment. Ergs located further south have a very high edaphic aridity not allowing them to retain water for more than two weeks, which is the period needed for the germination of annual plants.

(6) Jeffara-Ouara zone



This 1,100,000 ha wide zone (13 %) is constituted of the coastal plain bounded by the North East side of Djebel Matmata, by the sea and the plains extending from Medenine to the limits of Ouara and the Tunisian-Libyan border.

It consists in a sequence of nested and encrusted glacis extending from Gabes to Tataouine and ending in the lower plain by a series of small Oasis and a fringe of halophilic steppe. The population density decreases to the border as the possibilities of dry farming become low due to the scarcity of runoff water.

From the perspective of agrarian systems, as Jeffara is the southern coastal plain with the highest rainfall, the land use models are based on the irrigated coastal oasis and traditional irrigation-based schemes based on vegetables and forage crops, runoff water agriculture on the foothills of the back of Matmatas range, arboriculture, mainly olive tree growing on dry land, well established on sandy soils, and especially extensive livestock going on the pastures of the Southern Steppe and of El Ouara dominated by a vegetation based on Rtem and Calligonum.

The encrusted plateaus of the Jeffara have soils with high edaphic aridity. The thinness of the soil and the concentration of coarse material after the departure of fine particles limit its water retention capacity and allow the development of only a very sparse vegetation cover, which can hardly resist overgrazing.

4.3.2 Hydrography and water resources

Water resources are the result of the interference of climatic factors and geomorphological, geological and tectonic conditions that determined the conditions of storage, circulation and distribution of these resources.

Even though the river system of Southern Tunisia is divided in a dense wadis network irrigating the eastern part and an almost total absence of river in the desert west part, the region has the common characteristic of weakness and variability of runoff resource, and thus, to base its hydraulic exploitation almost exclusively on groundwater and in particular on deep fossil aquifers, as shown in Table 4.3-1.

	Surface	e water	Groundwa	iter tables	Fossil a	quifers	тот	AL
	Mm3/year	%	Mm3/year	%	Mm3/year	%	Mm3/year	%
Tataouine	27	2.4	15.14	1.4	58	5.2	73.14	6.5
Medenine	20	1.8	12.67	1.1	74.8	6.7	87.47	7.8
Gabes	44	3.9	23.7	2.1	156.6	14.0	180.3	16.1
South East	91	8.1	51.51	4.6	289.4	25.8	431.91	38.5
Kebili	7.5	0.7	5.49	0.5	238	21.2	243.49	21.7
Tozeur	33.6	3.0	34.08	3.0	174.4	15.6	208.48	18.6
Gafsa	80	7.1	33.3	3.0	82.5	7.4	115.8	10.3
South West	121.1	10.8	72.87	6.5	494.9	44.2	688.87	61.5
TOTAL	212.1	18.9	124.38	11.1	784.3	70.0	1,120.78	100

 Table 4.3-1
 Water resources in Southern Tunisia in 2010

Source DRGE (Ministry of Agriculture), JICA Expert Team

Therefore, and because the issue of water resource is a crucial aspect of the future development of the region, we will pass over the surface water briefly (1) to provide much more detail in the description of underground water (2), namely the one contained in groundwater tables a) and fossil aquifers b).

(1) Surface water

In the western part of the Southern Tunisian, the part of surface water is weak, due to insufficient rainfall, and to the irregularity of its runoff, occurring only at the occasion of major rains.

The eastern part, meanwhile, is crisscrossed by a hydrographic network of seasonal wadis. The latter spoof large quantities of water and solid materials to baseline levels (sea, and garâas sebkhas). Runoff potential is highly variable in this region, and, since the precipitations are characterized by their unpredictability, from 80 to 700 mm annually depending on the year, and rainfall intensity sometimes 220 mm per day, storm water is a great source of erosion. But rainfall remains marketable and valuable resources for agriculture and groundwater recharge.

This is the goal of the traditional infrastructure of rainwater collection, namely Jessours and tanks, built in the mountainous areas where runoff may occur. The oldest Jessours constructions are located in the areas of Matmata, Tamazret, Technine, Zmerten, Béni Khédache, Guermessa, Chénini, Douiret and Ouni. These earthworks allow the development of dryland farming, the struggle against water





erosion and the control over flood in downstream areas, by braking and / or capturing a portion of runoff waters. Also, it allows the fight against wind erosion, groundwater recharge and the realization of catchment areas, designed for the collection of rainwater and runoff water.

(2) Underground water

The total volume of 908.68 Mm3 of Southern Tunisia groundwater resources comes mainly from fossil aquifers in a proportion of 86.3% with a volume of 784.3 Mm3, and from groundwater tables in a proportion of only 13.7% with a volume of 124.38 Mm3/year.

The bulk of groundwater resources comes from the Southwest part with 62.5% and a volume of 567.77 Mm3, while the Southeast accounts for only 37.5% of groundwater resources with a volume of 340 91 Mm3.

	Groundwat	ter tables	Fossil a	quifers	тот	-AL
	Mm3/year	%	Mm3/year	%	Mm3/year	%
Tataouine	15.14	1.7	58	6.4	73.14	8.0
Medenine	12.67	1.4	74.8	8.2	87.47	9.6
Gabes	23.7	2.6	156.6	17.2	180.3	19.8
South East	51.51	5.7	289.4	31.8	340.91	37.5
Kebili	5.49	0.6	238	26.2	243.49	26.8
Tozeur	34.08	3.8	174.4	19.2	208.48	22.9
Gafsa	33.3	3.7	82.5	9.1	115.8	12.7
South West	72.87	8.0	494.9	54.5	567.77	62.5
TOTAL	124.38	13.7	784.3	86.3	908.68	100

Table 4.3-2Underground water resources in Southern Tunisia (2010)

Source DRGE, JICA Expert Team

Groundwater tables 1) and fossil aquifers 2) correspond to different geographic areas, environmental and development issues and shall thus be treated separately.

a) Groundwater tables

Groundwater tables, small geographic units, are largely sought by specific economic activities, and the one near the shore are threatened by the intrusion of seawater. They will be described in two steps, namely (1) the overall evolution of resource and exploitation, and (2) the detailed description of groundwater tables in each governorate.

1) Overall evolution of resource and exploitation of groundwater tables

Considering the total volume of underground water, shallow groundwater tables are second order resources. In the Southern region, they are either alluvial, underflow, or oasian type. The resources are estimated at a volume 124.38 Mm3, approximately 16.6% of the total resource in groundwater tables in the country²³.

²³ DRGE Annuaire des nappes phréatiques 2005 which data has been updated thanks to summary tables of the year 2010, the latest data by the time of our visit.

	1985	1990	1995	2000	2005	2010
Tataouine	8	11.5	13.1	15.1	15.14	15.14
Medenine	12	12.5	12.5	12.7	12.67	12.67
Gabes	15.1	24.3	24.2	23.7	23.7	23.7
South East Total	35.1	48.3	49.8	51.5	51.51	51.51
Kebili	4.1	4.8	5.5	5.5	5.49	5.49
Tozeur	8.4	19.6	22.2	33.6	33.58	34.08
Gafsa	19.6	24.7	24.7	24.7	33.3	33.3
South West Total	32.1	49.1	52.4	63.8	72.37	72.87
TOTAL	67.2	97.4	102.2	115.3	123.88	124.38

Table 4.3-3Evolution of Groundwater tables resources in Southern Tunisia during 1985-2010 (Mm3)

Source DRGE

Table 4.3-4 Evolution of Groundwater tables exploitation in Southern Tunisia during 1985-2010 (Mm3)

		1985	1990	1995	2000	2005	2010
South	Exploitation (Mm3)	28	36	46	45	49	47
Eact	Total wells	6,352	9,248	10,494	11,039	11,205	11,224
Lasi	Equipped wells	1,940	3,481	5,191	6,371	7,324	7,664
South	Exploitation (Mm3)	33	55	66	67	67	71
West	Total wells	2,908	6,866	7,567	8,316	9,653	10,704
west	Equipped wells	1,286	4,212	5,471	5,901	6,960	8,045
South	Exploitation (Mm3)	60	91	112	112	116	118
Total	Total wells	9,260	16,114	18,061	19,355	20,858	21,928
TOLAI	Equipped wells	3,226	7,693	10,662	12,272	14,284	15,709

Source DRGE



Source JICA ExpertTeam based on DRGE data

Figure 4.3-5 Map of resource of groundwater tables



Source JICA Expert Team based on DRGE data



2) Detailed description of groundwater tables in each governorate

Southern Tunisia has a total of 57 groundwater tables, 38 of which are under-exploited, 5 are in equilibrium, and 14 are overexploited^{24.}

	Gro	oundw	ater ta	ble	Dry re	s. (g/l)	Resour	Fynl	Avail Rs	Deficit	Expl rate
	Undr	Bala	Over	Total	min	may	Mm3 /v	Mm3 /v	Mm3 /v	Mm3 /an	۲. ۲. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳. ۳.
	expl.	nced	expl.	TUtai	111111	шал	winis ry	winio /y	winis /y	Willio /all	70
Tataouine	8	3	0	11	1.5	13	15.14	9.36	5.88	0.1	62
Medenine	9	1	4	14	2.5	8.5	12.67	12.97	2.08	2.38	102
Gabes	5	0	2	7	1	12	23.7	25.1	4.8	6.2	106
South East	22	4	6	32	1.67	11.17	51.51	47.43	12.76	8.68	90
Kebili	7	0	0	7	0.5	18.8	5.49	0.26	5.23	0	5
Tozeur	2	0	3	5	1	10	34.08	34.62	3.13	3.67	102
Gafsa	7	1	5	13	0.8	14	33.3	35.84	3.63	6.17	108
South West	16	1	8	25	0.77	14.27	72.87	70.72	11.99	9.84	71.67
TOTAL	38	5	14	57	1.22	12.72	124.38	118.15	24.75	18.52	80.83

Table 4.3-5General situation of the exploitation of Groundwater tables of Southern Tunisia (2010)

Source DGRE

2-1) Southeast region

In the Southeast region, the groundwater tables are of either alluvial or underflow type. The resources are estimated at a volume 51.51 Mm3, representing 5.7% of the total resource in groundwater tables in the country

 $^{^{24}}$ Groundwater tables which exploitation rate is less than 90% are considered under-exploited aquifers. Those which exploitation rate exceed 110% are considered overexploited, while those between 90 and 110% are considered as aquifers in equilibrium.

2-1-1) Detailed description of groundwater tables of the governorate of Tataouine

All the groundwater tables of the governorate of Tataouine are located in the northern region of Djefara, occupying the eastern part of the massif Dahar. Their recharge is mainly dependent on the runoff.

	Groundwater table		Num	nber of w	ells	Dry (g	res. /I)	Res.	Expl.	Avail	Deficit	Expl.
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Ghomracen /Mrabtine	83110	61	17	78	2	5	0.4	0.2	0.2		49
2	Oued Tataouine	83120	523	81	604	2	7	1.4	1.4			100
3	Oued Tlalet - El Ferch	83130	375	52	427	1.5	7	1.8	1.72	0.08		96
4	Graguer / Essed	83140	8	8	16	1.5	4	0.88	0.02	0.86		2
5	Plaine Smar	85120	365	24	389	2	13	2.75	2.85		0.1	104
6	Plaine El Ouara	86110	18	23	41	4	10	0.9	0.1	0.8		11
7	Om El Khialet	86120	161	78	239	3	8	1.5	0.42	1.08		28
8	Piemont Oriental de Dahar	86220	348	93	441	1.5	10	2.6	1.97	0.63		76
9	Ain Dekdouk	86230	71	35	106	2	11	2	0.63	1.37		31
10	B.V. Remtha	86240	30	27	57	2.5	10	0.41	0.03	0.38		7
11	11 Underflows Daher 94130			11	12	1.5	10	0.5	0.02	0.48		4
	TOTAL		1,961	449	2,410	1.5	13	15.14	9.36	5.88	0.1	62%

 Table 4.3-6
 Situation of the exploitation of Groundwater tables in the governorate of Tataouine (2010)

Source: DGRE



Source JICA Expert Team based on DRGE data



The review of the state of exploitation of groundwater tables in the governorate indicates that most of the water tables are underexploited, except for three aquifers of Oued Tataouine, Oued Tlalet - El Ferch and Plain Smar.

In the light of this situation and given the potential still available of 5.88 Mm3/year, it is from now recommended by the DGRE to (1) strengthen the efforts to encourage the exploitation of this available potential and (2) continue to limit the additional pumping in three overexploited aquifers.

2-1-2) Detailed description of groundwater tables of the governorate of Medenine

Among the groundwater tables of the governorate of Medenine, we can distinguish, besides the aquifers related to wadis watersheds, some coastal aquifers, namely the 4 aquifers of the island of Jerba, Djorf, Zarzis and Ben Gerdane. The latter, in addition to a hydrogeological configuration that lead to the infiltration of the salty water from the Sebkhas, are characterized by overexploitation, high density of pumping wells, high pumping flow rate and high depth of the drillings that lead to reach the salty water level, which aggravates the situation of homogenization and salinity increase. The two aquifers of the island of Jerba and Djorf have even been classified as restricted area from the second half of the 80s.

Table 4.3-7	Situation of the ex	ploitation of	Groundwater	tables in the	governorate c	of Medenine ((2010)
14010 110 /	bituation of the en	prontation or	oroundination	theored in the	So tornorate o	I INICACIMIC (

	Groundwater table		Num	nber of w	vells	Dry (g	res. /I)	Res.	Expl.	Avail	Deficit	Expl.
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Zeus Oum Zessar (aval)	82110	72	53	125	4	7	0.79	0.27	0.52		34
2	Zeus Oum Zessar (hallouf)	82120	15	31	46	2.5	4.5	0.16	0.06	0.1		38
3	Oum Tamar amont	82210	131	18	149	3	5	0.63	0.5	0.13		79
4	Zarzis	82220	166	160	326	4	7	0.94	0.68	0.26		72
5	Smar Medenine	82230	478	27	505	3	8	1.39	2.41		1.02	173
6	Oum Tamar aval (El Fej)	82240	114	9	123	3.5	7.5	0.47	0.58		0.11	123
7	Djorf	82310	265	195	460	4	7.5	0.91	1.34		0.43	147
8	Sidi Makhlouf	82320	92	34	126	4	8	0.5	0.38	0.12		76
9	Hessi Soltane	83210	19	15	34	3.5	8	0.22	0.07	0.15		52
10	Remel El Maidher	83220	40	4	44	4	8	0.66	0.18	0.48		27
11	Nehil el Melah	83230	38	46	84	4	8	0.18	0.14	0.04		78
12	Bou Hamaed	83250	47	22	69	4.5	7	0.47	0.19	0.28		40
13	lle de Jerba	84110	715	1,606	2,321	2.5	8	3.46	3.61		0.15	104
14	Ben Guerdane	85110	738	319	1,057	5	8.5	1.89	2.56		0.67	135
	TOTAL		2.930	2.539	5.469	2.5	8.5	12.67	12.97	2.08	2.38	102%

Source DGRE



Source JICA Expert Team based on DRGE data

Figure 4.3-8 Location of the groundwater tables of the governorate of Medenine

The main groundwater tables of the governorate of Medenine, totalling 64% of renewable resources, are highly overexploited. Coastal aquifers in particular show a remarkable increase in salinity arising

from the accumulation of several factors. This situation requires (1) to stop any encouragement on the creation and equipping of wells on overexploited groundwater tables and especially on coastal aquifers, (2) to establish protection areas for water tables which presents degradation of its chemical water quality, and (3) to continue the work of conservation of water and soil (CES) to benefit from the contributions to recharge of exceptional floods in the plains of central Jeffara.

2-1-3) Detailed description of groundwater tables of the governorate of Gabes

The largest reserve of renewable water in the governorate of Gabes is the water table of Gabes Sud, with a volume of 9 Mm3/year which provides the 70asis of Teboulbou, Kettana, Zrig, Zerkine, Mareth, Arram and Segui Mareth. It is lodged in alluvial formations and is recharged by rainwater through the wadis of the region during major rainfall events.

Table 4 3-8	Situation of the ex	nloitation of	Groundwater tabl	es in the o	overnorate of	Gabes ((2010)
1000 4.5 0	Dituation of the ex	pronution of	Olound water tubi	$\cos m m c \leq$		Oubes (20107

	Groundwater table		Num	nber of w	ells	Dry (g	res. /I)	Res.	Expl.	Avail	Deficit Mm3	Expl.
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Segui Zograta Menzel Habib	55210	260	38	298	3.5	12	3.4	1.4	2		41
2	Gabes Nord	81110	279	28	307	3	8	3.7	2.2	1.5		59
3	Gabes Sud	81210	1,264	392	1,656	2.5	10	9	11.8		2.8	131
4	Les Matmatas	81230	137	17	154	1	6	1.2	0.7	0.5		58
5	Chareb Soukra Bouloufa	91130	3	27	30	3.5	8	0.5	0.1	0.4		20
6	El Hamma Chenchou	91210	822	59	881	3	7	4.4	7.8		3.4	177
7	El Behaier	91310	8	11	19	3.5	10	1.5	1.1	0.4		73
	TOTAL		2,773	572	3,345	1	12	23.7	25.1	4.8	6.2	1 0 6%

Source DGRE



Source JICA Expert Team based on DRGE data



Even though the majority of groundwater tables of the governorate is in equilibrium between resource and exploitation, the two most important in terms of resource, namely the aquifers of Gabes Sud and El Hamma Chenchou, are both overexploited.

2-2) Southwest region

In the Southwest region, the groundwater tables are of either alluvial or underflow type in the governorate of Gafsa, and of oasis type in the governorates of Tozeur and Kebili. The resources are estimated at a volume 72.87 Mm3, representing 8% of the total resource in groundwater tables in the country

2-2-1) Detailed description of groundwater tables of the governorate of Kebili

The governorate of Kebili includes two types of groundwater tables:

On one hand, oasian groundwater tables, which resources have poor water quality because they are strongly related to the infiltration of irrigation water that leaches salts before reaching the tank. Those resources are used for filling the water deficit of irrigation in the oasis.

On the other hand, underflow or alluvial type groundwater tables, used for livestock watering in the grazing corridors of the Nefzaoua, which are of good quality and which get recharged by mountainous runoff.

Table 4 3-9	Situation of the ex	nloitation of	Groundwater	tables in the	governorate c	f Kehili ((2010)
14010 4.5-9	Situation of the ex	pionation of	Oroundwater	tables in the	governorate c	I KEUIII ((2010)

	Groundwater table		Nun	nber of w	ells	Dry (g	res. /I)	Res.	Expl.	Avail	Deficit	Expl.
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Nefzaoua Septentrionale	93110	18	1	19	1.7	9.3	0.78	0.04	0.74		5
2	Nefzaoua Orientale	93210	17	5	22	0.5	9.9	0.47	0.02	0.45		4
3	Kebili	93220	74	30	104	3.8	16	0.94	0.04	0.9		4
4	Douz	93230	48	30	78	3.3	19	0.95	0.02	0.93		2
5	Nefzaoua Meridionale	93310	3	4	7	5.2	5.4	0.63	0	0.63		0
6	Nefzaoua Occidentale	93320	4	2	6	3	10	0.78	0.09	0.69		12
7	S. Lahad	93340	65	32	97	3.5	17	0.94	0.05	0.89		5
	TOTAL	229	104	333	0.5	19	5.49	0.26	5.23		5%	

Source DGRE



Source JICA Expert Team based on DRGE data



The groundwater tables of Kebili play a secondary role in the economic activity of the region and are all underexploited. Indeed, the high salinity of the water has led to the abandonment of several wells in

the oasis. The drilling of deep wells in the fossil aquifers has been preferred for livestock watering in the grazing corridors.

2-2-2) Detailed description of groundwater tables of the governorate of Tozeur

More than 80% of renewable water resources comes from the water table of Oasis du Djerid. Enclosed in a sandy shallow layer consisting of sands, clayey sands, sandy clays and gypsum, this aquifer is characterized by its thinness, between 10 and 50 m, and by the poor chemical quality of its waters.

 Table 4.3-10
 Situation of the exploitation of Groundwater tables in the governorate of Tozeur (2010)

	Groundwater table			Number of wells			Dry res. (g/l) Res		Expl.	Avail	Deficit	Expl.
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Tamerza	74110	62	11	73	1.5	2.5	0.63	0.8		0.17	127
2	Ain el Kerma	74120	201	15	216	1.5	3	1.1	1.6		0.5	145
3	Mides	74130	6	2	8	1	1.5	0.15	0.12	0.03		80
4	Chott Gharsa Nord	74310	66	20	86	5	8	4.7	1.6	3.1		34
5	Oasis du Djerid	74320	1,755	208	1,963	4.5	10	27.5	30.5		3	111
	TOTAL		2,090	256	2,346	1	10	34.08	34.62	3.13	3.67	102%





Source JICA Expert Team based on DRGE data

Figure 4.3-11 Location of the groundwater tables of the governorate of Tozeur

The majority of groundwater tables in the governorate of Tozeur is from oasian type. The water table of Oasis du Djerid is generally overexploited, especially in the part where it is most sought, namely the area from Jhim in the west to Oued Koucha in the east.

Some water availabilities are offered by the Chott Gharsa Nord aquifer, which exploitation is still low, due to the poor chemical quality of its waters.

It is currently recommended (1) the continuation and the intensification of soil and water conservation (CES) works that enhance recharge of the groundwater tables of Tamerza and Ain el Kerma, (2) the interruption of encouraging new creations of wells in areas where the Oasis du Djerid aquifer showed

signs of overexploitation, and (3) the adaptation of the actions and techniques of water-saving for irrigation.

2-2-3) Detailed description of groundwater tables of the governorate of Gafsa

Geological studies in the Gafsa region has led to outline hydrogeological basins and to identify a total of 13 groundwater tables, including 4 of important resources, 3 of average resources and 6 of low resources 6, and characterized as follows.

T 1 1 4 0 1 1	C'' (1	1	C 1 (. 1 1		C C (2010)
Table 4.3-11	Situation of the ex	ploitation of	Groundwater	tables in the	governorate of	Gafsa (2010)

	Groundwater table		Number of wells		Dry res. (g/l)		Res.	Expl.	Avail	Deficit	Expl.	
No	Name	Code	Equip- ped	Not equip.	Total	min	max	Mm3 /y	Mm3 /y	Mm3 /y	/an	rate %
1	Sened Djebel	54140	4	29	33	1	4	0.2	0.07	0.13		35
2	Garaat Sened-Majoura	54150	174	46	220	0.8	4	1.2	0.95	0.25		79
3	Haoual el Oued	54160	91	47	138	2	6	1	0.4	0.6		40
4	Alim Dakhla	54170	18	51	69	2.5	4	1.3	0.11	1.19		8
5	Bou Omrane-Bou Saad	55020	18	32	50	2	7	0.3	0.12	0.18		40
6	Sidi Mansour	55210	14	90	104	4	10	0.6	0.12	0.48		20
7	Souinia Djebel	71410	4	14	18	4	7	0.2	0.07	0.13		35
8	Gafsa Nord	71520	3,278	705	3,983	0.8	10	12	15.9		3.9	132
9	Oum Laksab	72110	244	52	296	1	2	8.3	7.63	0.67		92
10	Gafsa Sud El Guettar	73220	708	543	1,251	2	6	3.2	4.7		1.5	147
11	Moulares_Redeyef	73310	727	324	1,051	2	10	2.7	3.12		0.42	116
12	Sebseb Hmara	73410	87	78	165	2	7	0.6	0.75		0.15	125
13	Chott Gharsa Nord	74210	359	288	647	3	14	1.7	1.9		0.2	112
	TOTAL		5,726	2,299	8,025	0.8	14	33.3	35.84	3.63	6.17	108%

Source DGRE



Source JICA Expert Team based on DRGE data

Figure 4.3-12 Location of the groundwater tables of the governorate of Gafsa

The review of the state of exploitation of groundwater tables in the governorate indicates that the exploitation is close to the available resources. Meanwhile, the aquifers of Gafsa Sud-El Guettar and Gafsa Nord are subject to exploitation that far exceeds available resources.

Other structures, Alim Dakhka, Haouel El Oued and Gaaret Sned, are underexploited. It is necessary to develop their exploitation by equipping unequipped water points.

The outlet of the Gafsa Nord aquifer in the Ragouba Ras El Kef region showed a significant decrease of the piezometric surface, exceeding 10m in places, which encourages to declare it as a protection area.

b) Fossil aquifers

The deep or fossil aquifers, large geographical entities shared by Algeria, Libya and Tunisia, contain significant water reserves, which are, however, not much renewable. Therefore, they question the sustainability of the development in the region. They will be described in two steps, namely (1) the overall evolution of resource and exploitation, and (2) the detailed description of fossil aquifers in each governorate.

1) Overall evolution of resource and exploitation of fossil aquifers

The most significant fossil aquifers of the Southern Tunisian region are the Complexe Terminal (CT) with 454.15 Mm3, the Djefara with 132.51 Mm3, and the Continental Intercalaire (CI) with 120.8 Mm3, which constitute respectively 58%, 17% and 15% of the fossil water resources. Currently, we note an overexploitation of these mostly fossil and little renewable resources. The resources in this region are estimated at 784.3 Mm3, or about 55% of total fossil water resources in the country $(1,422 \text{ Mm3})^{25}$.

The exploitation of Southern Tunisian fossil aquifers evolved from 799.5 Mm3 in 2009 to 799.2 Mm3 in 2010, recording a slight decrease of 0.3 Mm3. The exploitation is operated through 1,415 water points, including 1,229 pumped wells taking 557.5 Mm3.65 spouting wells debiting 238.5 Mm3 and 21 depression springs sources debiting 3 Mm3.

Table 4.3-12 Evolution of Fossil aquifer resources in Southern Tunisia between 2000 and 2010 (Mm3)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South West	567.9	579.6	590	581.9	577.4	583.3	587.6	597.7	598.4	606.4	601.1
South East	169.9	175	163.8	162	174.4	181	173.6	185.3	197.2	193.1	198.1
TOTAL	737.8	754.6	753.8	743.9	751.8	764.3	761.2	783	795.6	799.5	799.2

Source: DGRE

²⁵ DRGE Annuaire des nappes profondes 2010



Source JICA Expert Team based on DRGE data







Figure 4.3-14 Map of exploitation of fossil aquifers

In Southern Tunisia, the distribution of the exploitation of fossil aquifers by economic sector is as follows:

- Agricultural irrigation: 673.4 Mm3 (84.3 %)
- Drinking water supply: 100.4 Mm3 (12.6 %)
- Industry: 21.7 Mm3 (2.7 %)
- Hotel: 3.8 Mm3 (0.5 %)

Table 4.3-13 Distribution of the exploitation of fossil aquifers of Southern Tunisia

by economic sector (2010)

	Poso	IFC OS	Evolo	itation		Di	stribution of	the exploit	ation by eco	onomic sec	tor	
	IXESUC	lices	LAPIO	nation	Agricultura	l irrigation	Drinking	g water	Indu	ıstry	Но	tel
	Mm3/year	%	Mm3/year	%	Mm3/year	%	Mm3/year	%	Mm3/year	%	Mm3/year	%
Tataouine	58	4.08	17	29.31	8.2	48	5.18	31	3.62	21		
Medenine	74.8	5.26	48.72	65.13	5.54	11.4	41.17	84.5	0.14	0.3	1.87	3.8
Gabes	156.6	11.02	132.38	84.53	99.18	74.92	31.77	24	1.43	1.08		
South East	289.4	20.36	198.1	68.45	112.92	57	78.12	39.44	5.19	2.62	1.87	0.94
Kebili	238	16.74	400.21	168.16	392.09	97.97	6.87	1.72	0.2	0.05	1.05	0.26
Tozeur	174.4	12.27	136.47	78.25	126.03	92	3.47	3	6.13	4	0.84	1
Gafsa	82.5	5.8	64.42	78.08	42.35	65.7	11.94	18.6	10.13	15.7		
South West	494.9	34.81	601.1	121.46	560.47	93.24	22.28	3.71	16.46	2.74	1.89	0.31
TOTAL	784.3	55.17	799.2	101.9	673.4	84.3	100.4	12.6	21.7	2.7	3.8	0.5

Source DGRE



Source JICA Expert Team based on DRGE data



2) Detailed description of fossil aquifers

In order to reflect the complexity of the resource distribution contained in natural entities such as fossil aquifers, a detailed description will be organized in two parts: the first (2-1) will consist in a natural approach "per aquifer" which will focus on the distribution and evolution of the exploitation of each aquifer, while the second (2-2) will consist in a geographical approach "per governorate" which identifies the resources of fossil water in all the governorates of the South.

2-1) Natural approach "per aquifer"

The three major fossil aquifers of Complex Terminal (CT), Continental Intercalaire (CI), and Djeffara overlap several governorates of Southern Tunisia, as shown in Figure 4.3-16 below.



Source: OSS

Figure 4.3-16 Location of major fossil aquifers of Southern Tunisia

The Complexe Terminal (CT) aquifer is essentially exploited in the governorates of Tozeur and Kebili. Its exploitation evolved from 455.80 Mm3 in 2009 to 454.15 Mm3 in 2010. This decrease is primarily located in Chott El Gharsa, Beni Khedeche and Kebili.

The Continental Intercalaire (CT) aquifer is mainly exploited in the governorate of Kebili. Its exploitation evolved from 113.05 Mm3 in 2009 to 120.8 Mm3 in 2010, recording an increase of 7.75 Mm3 especially located in the governorate of Gabes (6.41 Mm3).

The exploitation of the Djeffara aquifer (excluding the exploitation of the Zeuss Koutine aquifer), evolved from 135 Mm3 in 2009 to 132.51 Mm3 in 2010 recording a decline of 2.5 Mm3. This decrease is primarily located in the governorate of Gabes.

Regarding the Zeuss Koutine aquifer shared between the two governorates of Gabes and Medenine, and which is part of the greater aquifer system of the Djeffara, its exploitation in 2010 reached 19.76 Mm3. This exploitation recorded an increase of 2.48 Mm3 compared to 2009.

Ground-	Gover- Entity Code Names		Explo	itation		
water tables	norate	Entity	Code	Indifies	Mm3/year	l/s
	Gafea	Chott Gharsa Nord	74314	CH. EL GHARSA NORD GAFSA	3.2	101.22
	Caisa		Gove	ernorate total	3.2	101.22
		Jérid	74311	COMPLEXE TERMINAL JERID	119.11	3769.22
	Tozeur	Chott Gharsa Nord	74313	C T CHOTT EL GHARSA NORD	3.46	109.5
			Gove	ernorate total	122.57	3,878.72
	Medenine	Dhaher B. Khedeche	83121	CT DE BENI KHEDACHE	0.22	7.02
	Wederinite		Gove	ernorate total	0.22	7.02
Comployo			92122	TURONIEN BIR SOLTANE		
Torminal			92331	C T O HALOUF	0.07	2.23
remina		Nefzaoua	93221	C T BAS EST CHOT DJERID	253.8	8031.75
	Kebili		93231	TURONIEN EST CHOT DJERID		
			93321	C T SUD S-W CHOT DJERID	36.66	1160.19
		R. Maatoug	93331		36.1	1142.51
			Gove	ernorate total	326.63	10,336.68
	Tataouine	Borj el Khadra	96112	C T BORJ EL KHADRA	1.53	48.33
			Gove	ernorate total	1.53	48.33
	TOTAL C	omplexe Terminal			454.15	14,372.00
	Tozour	Jérid	74312	CONT.INTERCALAIRE JERID	10.22	323.31
	Tozeur		Gove	ernorate total	10.22	323.31
	Cabaa	Chott Fedjej	91111	C I CHOTT FEDJEJ	27.77	878.79
	Gabes		Gove	ernorate total	27.77	878.79
	Madanina	Dhaher B. Khedeche	83122	CI DE BENI KHEDACHE	0.4	12.52
	Medernine		Gove	ernorate total	0.4	12.52
			91311	CINEFZAOUA	41.57	1315.56
Continental	Kobili	Nefzaoua	93211	C I EL BHAÏER	27.78	879.02
Intercalaire	Rebill		94111	C I GARAAT BOU FLIDJA	4.23	133.73
			Gove	ernorate total	73.58	2,328.31
			86211	C I PIEDMONT ORIEN.DHAHR	2.87	90.9
	Tataouine	Dhaher	94131	C I PIEDMONT OCCID.DHAHR	0.93	29.54
	rataoanio		96111	C I ERG ORIENTALE	5.03	159.06
			Gove	ernorate total	8.83	279.5
	TOTAL C	120.8	3,822.43			
			81111	OAS.GAB NORD SEN.MAR-GYP	5.84	184.67
			81121	GABES NORD SENO.CALCAIRE	16.78	530.86
		Djellara G.N.	81131	C T S. MIOCENE/CAL SENON	5.19	164.25
			81141	GABES NORD SAB. MIO-PLIO	14.78	467.88
			81221	TURO./CENOMAN GABES SUD	2.69	85
	Cabos	Dioffara G S	81231	SEN INF.(MAR-GYP)GAB SUD	6.31	199.57
	Cabes	Djenara 0.0.	81241	SENON INF. (CALCAIRE)	36.48	1154.33
			91411	SENO.C/OGL.MERT./O.CHIAH	0.22	6.83
		O. Marteba	91221	C T BASSIN SUD TUR-SENON	0.92	29.2
		Hamma Chenchou	91231	C T BAS. SUD SEN.INF.CAL	15	474.57
Djeffara			91241	C I MIOCEN SENON INF.		
			Gove		104.21	3,297.16
			82211		7.66	242.39
			82231		0.41	12.83
		Dieffara	02311		1.84	207.33
	Medenine	Djenara	03211 8/111		1.02	241.02
			86112		0.41	JZ9.30
			99932		0.14	4.44 0.5
			Gove		28.2	805 /7
		ioffara	5076		40.0	4 400
		jenara			132.51	4,193
Zeuss-	Modonine	Zeuss Koutine	81211	ZEUSS-KOUTINE JURASSIQUE	19.76	626.46
Koutine	wederline		Gove	ernorate total	19.76	626.46
	TOTA				707	22.04.2
	IUIA	- FUSSIL AQUIFERS	01 30		121	23,013

Table 4.5-14 Administrative distribution of the exploitation of fossil aquifers in Southern Tunisia (201	Table 4.3-14	Administrative dist	tribution of the ex	ploitation of fossil	aquifers in	Southern 7	Funisia (2	2010)
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Source DRGE

2-2) Geographical approach "per governorate"

2-2-1) Detailed description of fossil aquifers of the governorate of Tataouine

In the governorate of Tataouine, at Borj El Khadra, the exploitation of Complexe Terminal (CT) aquifer during 2010 is estimated at 1.53 Mm3. This exploitation has stagnated compared to 2009. At the Dahar of Tataouine, the withdrawls in the web of the Continental Intercalaire 2010 reached 8.83 Mm3. A decline of 1.26 Mm3 was recorded compared to 2009.

 Table 4.3-15
 Situation of the exploitation of fossil aquifers in the governorate of Tataouine (2010)

NI	Nama	Quala	Mictorial and	Reso	urces	Exploit	. Mm3/y
NO	Name	Code	watersned	l/s	Mm³/y	2009	2010
1	Gres Trias de Tataouine	82212	Golfe Bou Ghrara	190	6.0	3.12	2.95
2	Calcaire Jurassique	83112	O. fessi	100	3.2	0.13	0.10
3	Calcaire Bathonien	83113	O. fessi	120	3.8	2.55	2.77
4	Mio Plio Quater El Ouara	86111	Sebkhat oum Khialat	90	2.8	0.15	0.15
5	Trias Dolimiti.Tataouine	86121	Sebkhat oum Khialat	90	2.8	0.67	0.67
6	CI Piedmont Orien.Dhahr	86211	Garaet el Jaouecha	200	6.3	2.86	2.87
7	CI Piedmont Occid.Dhahr	94131	Dhaher Ksar Ghilène Nord	300	9.5	1.03	0.93
8	CI Erg Orientale	96111	El Borma	400	12.6	6.20	5.03
9	CT Borj El Khadra	96112	El Borma	150	4.7	1.53	1.53
10	Gres du Trias Tat (Inf.)	99932	O. fessi	200	6.3	0.00	0.00
		1.840	58.0	18.24	17.00		

Source: DGRE



Source JICA Expert Team based on DRGE data



2-2-2) Detailed description of fossil aquifers of the governorate of Medenine

In the governorate of Medenine, at Dahar Beni Khedeche, the exploitation of Complexe Terminal aquifer during 2010 was limited to 0.22 Mm3, recording an increase of 0.05 Mm3 compared to 2009. The exploitation of the Continental Intercalaire aquifer in 2010 was limited to 0.40 Mm3. Compared to 2009, a slight increase of 0.06 Mm3 was recorded. Withdrawals at the Djeffara aquifer reached 28.30 Mm3 in 2010. An increase of 1.35 Mm3 was recorded compared to 2009.

 Table 4.3-16
 Situation of the exploitation of fossil aquifers in the governorate of Medenine (2010)

	Nama	Quala	Mictorial and	Reso	urces	Exploit	. Mm3/y
NO	Name	Code	watersned	l/s	Mm ³ /y	2009	2010
1	Zeuss-Koutine Jurassique	81211	Cotière Gabes	350	11.1	17.28	19.76
2	Gres Tria.Sahel Elababsa	82211	Golfe Bou Ghrara	155	4.9	8.25	7.66
3	Pli-Quaternaire Hamila	82231	Golfe Bou Ghrara	53	1.7	0.41	0.41
4	Sable Djorf (Miocene)	82311	Djorf			2.06	1.84
5	Sable de Zarzis (Mioce.)	83211	Sebkhat el Mélah	700	22.1	7.46	0.22
6	Sable de Djerba (Mioce.)	84111	lle de Djerba			11.31	0.40
7	CT Beni Khedache	83121	O. fessi	40	1.3	0.17	7.82
8	CI Beni Khedache	83122	O. fessi	26	0.8	0.34	10.41
9	El Ouara de Medenine	86112	Sebkhat oum Khialat	150	4.7	0.14	0.14
10	Gres Tri Jefara Medenine	99922	Djeffara Nord (El Ababsa)	560	17.7	0.02	0.02
11	Calcaires du Bathonien	99923	O. El Khil	12	0.4	0.00	0.00
12	Calcaires du Jurass.Supe	99924	Daher 6 B2ni Khedeche	16	0.5	0.05	0.04
13	Mpq D'el Hamada	99925	Plaine Hamada (O.Fessi)	100	3.2	0.00	0.00
14	Mp A Olig Beni Guerdane	99926	Plaine Hamada (O.Fessi)	50	1.6	0.00	0.00
15	Senonien Beni Guerdane	99927	Plaine Hamada (O.Fessi)	100	3.2	0.00	0.00
16	Cret Inf Ben Guerdane	99928	Plaine Hamada (O.Fessi)	50	1.6	0.00	0.00
		2,362	74.8	47.49	48.72		





Source JICA Expert Team based on DRGE data



2-2-3) Detailed description of fossil aquifers in the governorate of Gabes

In the governorate of Gabes, in the region of Chott El Fedjej, the exploitation of the Continental Intercalaire aquifer reached 27.77 Mm3 during the year 2010. An increase of 6.41 Mm3 was recorded compared to 2009. The exploitation of the Djeffara aquifer in 2010 reached 104.21 Mm3. It was marked by a sharp decline of 1.44 Mm3 compared to 2009.

Table 4 3-17	Situation of the ex	ploitation of fossil	aquifers in the	governorate of Gabes (2010)
1000 4.5 17	bituation of the ch	pronution of rossin	aquiters in the	Sovernorate of Oubes (2010)

	Norma	Quala	Meterska d	Reso	urces	Exploit	. Mm3/y
NO	Name	Code	watersned	l/s	Mm ³ /y	2009	2010
1	Calc.Cret.Sket Mansour	55211	Sebkat Naouel			0.22	0.26
2	Mio-Pliocene Si Mansour	55221	Sebkat Naouel	22	0.7	0.00	0.00
3	Quaternaire Si Mansour	55321	Sebkat Naouel			0.00	0.00
4	Oas.Senon. M-G Gabes Nord	81111	Cotière Djeffara de Gabès			6.15	5.84
5	Senon.Cal. Gabes Nord	81121	Cotière Djeffara de Gabès	1 600	50.6	15.93	16.78
6	Cts. Mioc./Cal Senon Gabes Nord	81131	Cotière Djeffara de Gabès	1,000	50.6	5.15	5.19
7	Sab. Mio-Plioce Gabes Nord	81141	Cotière Djeffara de Gabès			14.56	14.78
8	Turon./Cenoman Gabes Sud	81221	Cotière Djeffara de Gabès		36.3	2.39	2.69
9	Senon Inf.(M-G) Gabes Sud	81231	Cotière Djeffara de Gabès	1,150		7.05	6.31
10	Senon Inf. (Calc.) Gabes Sud	81241	Cotière Djeffara de Gabès			34.93	36.48
11	CI Chott Fedjej	91111	Chott el Fedjej Sud Est	1,080	34.1	21.36	27.77
12	CT Bassin Sud Tur-Senon (Hc)	91221	Chott el Fedjej Sud Est			0.99	0.92
13	CT Bas. Sud Sen.Inf.Cal (Hc)	91231	Chott el Fedjej Sud Est	900	28.4	18.31	15.0
14	CT Miocen Senon Inf. (Hc)	91241	Chott el Fedjej Sud Est			0.00	0.00
15	CT Seno.C/Ogl.Mert./O.Chiah	91411	Chott el Fedjej Sud Est	13	0.4	0.19	0.22
16	CT Cenoma.Turon./Matmata	92412	Chott el Fedjej Sud Est	190	6.0	0.21	0.14
		4,955	156.6	127.44	132.38		





Source JICA Expert Team based on DRGE data



2-2-4) Detailed description of fossil aquifers in the governorate of Kebili

In the governorate of Kébili, in the region of Nefzaoua and R'jim Maâtoug, the exploitation of Complexe Terminal aquifer during 2010 is estimated at 326.63 Mm3. The illegal exploitation of private wells in the area reached in 194.88 Mm3 the same year. Also, in Nefzaoua, withdrawls made in 2010 in the Continental Intercalaire aquifer reached 73.58 Mm3. Compared to 2009, it increased by 1.18 Mm3.

Table 4.3-18	Situation of the exploitation	of fossil aquifers in the governorate	of Kebili (2010)
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	Name	0	Wetershe d	Reso	urces	Exploit. Mm3/y	
	Name	Code	watersned	l/s	Mm ³ /y	2009	2010
1	Mio.Plioquat.De Segui	75211	Ségui	52	1.6	0.00	0.00
2	CI Nefzaoua	91311	Autres S/S Sud Chott el Fedjej			40.65	41.57
3	CI Hallouf	92111	O. Hallouf			0.00	0.00
4	CI Tarfa	92211	Chott Regoug	000	27.0	0.00	0.00
5	CI Chott Djerid	93111	Sous Secteur Nord Chott Djérid	000	27.0	0.00	0.00
6	CI El Bhaira	93211	Sous Secteur Est Chott Djérid			27.57	27.78
7	CI Sud Et S-W Chot Djer	93311	Sous Secteur Sud Chott Djérid			0.00	0.00
8	Turonien Bir Soltane	92122	O. Hallouf			0.00	0.00
9	CT Tarfa	92221	Chott Regoug			0.00	0.00
10	CT Halouf	92331	O. Hallouf			0.07	0.07
11	CT Chott Djerid	93121	Sous Secteur Nord Chott Djérid	4 500	142.2	0.00	0.00
12	CT Bas Est Chot Djerid	93221	Sous Secteur Est Chott Djérid	4,500	142.2	253.46	253.80
13	Turonien Est Chot Djerid	93231	Sous Secteur Est Chott Djérid			0.00	0.00
14	CT Sud S-W Chot Djerid	93321	Sous Secteur Sud Chott Djérid			36.41	36.66
15	Miocene du Djerid	93131	Sous Secteur Nord Chott Djérid			0.00	0.00
16	CT Rejim Maatoug	Rejim Maatoug 93331 Sous Secteur Sud Chott Djérid 2,000 63.2		63.2	35.73	36.10	
17	Cl Garaat Bou Flidja	94111	Dhaher Ksar Ghilène Nord	100	3.2	4.18	4.23
<u> </u>	TOTAL 7.532 238.0 398.07 400.21						

Source DGRE



Source JICA Expert Team based on DRGE data



2-2-5) Detailed description of fossil aquifers in the governorate of Tozeur

In the governorate of Tozeur, at Chott El Jerid and Chott El Gharsa Nord, the exploitation of Complexe Terminal aquifer during 2010 is estimated at 122.57 million m3. Compared to 2009, there has been a regression of 5.86 Mm3 mainly due to the lower productivity of the majority of drilling, resulting from the continuous decline of the piezometric level and the reduction of efficiency of some obsolete drillings. Also at Jerid, withdrawls of 2010 in the Continental Intercalaire aquifer reached 10.22 million m3. Compared to 2009, there was an increase of 1.02 Mm3.

 Table 4.3-19
 Situation of the exploitation of fossil aquifers in the governorate of Tozeur (2010)

	Nama	Codo	Wetershed	Resources		Exploit. Mm3/y	
	Name	Code	watershed	l/s	Mm³/y	2009	2010
1	Tameghza	73314	Moulares-Rdeyef	120	3.8	3.49	2.86
2	Tameghza Pq	73315	Moulares-Rdeyef	20	0.6	0.02	0.020
3	CT Jerid	74311	Chott el Gharsa aff. Sud	4,500	142.2	122.69	119.11
4	CI Jerid	74312	Chott el Gharsa aff. Sud	550	17.4	9.20	10.22
5	CT Chott El Gharsa Nord	74313	Chott el Gharsa aff. Sud	150	4.7	3.46	3.46
6	Plio - Quaternaire	74315	Chott el Gharsa aff. Sud	150	4.7	0.77	0.80
7	Jerid Eocene	99971	Chott el Gharsa aff. Sud	30	0.9	0.00	0.00
	TOTAL 5.520 174.4 139.63 136.47						136.47



Source JICA Expert Team based on DRGE data

Figure 4.3-21 Location of the fossil aquifers in the governorate of Kebili

2-2-6) Detailed description of fossil aquifers in the governorate of Gafsa

The exploitation of deep groundwater in the governorate of Gafsa in 2010 is estimated at 64.42 million m3 for an estimated 82.5 Mm3/year resources. The remaining resources are up to 18.08 Mm3/year.

The use of 2010 saw a reduction in the volume of pumping 4.25 Mm3en from 68.67 million m3 in 2009 to 64.42 million m3 in 2010. This despite the evolution of the number of holes is increased from 250 in 2009 to 337 in 2010.

TT11 42.00	0	1	1	$f = \int \frac{1}{2} $
Table 4.3-20	Situation of the ex	xploitation of fossi	aquifers in the g	governorate of Gafsa (2010)

N	Name	0	Material and	Reso	urces	Exploit. Mm3/y	
NO	Name	Code	watersned	l/s	Mm ³ /y	2009	2010
1	Sidi Aich	71411	Sous Secteur rive dte O. Sid Aich	25	0.8	0.00	0.00
2	Sidi Aich2	71412	Sous Secteur rive dte O. Sid Aich	-	-	0.21	0.16
3	Gafsa Nord1	71521	Plaine - Abdessadok	1.050	22.2	41.01	37.21
4	Gafsa Nord2	72312	Sous Secteu rive gche	1,000	- 33.Z	0.00	0.00
5	Cretace Sidi Bou Dhiaf	72211	Sous Secteur rive dte O. Sid Aich	5	0.2	0.04	0.04
6	El Guettar	73111	Sebkhat el Guettar	110	3.5	3.38	3.43
7	Ahmed Zarroug	73211	Tronçon Baiech	65 2.1		1.24	1.36
8	Gafsa Sud1	73221	Tronçon Baiech	205	6.5	2.91	3.09
9	Gafsa Sud2	73222	Tronçon Baiech	10	0.3	0.00	0.00
10	Plio-Quaternaire Redeyef	73311	Moulares-Rdeyef	230 7.3		2.83	3.68
11	Miocene Redeyef	73312	Moulares-Rdeyef	565	17.0	14.22	11.94
12	Plioquaternaire	73313	Moulares-Rdeyef	505	17.9	0.00	0.00
13	Djebel Belkhir	73521	Sidi Mansour	50	1.6	0.34	0.08
14	Ch. El Gharsa Nord Gafsa	74314	Chott el Gharsa aff. Sud	200	6.3	2.28	3.20
15	Miocene Sebkhet Naouel	75111	Sebkat Naouel	40	1.3	0.10	0.12
16	Eocene B. Omrane B. Saad	75112	Sebkat Naouel	5	0.2	0.02	0.02
17	Zabbag Sup.Sabket Naouel	75113	Sebkat Naouel	50	1.6	0.09	0.09
	TOTAL 2,610 82.5 68.67 64.42						

Source DGRE



Source JICA Expert Team based on DRGE data



4.3.3 Climate

From a climatic point of view, the South of Tunisia can be classified as subtropical Mediterranean, with a climate characterized by a regular alternation of two seasons that are strongly contrasted, including, a dry and hot summer from June to August, and a winter that is distinguished by its relative mildness from December to February. The shoulder seasons, autumn and spring, between them are transitional periods when it may occur simultaneously, some typical situations of winter or summer. The average temperatures²⁶ range from 12 degrees in winter, to 27 degrees in summer in the Djerba area, and even reach 32 degrees in the desert region of Tozeur.



Source JICA Expert Team based on National Institute of Meteorology





Source JICA Expert Team based on National Institute of Meteorology

Figure 4.3-24 Comparison of average temperatures in Djerba and Tozeur

From a bioclimatic point of view, of the 5 bioclimatic stages that defines Tunisia²⁷, going from the driest to the wettest on the basis of rainfall, the South of the country is characterized by the presence of the two Saharan and arid bioclimatic zones, as shown in Figure 4.3-25.

 ²⁶ Monthly averages calculated on the 1961-1990 period as recommended by the World Meteorological Organization (WMO). National Institute of Meteorology, Tunisian Republic.
 ²⁷ INRE 1975. Carte biodimeting do to Tunisian Leader to the the transformeting of t

 ²⁷ INRF 1975. Carte bioclimatique de la Tunisie selon la classification d'Emberger : étages et variantes (1/1 000 000).
 Ministère de l'Agriculture, République tunisienne.



Source Ministry of Environment



Saharan bioclimate:

The predominance of Saharan, or desert bioclimate in the South and the West, where rainfall is less than 100 mm per year. The number of rainy days is relatively low, but the intensity of rainfall is very high, especially during autumn, which causes erosion, especially on the slopes. It is a region marked by a constant arid, dominated by the Saharan climate processes that result in a water balance deficit and very little variation from one year to another. So it is this situation that was the basis of the development, over the centuries, of the traditional farming system of oases (multilayer crops and windbreaks). There blows hot and dry winds in summer, such as the sirocco, which rush into the large stretches of desert and plains, and, loaded with sand, severely damage crops and growth of pasture species. These winds are also responsible for the displacement of dunes particularly in the governorate of Kébili. Sand encroachment sometimes constitutes an obstacle to traffic, especially during sandstorms. The region has a period of absolute drought of 150 to 180 days. Water scarcity (aridity) or fluctuations in time (drought) affect biological balances.

The amount of sunshine, the sometimes excessive temperatures, and the winds that blow all year round through this vast territory may constitute energy sources to be mobilized and can therefore also be considered as strengths for development.

Arid bioclimate:

An arid zone in the Centre (with chilly winters) and in South-East along the coast of the Gulf of Gabes (with mild winters), where rainfall ranges between 100 and 400 mm per year. It is often considered as a transition zone between the Mediterranean area and the Saharan area. This position is reflected in the alternation between years of predominantly Mediterranean climate and years dominated by a subtropical process.

4.3.4 Pedology, vegetation and land use

The land area of the Southern region in Tunisia, which stretches from the lowlands located to the South of Gafsa mountains to the fringes of the Sahara desert, consists of large morpho-pedological sets where the source rock and maritime or Saharan climate influences determine the (4.3.4.1) different types of soils, (4.3.4.2) vegetation that grows there, as well as (4.3.4.3) the subsequent use made by human populations.

(1) Land resources

The Southern region in Tunisia is characterized by the weakness of its land resources, which are mostly input soils that are very fragile and vulnerable to any form of disturbance. Generally, as evidenced in Figure 4.3-26, 5 major types of typical soils of Southern Tunisia 28 , namely (1) sandy soil, (2) isohumic soil, (3) stony soil, (4) input soil, and (5) halomorphic soil can be identified.



Source: Soil Atlas of Africa



²⁸ Atlas of Tunisian soil, Amor Mtimet MdA, 1999

Sandy so	ils - Arenosols	Stony or	raw mineral soils - Gypsisols	
ARpr	Protic Arenosols - Sandy soil showing no horizon development	GYpt	Petric Gyspisols - High level of gypsum having a strongly cemented or indurated layer	
Isohumic	soils - Calcisols	Poorly ev	volved input soils - Leptosols	
CLha	Haplic Calcisols - Soil with significant accumulation of calcium carbonates	LPIi	Lithic Leptosols - Shallow soil over hard rock having continuous rock close to the surface	
CLpt	Petric Calcisols - As CLha having a strongly cemented or indurated layer	LPrz	Rendzic Leptosols - As LP with dark, organic-rich acid surface horizon overlies calcaric materials	
Other co	mplex soils - Cambisols	Holomorphic or saline soils - Solonchaks		
CMeu	Eutric Cambisols - Moderately developed soil which is not acid	SC	Undifferentiated Solonchaks - Soil with accumulation of salt	
			Haplic Solonchaks	

Legend of Figure 4.3-26

Source: EUSOILS

Sandy soil

The sandy soils of the plateaux and Erg Oriental are characterized by their grain size (ferruginized coarse grain) and by the vastness and the morphology of dunal sand-covering (Barchanes, dunes, Shan inter-dunes). They are used as desert ranges.

- Soil with accumulation of salt showing no major

characteristics

The sandy soils of the plateaux (Dahar, outskirts of the chotts), however, have a white material or finer yellow ochre (fine sand), and poorly structured. They form range sectors that are very sensitive to overgrazing or areas of occasional grain farming during rainy periods.

Isohumic soils

Isohumic soils (sierozems, poorly evolved soils and regosols) appear on a source rock produced by wind accumulation which has undergone, during the middle and current Quaternary age, relatively marked rearrangements and soil formation (limestone accumulations in the form of nodules and incrustations). These deep soils occupy the slopes, valleys, great marly soil depressions of Tamezret, Techine, Beni Kheddache, Beni Zeltene, as well as their connecting aprons, and the plains in the surroundings of the Jeffara Basin to the East. Their morpho-analytical characteristics show an importance of fine sand, coarse silt and poor structural stability initiating serious gullying and grooving phenomena. They are used for the cultivation of fruit trees, olive trees and pulses.

Stony or raw mineral soils

Stony or raw mineral soils are soils where the coarse elements represent well over 70% of their volume of piedmont: coarse colluvium or alluviums on the valley floor. These soils are subject to wind deflation or fluvial disaggregation. Soils on calcareous crust cover the Dahar plateau and the piedmont alluvial plain, while soils on gypseous crust are more typical of the lowlands of Ouara and in vast areas such as in the West of Tataouine.

Poorly evolved input soils

Poorly evolved input soils formed by wind or fluvial accumulation make the best agricultural lands in the South-West (oasis land or Ségui's). Indeed, their material is a sandy-loamy to sandy texture, deep (more than 1.50 m), which enables correct upward leaching. Contained organic matter may exceed the rate of 0.5%. Gypseous accumulations may occur at medium depth (40-60 cm). A gypsum crust of nappe is present almost everywhere on the outskirts of Garaats and chotts.

Halomorphic or saline-sodic soils

Halomorphic or saline-sodic soils (solontchak, solonetz) are found in the great depressions of Chotts (El Jerid, Allwin) and the many sebkhas and garaats which form the outlets of major watersheds. They occupy large areas with a saline crust during the dry season or swampy areas with sub-surface water body appearing during cool seasons. Concentrations of gypsum may occur at 40-60 cm depth. The outskirt of these units is occupied by aeolian sands (nebkhas) with halophilic vegetation and serves as a rangeland for camels.

These soils are generally not for cultivation with the exception of some which, with the use of irrigation, can be leached out and drained (oasis), as well as a few land strips that, during rainy years, can bear, because of a temporary leaching, occasional cereal crops (barley).

(2) Vegetation cover

The aggressiveness of the climate, the deep history of human settlement, the fragility of the vegetation cover, the cultivation of rangelands and the very advanced stage of forest clearing explain the state of degradation of the natural vegetation of the Southern region in Tunisia.

The map of vegetation in Tunisia (Figure 4.3-27) shows a distribution very affected by soil and bioclimatic conditions. There are generally speaking 4 large typical formations, namely (1) mediterraneo-steppe area, (2) pre-desert steppe area, (3) Saharan steppe area, and (4) halophyte environment vegetation area



Source: Directorate General of forests

Figure 4.3-27 Map of vegetation in Tunisia

Mediterraneo-steppe area

The mediterraneo-steppe area is represented by the low matorral of Rosemary and esparto which covers the highlands of the highest jebels in the governorate of Gafsa and the Matmata mountains between the governorates of Gabès and Medenine.



Pre-desert steppe area

The pre-desert steppe area covers most of the land area in the Southern region in Tunisia. It includes various plant combinations. The steppe of *remth* is associated with white wormwood (Artemisia herba-alba) in the lands South of the governorate of Gabès on both sides of the low matorral of Rosemary and esparto. In the same area, the rest of the land is occupied by thorn pseudo-steppes of Jujube trees combined with crops.

Saharan desert area

The Saharan desert area covers the inland territory and is characterized by a broad diversity due to the soil and climatic variations between the Jeffara, Ouara, Dahar and Erg. It comprises the steppe of arfej found in the highlands, the Saharan steppes of the regs with *ghezdir* and *esparto* covering the backslope of Dhahar and the extensive areas of Ouara and Saharan pseudo-steppes with arta and desert pseudo-silve with arich which is typical of the Grand Erg Oriental and makes up a unique vegetation in a desert environment.

Plant area of halophyte environment

Phreatophytic pseudo steppe with *ghardeg* and *souida* is typical of halophilic lands on the edge of Chotts, similar to crassulacean steppes with hmadha in saline soils.

(3) Land use

In order to geographically represent the human activities over natural environment and the issues at stake in our study area, southern Tunisia, a land use approach is needed. We chose to base our work on a land use map²⁹ elaborated by the Ministry of Agriculture and Water Resources in 2008 during the LADA (Land Degradation Assessment in Drylands) project³⁰.

The map is built up with both LADA guidelines for stratification and mapping of land use (LUS) and available national data from several official Tunisian organizations.

In order to facilitate the analysis of the territory, the different land use categories shall at first be presented independently as thematic maps in Figure 4.3-28 to Figure 4.3-32, and then, in a second step, the synthetic map of land use shall be shown in Figure $4.3-33^{31}$.

²⁹ Tunisian Republic, Ministry of Agriculture and Water Resources, Directorate-General for the development of agricultural lands, "Obtention of a nationwide land use map 1: 500 000 based on available national data and following the LADA guidelines for stratification and mapping read LUS." Version 1.0, June 2008.

Four-year (2006-2010) project of land degradation evaluation in dry regions, implemented by UNEP and FAO, and to which Tunisia and 5 other countries (Argentina, China, Cuba, Senegal and South Africa) have participated. ³¹ Note: In order to assure abovity of the sector of the secto

Note: In order to assure clarity of the synthetic map, the colors applicated in the thematic map had to be changed.



Urban areas
Protected areas
Ramsar sites

Source UNEP/FAO







Source UNEP/FAO





Intensive livestock on dry lands
Intensive livestock on irrigated lands
Moderately intensive livestock on dry lands
Moderately intensive livestock on irrigated lands
Extensive livestock on dry lands
Extensive livestock on irrigated lands

Source UNEP/FAO





Large scale irrigated croplands

Citrus in irrigated
 Arboriculture in irrigated
Market gardening in irrigated
Field crops in irrigated
Palm grove in irrigated

Rainfed croplands

Citrus
Market gardening
Field crops
Olive tree
Palm grove
Orchard
Vineyard

Source UNEP/FAO





Bare ground
Water
Forest
Shrub areas, shrubs and herbaceous plants mixed areas

Source UNEP/FAO









1		
	Citrus	
	Market gardening	
	Field crops	
	Olive tree	
	Palm grove	
	Orchard	
	Vineyard	

Agropastoralism

	Intensive livestock on dry lands	
	Intensive livestock on irrigated lands	
	Moderately intensive livestock on dry lands	
	Moderately intensive livestock on irrigated lands	
Extensive livestock on dry lands		
	Extensive livestock on irrigated lands	

Pastoralism



Natural areas

Source UNEP/FAO

Figure 4.3-33 Synthetic land use map

Urban area

Protected areas

Ramsar sites

Large scale irrigated croplands

Citrus in irrigated agriculture

Arboriculture in irrigated agriculture

Market gardening in irrigated agriculture

Field crops in irrigated agriculture

Palm grove in irrigated agriculture

Rainfed croplands

Intensive pastoralism in bare areas
Moderately intensive pastoralism in bare areas
Extensive pastoralism in bare areas
Intensive pastoralism in shrub areas
Moderately intensive pastoralism in shrub areas

Extensive pastoralism in shrub areas

Water

Forest

Shrub areas, shrubs and herbaceous plants mixed areas

CHAPTER 5 CURRENT STATUS OF PRODUCTIVE SECTORS OF THE SOUTHERN REGION¹

- 5.1 Agriculture, Livestock Breeding, Fishery and Aquaculture, and Agriculture and Fish Processed Products
- 5.1.1 General Conditions of the Sector
- (1) Production of agriculture, livestock breeding, and fishery and aquaculture

(a) Arboriculture (dates, olive, fig, pomegranate, almond, raisin, apple, apricot, pistachio, and others)

Table 5.1-1 shows the area, production and value of dates in the Southern Region during 2008-2012. The area devoted to dates is 40,765ha as of 2012 accounting for almost all of oasis area in the South, and the production volume increased from 145,000t in 2008 to 191,000 ton in 2012. By Governorate, the major producer of dates is Kébili (115,000t/year, 2012), followed by Tozeur (42,000 ton/year, 2012). The value of dates production in the South (TND 467.4 million, 2012) is by far the largest among the other agricultural products.

		2008			2009				
Governorate	Area (ha)	Production (1,000 ton)	Value (TND 1,000)	Area (ha)	Production (1,000 ton)	Value (TND 1,000)	Area (ha)	Production (1,000 ton)	Value (TND 1,000)
Gabès	6,600	20.0	45,000	6,600	20.0	46,000	6,660	25.8	60,630
Kébili	22,952	79.9	179,775	22,952	91.0	209,300	23,859	97.0	227,950
Tozeur	8,363	38.5	86,625	8,363	41.0	94,300	8,363	44.0	103,400
Gafsa	1,920	6.6	14,850	1,850	7.0	16,100	1,885	6.7	15,698
Total	39,835	145.0	326,250	39,765	159.0	365,700	40,767	173.5	407,678
		2011			2012				
Governorate	Area (ha)	Production (1,000 ton)	Value (TND 1,000)	Area (ha)	Production (1,000 ton)	Value (TND 1,000)			
Gabès	6,660	26.0	63,960	6,660	26.0	-			
Kébili	23,859	112.0	275,520	23,857	115.0	-			
Tozeur	8,363	44.0	108,240	8,363	42.0	-			
Gafsa	1,885	8.0	19,680	1,885	8.0	-			
Total	40,767	190.0	467,400	40,765	191.0	-			

Table 5.1-1 Area, production and value of dates

Source : Commissariat Régional au Développement agricole (2008-2012, area and production), ONAGRI (2008-2011, value)

¹ The analysis of this section is based on the framework of Diamond Model, which is proposed by Michael Porter. This model attempts to explain the competitive advantage of nations or regions based on the certain factors available to them. Whereas the traditional economic theories of comparative advantage only focus on factor endowments, the Diamond Model uses considers the following four factors that affect the competitiveness.

⁻The firm strategy, structure and rivalry

⁻Demand conditions for products

⁻Related supporting industries

⁻Factor conditions

The Diamond model gives analysts chance to see more proactive role of government to encourage and push organizations and companies to a more competitive level, thereby increasing performance and ultimately the total combined benefit.

Table 5.1-2 shows the area and production volume of olive and the value of olive oil in the South during 2008-2012. The area for olive production is 363,394ha as of 2012. Production volume of olive is 64,241t in 2012, but trend for the past five years is not stable mainly due to the difference of rainfall condition. By Governorate, the major producer of olive is Médenine (38,000 ton/year, 2012), followed by Gafsa (12,436 ton/year, 2012). The value of olive oil production in the South is TND 12.2 million in 2011, where available on statistics.

			200	8			2009	9	2010				
		Area (ha)	Prod. (ton)	Oil (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Oil (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Oil (ton)	Value (TND 1,000)
	Rain fed	43,000	3,530	706	504.1	44,209	620	124	68.2	44,355	557	112	72.8
Tataouine	Irrigated	1,065	900	-	-	1,197	755	-	-	1,607	1,029	-	-
Médenine	Mixed	187,600	56,000	11,200	7,996.8	188,250	38,000	7,600	4180.0	190,000	1,700	340	221.0
Gabès	Mixed	57,000	390	17,000	12,138.0	59,000	400	13,600	7480.0	59,000	400	10,000	6,500.0
Kébili	Irrigated	630	288	-	-	635	291	62	34.1	612	271	55	35.8
Tozeur	Irrigated	-	250	-	-	-	250	-	-	-	450	-	-
	Rain fed	62,102	1,100	-	-	62,140	5,004	-	-	62,380	8,450	-	-
Garsa	Irrigated	6,300	8,970	-	-	6,735	7,432	-	-	7,200	11,736	-	-
Tot	tal	357,697	71,428	28,906	20,638.9	362,165	52,752	21,386	11,762.3	365,154	24,593	10,507	6,829.6
			201	1			2012	2					
		Area (ha)	201 Prod. (ton)	l Oil (ton)	Value (TND 1,000)	Area (ha)	2012 Prod. (ton)	2 Oil (ton)	Value (TND 1,000)				
	Rain fed	Area (ha) 40,715	201: Prod. (ton) 65	1 Oil (ton) 13	Value (TND 1,000) 9.0	Area (ha) 40,715	2012 Prod. (ton) 6,795	2 Oil (ton)	Value (TND 1,000)				
Tataouine	Rain fed Irrigated	Area (ha) 40,715 1,733	201: Prod. (ton) 65 697	1 Oil (ton) 13	Value (TND 1,000) 9.0	Area (ha) 40,715 1,733	2012 Prod. (ton) 6,795 547	2 Oil (ton) -	Value (TND 1,000) -				
Tataouine Médenine	Rain fed Irrigated Mixed	Area (ha) 40,715 1,733 188,250	201: Prod. (ton) 65 697 38,000	Oil (ton) 13 - 7,600	Value (TND 1,000) 9.0 - 5,244.0	Area (ha) 40,715 1,733 188,250	2012 Prod. (ton) 6,795 547 38,000	2 Oil (ton) - - 7,600	Value (TND 1,000) - - -				
Tataouine Médenine Gabès	Rain fed Irrigated Mixed Mixed	Area (ha) 40,715 1,733 188,250 61,650	201 Prod. (ton) 65 697 38,000 400	Oil (ton) 13 - 7,600 10,000	Value (TND 1,000) 9.0 - 5,244.0 6,900.0	Area (ha) 40,715 1,733 188,250 61,650	2012 Prod. (ton) 6,795 547 38,000 10,400	2 Oil (ton) - 7,600 -	Value (TND 1,000) - - - -				
Tataouine Médenine Gabès Kébili	Rain fed Irrigated Mixed Mixed Irrigated	Area (ha) 40,715 1,733 188,250 61,650 681	201: Prod. (ton) 655 697 38,000 400 350	I Oil (ton) 13 - 7,600 10,000 70	Value (TND 1,000) 9.0 - 5,244.0 6,900.0 48.3	Area (ha) 40,715 1,733 188,250 61,650 750	2012 Prod. (ton) 6,795 547 38,000 10,400 460	2 Oil (ton) - - 7,600 - -	Value (TND 1,000) - - - -				
Tataouine Médenine Gabès Kébili Tozeur	Rain fed Irrigated Mixed Mixed Irrigated Irrigated	Area (ha) 40,715 1,733 188,250 61,650 681 -	201 Prod. (ton) 65 697 38,000 400 350 450	Oil (ton) 13 - 7,600 10,000 70 -	Value (TND 1,000) 9.0 - 5,244.0 6,900.0 48.3 -	Area (ha) 40,715 1,733 188,250 61,650 750 -	2012 Prod. (ton) 6,795 547 38,000 10,400 460 400	2 Oil (ton) - - 7,600 - -	Value (TND 1,000) - - - - - -				
Tataouine Médenine Gabès Kébili Tozeur	Rain fed Irrigated Mixed Mixed Irrigated Irrigated Rain fed	Area (ha) 40,715 1,733 188,250 61,650 681 - 62,620	201 Prod. (ton) 65 697 38,000 400 350 450 4,831	Oil (ton) 13 - 7,600 10,000 70	Value (TND 1,000) 9.0 - 5,244.0 6,900.0 48.3 - -	Area (ha) 40,715 1,733 188,250 61,650 750 - 62,620	2012 Prod. (ton) 6,795 547 38,000 10,400 460 400 4,831	2 Oil (ton) - - 7,600 - - - -	Value (TND 1,000) - - - - - - - - -				
Tataouine Médenine Gabès Kébili Tozeur Gafsa	Rain fed Irrigated Mixed Mixed Irrigated Irrigated Rain fed Irrigated	Area (ha) 40,715 1,733 188,250 61,650 681 - 62,620 7,676	201: Prod. (ton) 65 697 38,000 400 350 450 4,831 2,808	I Oil (ton) 13 - 7,600 10,000 70 - - -	Value (TND 1,000) 9.0 - 5,244.0 6,900.0 48.3 - -	Area (ha) 40,715 1,733 188,250 61,650 750 - 62,620 7,676	2012 Prod. (ton) 6,795 547 38,000 10,400 460 400 4,831 2,808	2 Oil (ton) - - 7,600 - - - - - - - -	Value (TND 1,000) - - - - - - - - - - - -				

Table 5.1-2 Area and production of olive and value of olive oil

Source: Commissariat Régional au Développement agricole (2008-2012, area and production), ONAGRI (2008-2011, value)

Table 5.1-3 shows the area and production volume of fig in the South during 2008-2012. The area devoted to fig production is 7,212ha in 2012. Production volume of fig is 7,195 ton in 2012, and trend of the past five years is assumed to be almost flat excluding the volume of Gabès whose data is available only in 2012. By Governorate, the major producer of olive is Gabès (2,700 ton/year, 2012), followed by Médenine (2,500 ton/year, 2012). Fig is well known among local farmers as one of the traditional products of the South.

		2008		2009		2010		2	011	2012	
		Area (ha)	Prod. (ton)								
Tataouine	Rain fed	1,850	722	1,883	670	925	380	925	380	925	324
	Irrigated	281	265	293	463	268	495	268	495	268	250
Médenine	Mixed	3,100	2,400	3,100	2,500	3,100	2,500	3,100	2,500	3,100	2,500
Gabès	Mixed	-	-	-	-	-	-	-	-	370	2,700
Kébili	Irrigated	330	455	236	406	125	550	125	550	350	390
Tozeur	Irrigated	-	200	-	200	-	200	-	200	-	205
~ ^	Rain fed	1,700	230	1,700	265	1,690	265	1,690	265	1,690	265
Gaisa	Irrigated	500	690	500	697	509	564	509	564	509	561
Tot	tal	7,761	4,962	7,711	5,201	6,617	4,954	6,617	4,954	7,212	7,195

 Table 5.1-3
 Area and production volume of fig

Source : Commissariat Régional au Développement agricole (2008-2012)

Table 5.1-4 shows the area and production volume of pomegranate in the South during 2008-2012. The area for pomegranate is 3,648 ha in 2012. Production volume in the South is 29,870 ton in 2012, and it remains almost flat for the past five years. By Governorate, Gabès (28,000 ton/year, 2012) is by far the largest producer of pomegranate, and pomegranate of Gabès has already got an excellent reputation in domestic market. In addition, some pomegranate farmers in Gabès have exported pomegranate to Libya, France and Gulf countries.

		2008		2009		2010		2011		2012	
		Area (ha)	Prod. (ton)								
Tataouine	Irrigated	302	410	306	410	178	370	178	370	178	220
Médenine	Mixed	500	850	350	900	350	900	350	900	350	900
Gabès	Mixed	2,700	25,000	2,700	27,000	2,700	28,000	2,700	28,000	2,700	28,000
Kébili	Irrigated	420	545	425	526	420	521	420	521	420	460
Tozeur	Irrigated	-	300	-	300	-	300	-	300	-	290
Tot	al	3,922	27,105	3,781	29,136	3,648	30,091	3,648	30,091	3,648	29,870

Table 5.1-4 Area and production volume of pomegranate

Source : Commissariat Régional au Développement agricole (2008-2012)

Table 5.1-5 shows the area, production volume and value of almond in the South during 2008-2012. The area devoted to almond is 18,839 ha during 2010-2012. Production volume in the South is 9,375t in 2012, and it increased during 2008-2010. By Governorate, Gafsa (7,755 ton/year, 2012) is the major producer of almond, followed by Médenine (1,100 ton/year, 2012). The value increases from TND 24.8 million in 2008 to TND 33.9 million in 2011, not only by production increase but also by the increase of unit price due to tight demand for almond in international market in recent years.
			2008			2009			2010	
		Area (ha)	Prod. (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Value (TND 1,000)
	Rain fed	1,975	290	957.0	1,974	200	700.0	419	160	560.0
Tataouine	Irrigated	247	150	495.0	253	140	490.0	165	210	735.0
Médenine	Mixed	2,250	1,100	3,630.0	2,200	1,100	3,850.0	2,200	1,100	3,850.0
Gabès	Mixed	6,000	100	330.0	6,000	100	350.0	6,000	180	630.0
C (Rain fed	10,460	2,575	8,497.5	10,574	3,090	10,815.0	9,580	2,640	9,240.0
Gafsa	Irrigated	340	3,300	10,890.0	463	4,012	14,042.0	475	5,115	17,902.5
Tot	al	21,272	7,515	24,799.5	21,464	8,642	30,247.0	18,839	9,405	32,917.5
			2011			2012				
		Area (ha)	Prod. (t)	Value (1,000 TND)	Area (ha)	Prod. (t)	Value (1,000 TND)			
	Rain fed	419	160	576.0	419	165	-			
Tataouine	Irrigated	165	210	756.0	165	175	-			
Médenine	Mixed	2,200	1,100	3,960.0	2,200	1,100	-			
Gabès	Mixed	6,000	180	648.0	6,000	180	-			
C (Rain fed	9,580	2,640	9,504.0	9,580	2,640	-			
Gatsa	Irrigated	475	5,115	18,414.0	475	5,115	-			
Tot	al	18,839	9,405	33,858.0	18,839	9,375	-			

 Table 5.1-5
 Area, production and value of almond

Source : Commissariat Régional au Développement agricole (2008-2012, area and production), ONAGRI (2008-2011, value)

Table 5.1-6 shows the area and production volume of raisin in Médenine and Gabès during 2008-2012, where available on statistics. The area devoted to raisin is 2,400 ha in total during 2010-2012, but decreased compared to that of 2008 (3,685 ha). Production volume in total is 3,500 ton in 2012.

		20	008	20	09	202	10	202	11	201	12
		Area	Prod.								
		(ha)	(ton)								
Médenine	Mixed	2,185	2,500	2,200	3,000	2,200	3,000	2,200	3,000	2,200	3,000
Gabès	Mixed	1,500	375	1,500	375	200	500	200	500	200	500
Tot	al	3,685	2,875	3,700	3,375	2,400	3,500	2,400	3,500	2,400	3,500

Table 5.1-6 Area and production volume of raisin

Source : Commissariat Régional au Développement agricole (2008-2012)

Table 5.1-7 shows the area, production volume and value of apple in Médenine and Kébili during 2008-2011, where available on statistics. The area for apple is 2,134 ha in total during 2009-2011. Out of 1,034 ton of total production volume in 2011, more than 90% is of Médenine (950 ton).

			2008			2009			2010			2011	
		Area (ha)	Prod. (ton)	Value (TND 1,000)									
Médenine	Mixed	2,200	900	591.3	2,000	950	770.5	2,000	950	782.8	2,000	950	738.2
Kébili	Irrigated	131	78	51.2	134	74	60.0	134	84	69.2	134	84	65.3
То	tal	2,331	978	642.5	2,134	1,024	830.5	2,134	1,034	852.0	2,134	1,034	803.4

Table 5.1-7 Area, production and value of apple

Source : Commissariat Régional au Développement agricole (2008-2012, area and production), ONAGRI (2008-2011, value)

Table 5.1-8 shows the area, production volume and value of apricot in Gabès during 2008-2011, where available on statistics. The area for apricot is 370ha, and production is 1,000t in 2011. The value decreases from TND 906,000 in 2010 to TND 548,000 in 2011 due to the decrease of unit price.

Table 5.1-8 Area, production volume and value of apricot

			2008			2009			2010			2011	
		Area (ha)	Prod. (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Value (TND 1,000)	Area (ha)	Prod. (ton)	Value (1,000 TND)
Gabès	Mixed	370	1,050	508.2	370	1,050	605.9	370	1,000	906.0	370	1,000	548.0

Source : Commissariat Régional au Développement agricole (2008-2011, area and production), ONAGRI (2008-2011, value)

Table 5.1-9 shows the area and production volume of pistachio in Gafsa during 2008-2011, where available on statistics. The area for pistachio is 21,122 ha during 2010-2012. Production volume is 555 ton in 2012, of which 226 ton is produced on irrigated farmland which is highly productive compared to rain fed farmland.

		200	8	200	9	201	0	201	l 1	201	12
		Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
		(ha)	(ton)	(ha)	(ton)	(ha)	(ton)	(ha)	(ton)	(ha)	(ton)
C C	Rain fed	18,440	260	18,510	519	19,445	329	19,445	329	19,445	329
Gaisa	Irrigated	1,591	178	1,896	140	1,677	226	1,677	226	1,677	226
Te	otal	20,031	438	20,406	659	21,122	555	21,122	555	21,122	555

Table 5.1-9 Area and production volume of pistachio

Source : Commissariat Régional au Développement agricole (2008-2012)

Table 5.1-10 shows the area and production volume of arboriculture products other than mentioned above during 2008-2012 including grape, pear, citrus fruits, etc. The area devoted to other products is 14,447 ha in 2012. Production volume in total is 15,070 ton in 2012.

		2	008	20	09	20	10	201	11	201	12
		Area	Prod.								
		(ha)	(ton)								
Tataquina	Rain fed	330	22	338	-	95	-	95	I	95	-
Tataouine	Irrigated	740	1,345	877	1,617	311	1,653	311	1,653	312	1,019
Médenine	Mixed	3,500	1,200	3,500	1,600	3,500	1,600	3,500	1,600	5,500	2,550
Gabès	Mixed	5,830	3,960	5,830	3,960	5,920	6,985	5,920	6,985	6,290	7,985
Kébili	Irrigated	-	-	330	415	350	600	350	600	90	50
Tozeur	Irrigated	-	350	-	350	-	350	-	350	-	345
Gafsa	Irrigated	1,999	4,210	2,020	4,500	2,160	3,121	2,160	3,121	2,160	3,121
Tot	al	12,399	11,087	12,895	12,442	12,336	14,309	12,336	14,309	14,447	15,070

 Table 5.1-10
 Area and production volume of other products

Source : Commissariat Régional au Développement agricole (2008-2012)

(b) Cereals, legumes, vegetables and forage crops

Table 5.1-11 shows the area and production volume of cereals such as wheat, barley, etc. in the South during 2008-2012. The area for cereals is 74,536 ha in 2012. Production volume in the South is 374,456 ton in 2012, most of which is the production of Gafsa whose natural condition for rain fed farming is better than those of other five Governorates. It can be said that climate and soil condition of the South is not suitable for land-extensive farming such as cereals and legumes especially for rain fed farming, and farmers in the South tend to focus on other products such as arboriculture and/or vegetables which is productive and profitable compared to land-extensive farming.

		2	008	2	009	2	010	20	011	2	012
		Area (ha)	Prod. (ton)								
	Rain fed	8,045	1,850	870	322	870	322	25,575	83,910	10,862	3,227
Tataouine	Irrigated	103	1,550	142	506	188	1,930	190	2,600	93	195
M(1)	Rain fed	43,320	180,860	20,120	97,320	5,950	97,320	20,120	97,320	20,120	9,732
Medenine	Irrigated	138	2,187	261	5,030	235	5,635	261	5,030	261	602
Gabès	Irrigated	-	-	-	-	-	-	-	-	7,250	-
Kébili	Irrigated	6,000	40,000	500	7,500	682	10,300	600	9,000	600	9,000
Tozeur	Irrigated	-	-	-	-	-	-	-	-	-	-
Gafsa	Rain fed	-	-	28,820	44,061	3,457	1,004	35,350	351,700	35,350	351,700
Tot	al	57,605	226,447	50,712	154,738	11,381	116,511	82,096	549,560	74,536	374,456

Table 5.1-11 Area and production volume of cereals

Source: Commissariat Régional au Développement agricole, 2008-2012

Table 5.1-12 shows the area and production volume of legumes such as beans, etc. in the South during 2008-2012. The area for legumes is 2,759ha in 2012. Production volume in the South is 6,411 ton in 2012. By Governorate, production of Kébili by irrigation is the largest (4,800 ton in 2012), followed by Gabès (1,130 ton in 2012). As described above, legumes as well as cereals are not necessarily suitable for natural condition of the South.

		20	008	20	009	20	010	20	011	20	012
		Area (ha)	Prod. (ton)								
T-4	Rain fed	-	-	27	62	27	62	114	194	108	21
Tataouine	Irrigated	-	-	-	-	-	-	-	-	-	-
N/1	Rain fed	2,949	12,201	2,055	1,819	836	1,819	2,055	1,819	2,055	182
Medenine	Irrigated	-	-	-	-	-	-	-	-	-	-
Gabès	Irrigated	90	1,000	125	1,400	430	2,810	435	2,175	464	1,130
Kébili	Irrigated	200	800	203	720	189	1,370	189	1,370	60	4,800
Tozeur	Irrigated	-	-	-	-	-	-	-	-	-	-
Gafsa	Rain fed	190	570	980	4,900	740	3,550	72	278	72	278
Tot	al	3,429	14,571	3,390	8,901	2,222	9,611	2,865	5,836	2,759	6,411

 Table 5.1-12
 Area and production of legumes

Source: Commissariat Régional au Développement agricole, 2008-2012

Table 5.1-13 shows the area and production volume of vegetables in the South during 2008-2012, excluding products of greenhouse farming in Kébili and Tozeur described below. The area for vegetables is 14,174 ha in 2012. Production volume in the South is 702,479 ton in 2012. By Governorate, Gabès (340,898 ton in 2012) is the largest producer of vegetables, followed by Médenine (294,550 ton in 2012).

Some local farmers pointed out that off-season vegetables such as potato in Tataouine shipped to the North, and tomato in Gabès produced in geothermal greenhouse and exported to EU countries such as Germany and France are one of the characteristics of the Governorate. Other vegetables such as green pepper, red pepper, cucumber, aubergine, spinach, melon, water melon, carrots, and garlic are commonly produced on mainly irrigated farmland in the South.

		20	008	20	009	20	010	20	011	20	012
		Area (ha)	Prod. (ton)								
T -4	Rain fed	-	-	14	110	14	110	-	-	7	6
Tataouine	Irrigated	835	15,486	787	15,515	765	14,735	610	12,700	436	9,170
	Rain fed	1,246	182,000	1,115	294,550	-	-	1,115	294,550	1,115	294,550
Medenine	Irrigated	1,577	33,457	1,534	31,840	1,527	33,488	1,534	31,840	1,534	31,840
Gabès	Irrigated	9,430	316,000	9,366	292,800	8,566	323,702	8,451	322,913	8,308	340,898
Kébili	Irrigated	2,050	23,200	2,070	20,350	1,488	15,150	1,940	19,930	2,070	20,250
Tozeur	Irrigated	820	5,945	763	5,580	764	6,040	800	5,400	704	5,765
Gafsa	Rain fed	-	-	-	-	-	-	-	-	-	-
Tot	al	15,958	576,088	15,649	660,745	13,124	393,225	14,450	687,333	14,174	702,479

 Table 5.1-13
 Area and production of vegetables

Source: Commissariat Régional au Développement agricole, 2008-2012

Table 5.1-14 shows the area and production volume of forage crops in the South during 2008-2012. The area for forage crops is 22,410 ha in 2012. Production volume in the South is 970,368 ton in 2012, and it increased in recent five years because of the tight demand for forage crops in Tunisia and political support by OEP. By Governorate, Gabès (524,465 ton in 2012) is the largest producer of vegetables, followed by Kébili (407,000 ton in 2012).

			2008			2009			2010	
		Area (ha)	Prod. (ton)	Prod. (unit)	Area (ha)	Prod. (ton)	Prod. (unit)	Area (ha)	Prod. (ton)	Prod. (unit)
Tetereiter	Rain fed	-	-	-	-	-	-	-	-	-
Tataouine	Irrigated	362	10,460	3,138,000	355	9,520	2,856,000	365	7,330	2,199,000
Mádanina	Rain fed	-	-	-	-	-	-	-	-	-
Medenine	Irrigated	303	9,433	2,829,751	345	8,873	2,661,900	345	9,140	3,012,000
Gabès	Irrigated	6,020	296,440	36,100	6,020	296,440	36,100	8,770	428,055	52,200
Kébili	Irrigated	8,400	422,000	-	8,400	424,000	-	7,600	381,000	-
Tozeur	Irrigated	680	22,200	-	650	21,000	-	600	19,000	-
Gafsa	Rain fed	2,800	62,400	-	2,950	8,850	-	2,800	15,560	311,200
To	tal	18,565	822,933	6,003,851	18,720	768,683	5,554,000	20,480	860,085	5,574,400
			2011			2012				
	-	Area (ha)	Prod. (ton)	Prod. (unit)	Area (ha)	Prod. (ton)	Prod. (unit)			
Totoovino	Rain fed	-	-	-	-	-	-			
Tataoume	Irrigated	319	5,850	1,754,700	115	1,880	-			
Médanina	Rain fed	-	-	-	-	-	-			
Medenine	Irrigated	345	8,873	2,661,900	345	8,873	-			
Gabès	Irrigated	9,765	479,285	58,424	10,670	524,465	-			
Kébili	Irrigated	8,250	359,000	-	8,500	407,000	-			
Tozeur	Irrigated	500	15,800	-	550	17,000	-			
Gafsa	Rain fed	2,230	11,150	223,000	2,230	11,150	-			
То	tal	21,409	879,958	4,698,024	22,410	970,368	-			

			C C	
Table 5.1-14	Area and	production	of forage	crops

Source: Commissariat Régional au Développement agricole (2008-2012, area and production), ONAGRI (2008-2011, value)

Table 5.1-15 shows the area and production volume of greenhouse farming in Kébili and Tozeur during 2008-2012, where available on statistics. The area for greenhouse farming is very limited in both Governorates. Production volume is 4,272 ton in Kébili in 2012, and 2,670 ton in Tozeur in 2012, but the volume decreased from that in 2008. According to the field survey by JET, major products produced in greenhouse in Kébili and Tozeur are tomato, green pepper, red pepper, cucumber, and aubergine, etc.

Table 5 1-15	Area and	production	of	reenhouse	farming
Table 5.1-15	Alea allu	production	OI E	greennouse	Tarining

	2008		2009		2010		2011		2012	
	Area (ha)	Prod. (ton)								
Kébili	91.5	7,590	93.4	7,960	92	5,857	92	5,857	78.75	4,272
Tozeur	36	2,560	38	2,620	36	2,710	46.5	2,670	35	2,670
		,		,		,		,		,

Source: Commissariat Régional au Développement agricole, 2008-2012

(c) Livestock breeding

(i) Sheep, sheep meat and wool

The number of sheep (Table 5.1-16), production volume and value of sheep meat (Table 5.1-17), and production volume of wool (Table 5.1-18) are shown below. Total number in the South decreased in recent five years, especially in Tataouine (from 286,700 in 2008 to 184,380 in 2012) and Médenine (from 313,800 in 2008 to 232,090 in 2012). Along with the decrease of the number of sheep, meat production also decreased from 19,545 ton in 2008 to 9,377 ton in 2012, and so did wool production (from 1,774 ton in 2008 to 1,571 ton in 2012.

One of the reasons for the decrease is assumed to be the increase of financial burden of farmers due to high cost of forage crops and other materials needed.

	20	08	2009		2010		2011		2012*	
	Total	Female								
Tataouine	286,700	224,200	318,360	162,300	242,210	181,960	184,380	100,590	184,380	100,590
Médenine	313,800	281,700	318,610	203,200	310,000	273,850	232,090	150,480	232,090	150,480
Gabès	342,100	253,300	369,500	191,310	324,580	239,680	305,270	160,000	305,270	160,000
Kébili	95,100	82,600	106,190	72,390	104,890	84,600	96,810	65,460	96,810	65,460
Tozeur	61,300	53,000	65,000	48,500	60,000	51,700	58,000	44,500	58,000	44,500
Gafsa	418,400	354,500	416,780	250,130	388,400	318,700	363,490	212,230	363,490	212,230
South	1,517,400	1,249,300	1,594,440	927,830	1,430,080	1,150,490	1,240,040	733,260	1,240,040	733,260
Tunisia	6,954,900	5,492,400	7,618,350	4,180,840	7,361,620	-	7,234,070	3,972,860	7,234,070	3,972,860

Table 5.1-16 Number of sheep (total, female)

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

* The data as of 2012 seem to be referred to those of 2011 due to the limited frequency of statistical survey.

	2	2008	20	009	20	010	20)11	20	12
	Prod. (ton)	Value (TND 1,000)								
Tataouine	2,705	10,752	1,120	4,648	770	3,376	1,042	5,008	1,042	-
Médenine	3,800	15,105	3,800	15,770	3,800	16,663	3,800	18,263	3,800	-
Gabès	4,455	17,709	4,455	18,488	4,455	19,535	1,650	7,930	1,600	-
Kébili	480	1,908	500	2,075	500	2,193	450	2,163	420	-
Tozeur	805	3,200	715	2,967	705	3,091	650	3,124	715	-
Gafsa	7,300	29,018	7,300	30,295	6,600	28,941	3,600	17,302	1,800	-
Total	19,545	77,691	17,890	74,244	16,830	73,800	11,192	53,789	9,377	-
Tunisia *	56,600	224,985	55,100	228,665	56,500	247,753	110,000	528,660	110,000	-

 Table 5.1-17
 Production volume and value of sheep meat

Source: les gouvernorats du sud en chiffres 2008-2012, ONAGRI, (*) : annuaire statistique de la Tunisie 2008-2011.

Table 5.1-18Production volume of wool (ton)

	2008	2009	2010	2011	2012
Tataouine	300	250	168	206	206
Médenine	480	480	400	480	480
Gabès	232	232	200	200	225
Kébili	160	160	160	160	150
Tozeur	102	75	70	70	60
Gafsa	500	500	450	450	450
Total	1,774	1,697	1,448	1,566	1,571

Source : les gouvernorats du sud en chiffres 2008-2012

(ii) Goat and goat meat

The number of goat (Table 5.1-19) and production volume and value of goat meat (Table 5.1-20) in the South are shown below. It shows the same trend as that of sheep, which is the decrease of the number (from 708,200 in 2008 to 488,470 in 2012) and meat production (from 7,026 ton in 2008 to 3,945 ton in 2012).

	20	08	2009		20	10	2011		2012*	
	Total	Female	Total	Female	Total	Female	Total	Female	Total	Female
Tataouine	199,200	149,700	195,230	100,150	158,700	122,960	113,690	64,080	113,690	64,080
Médenine	201,300	177,000	205,580	127,210	200,000	171,890	98,100	61,800	98,100	61,800
Gabès	136,400	106,300	143,820	82,130	121,390	93,470	108,940	60,000	108,940	60,000
Kébili	78,900	70,300	83,350	66,430	81,460	69,600	78,210	61,200	78,210	61,200
Tozeur	31,300	24,700	31,000	20,500	25,000	21,000	23,000	17,500	23,000	17,500
Gafsa	61,100	53,100	67,830	42,500	63,500	49,000	66,530	38,980	66,530	38,980
Sud	708,200	581,100	726,810	438,920	650,050	527,920	488,470	303,560	488,470	303,560
Tunisie	1,412,000	1,107,000	1,550,650	855,780	1,454,640	1,109,890	1,295,940	707,930	1,295,940	707,930

Table 5.1-19	Number	of goat	(total.	female)
10010 011 1/		or gome	(

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

* The data as of 2012 seem to be referred to those of 2011 due to the limited frequency of statistical survey.

	2	008	20	009	20	010	20	011	20	012
	Prod. (ton)	Value (TND 1,000)								
Tataouine	1,582	5,505	529	1,852	412	1,623	529	2,111	529	-
Médenine	2,070	7,204	2,070	7,245	2,070	8,156	2,070	8,259	2,070	-
Gabès	1,900	6,612	1,900	6,650	1,900	7,486	700	2,793	751	-
Kébili	220	766	250	873	250	985	248	990	195	-
Tozeur	254	884	210	735	200	788	190	758	220	-
Gafsa	1,000	3,480	1,000	3,500	879	3,464	650	2,594	180	-
Total	7,026	24,451	5,959	20,855	5,711	22,502	4,387	17,504	3,945	-
Tunisie *	11,300	39,324	11,400	39,900	11,000	43,340	21,900	87,381	21,900	-

 Table 5.1-20
 Production volume and value of goat meat

Source: les gouvernorats du sud en chiffres 2008-2012, ONAGRI, (*): annuaire statistique de la Tunisie 2008-2011.

(iii) Camel and camel meat

The number of camel (Table 5.1-21) and production volume of camel meat (Table 5.1-22) are shown below. Total number of camel in the South decreased in 2008-2009, but remains flat after 2010. By Governorate, Médenine (19,000), Kébili (13,750), and Tataouine (11,700) which have proximity to Sahara desert are major breeder of camel in the South (2012). Meat production decreased from 3,744 ton in 2008 to 1,807 ton in 2012. According to camel breeder in Tozeur, high cost for forages is the most serious issue among the breeders, which is same as sheep and goat breeders.

Table 5.1-21 Number of camel

	2008	2009	2010	2011	2012
Tataouine	25,000	9,000	9,000	11,800	11,700
Médenine	19,000	19,000	19,000	19,000	19,000
Gabès	1,400	1,300	600	600	1,550
Kébili	13,750	13,750	13,750	13,750	13,750
Tozeur	3,525	3,500	3,500	3,500	3,500
Gafsa	3,500	4,500	3,350	2,500	2,500
Sud	66,175	51,050	49,200	51,150	52,000
Tunisie	-	-	-	-	-

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

	2008	2009	2010	2011	2012
Tataouine	1,414	298	298	312	312
Médenine	800	800	880	800	800
Gabès	400	1,255	400	25	30
Kébili	230	260	260	260	250
Tozeur	100	220	220	215	215
Gafsa	800	826	799	250	200
Total	3,744	3,659	2,857	1,862	1,807

Table 5.1-22 Production volume of camel meat (t)

Source : les gouvernorats du sud en chiffres 2008-2012

(iv) Cattle, cattle meat and milk

The number of cattle (Table 5.1-23), production volume and value of cattle meat (Table 5.1-24), and production volume of milk (Table 5.1-25) are shown below. Out of the total number of cattle in the South (24,160, as of 2012), nearly 90% of them are of Gafsa (10,490) and Gabès (10,460). Meat production decreased from 3,374t in 2008 to 1,997t in 2012. On the other hand, milk production increased from 60,300 ton in 2008 to 66,907 ton in 2012. According to a dairy farmer in Gabès, demand for milk is increasing in local market including other five Governorates, and small family-run dairy farming of which breakeven point is approximately 50 head of cow is more profitable than other livestock breeding.

Table 5.1-23 Number of cattle

	2008		2009		2010		2011		2012*	
	Total	Female								
Tataouine	300	200	380	200	380	310	200	120	200	120
Médenine	2,200	1,600	2,400	1,500	1,330	1,090	1,320	780	1,320	780
Gabès	7,800	6,800	10,220	7,790	10,490	9,240	10,460	8,000	10,460	8,000
Kébili	700	500	690	450	760	610	890	570	890	570
Tozeur	1,700	1,400	1,150	820	960	860	800	650	800	650
Gafsa	7,700	6,100	9,970	5,270	8,960	6,410	10,490	6,760	10,490	6,760
Sud	20,400	16,600	24,810	16,030	22,880	18,520	24,160	16,880	24,160	16,880
Tunisie	660,300	563,100	710,130	454,100	679,080	569,360	670,980	439,620	670,980	439,620

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

* The data as of 2012 seem to be referred to those of 2011 due to the limited frequency of statistical survey.

 Table 5.1-24
 Production volume and value of cattle meat

	20	008	20	009	2	010	20)11	20)12
	Prod. (ton)	Value (1,000 TND)								
Tataouine	38	103	11	31	11	37	14	48	14	-
Médenine	370	999	370	1,036	370	1,230	370	1,267	370	-
Gabès	1,475	3,983	1,475	4,130	1,475	4,904	850	2,915	650	-
Kébili	36	97	50	140	50	166	30	103	23	-
Tozeur	55	149	80	224	70	233	60	206	40	-
Gafsa	1,400	3,780	1,400	3,920	1,600	5,320	1,000	3,430	900	-
Total	3,374	9,110	3,386	9,481	3,576	11,890	2,323	7,969	1,997	-
Tunisie *	56 800	153 360	62 100	173 880	57 500	191 188	104 600	358 778	104 600	_

Source: les gouvernorats du sud en chiffres 2008-2012, ONAGRI, (*): annuaire statistique de la Tunisie 2008-2011.

	200)8	200	9	201	.0	201	.1	20	12
	Prod. (ton)	Value (TND 1,000)								
Tataouine	900	450.0	475	261	363	211	732	425	732	I
Médenine	3,000	1,500	3,000	1,650	10,000	5,800	3,000	1,740	3,000	I
Gabès	30,000	15,000	29,500	16,225	29,000	16,820	32,000	18,560	30,000	-
Kébili	1,900	950	1,900	1,045	7,750	4,495	1,500	870	1,175	I
Tozeur	2,500	1,250	2,500	1,375	3,700	2,146	2,000	1,160	2,000	I
Gafsa	22,000	11,000	23,000	12,650	24,000	13,920	24,506	14,213	30,000	I
Total	60,300	30,150	60,375	33,206	74,813	43,392	63,738	36,968	66,907	-
Tunisie *	1,006,000	503,000	1,046,000	575,300	1,030,000	597,400	1,088,000	631,040	_	-

Table 5.1-25 Production volume and value of milk

Source: les gouvernorats du sud en chiffres 2008-2012, ONAGRI, (*): annuaire statistique de la Tunisie 2008-2011.

(v) Laying hen, eggs, broiler hen, chicken and other poultry meat

The number of laying hen (Table 5.1-26) and production volume of egg (Table 5.1-27) are shown below. Total number in the South decreased in 2008-2009, but slightly increased after 2009 (from 323,835 in 2009 to 367,000 in 2012). Along with the increase of the number of laying hen, egg production also increased from 81,842,000 in 2009 to 97,274,000 in 2012. It is estimated that the needs of egg in the South is approximately 150 million (100 multiplied by the number of population), so it seems that the production volume is not enough to meet the needs in local market.

	2008	2009	2010	2011	2012
Tataouine	24,200	30,000	30,000	30,000	30,000
Médenine	322,400	167,000	170,000	167,000	167,000
Gabès	206,600	90,000	96,400	93,120	112,000
Kébili	28,200	-	-	-	-
Tozeur	51,900	7,835	7,835	7,835	8,000
Gafsa	102,400	29,000	39,200	30,800	50,000
Sud	735,700	323,835	343,435	328,755	367,000
Tunisie	28,069,400	-	-	-	-

Table 5.1-26Number of laying hen

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

Table 5.1-27Production volume of egg (1,000 units)

	2008	2009	2010	2011	2012
Tataouine	7,500	9,000	9,000	8,000	8,000
Médenine	50,000	50,000	50,000	50,000	50,000
Gabès	15,000	15,000	20,000	22,000	30,240
Kébili	-	-	-	-	-
Tozeur	2,680	2,000	2,000	2,000	3,000
Gafsa	7,000	5,842	5,517	5,657	6,034
Total	82,180	81,842	86,517	87,657	97,274
Tunisie *	1,461,000	1,480,000	1,569,000	1,710,000	1,710,000

Source: les gouvernorats du sud en chiffres 2008-2012, (*): annuaire statistique de la Tunisie 2008-2011.

The number of broiler hen (Table 5.1-28) and production volume and value of chicken and other poultry meat (Table 5.1-29) are shown below. Total number in the South increased in recent three years (from 647,700 in 2010 to 904,833 in 2012). By governorate, Médenine (333,860), Gabès (283,573 in 2012),

and Gafsa (202,400 in 2012) are major breeders of broiler hen . Production volume of poultry meat including chicken, turkey, ostrich, etc. once decreased during 2008-2010, but recovered from 2,061t in 2010 to 3,182t in 2012.

	2010	2011	2012
Tataouine	35,000	47,500	49,500
Médenine	343,000	333,860	333,860
Gabès	66,400	66,405	283,573
Kébili	-	-	-
Tozeur	61,000	61,000	35,500
Gafsa	142,300	163,000	202,400
Sud	647,700	671,765	904,833
Tunisie	-	-	-

Table 5.1-28	Number of broiler hen
14010 011 20	realized of oroller men

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

 Table 5.1-29
 Production volume and value of chicken and other poultry meat

	2008		2009		2010		2011		2012	
	Prod. (ton)	Value (TND 1,000)								
Tataouine	213	425	24	53	30	65	30	72	260	-
Médenine	1,150	2,293	1,147	2,523	1,147	2,484	1,147	2,765	1,147	-
Gabès	690	1,376	690	1,518	275	596	175	422	500	-
Kébili	-	-	-	-	-	-	-	-	-	-
Tozeur	910	1,815	90	198	90	195	90	217	70	-
Gafsa	600	1,196	519	1,142	519	1,124	750	1,808	1,205	-
Total	3,563	7,105	2,470	5,434	2,061	4,464	2,192	5,285	3,182	-
Tunisie *	123,000	245,262	126,000	277,200	131,000	283,746	150,300	362,373	150,300	-

Source: les gouvernorats du sud en chiffres 2008-2012, ONAGRI, (*) : annuaire statistique de la Tunisie 2008-2011.

(vi) Others

The number of rabbit is shown in Table 5.1-30, where available on statistics. Total number of rabbit 2012 is 7,826, though annual change of the number cannot be observed due to the lack of data. According to the interview with OEP and local rabbit farmer in Tataouine, rabbit breeding is promoted by OEP to increase additional income for small farmers and also to increase the number of young entrepreneurs in the field of agriculture.

	2008	2009	2010	2011	2012
Tataouine	1,105	-	-	100	100
Médenine	2,685	-	-	-	-
Gabès	10,160	-	-	-	-
Kébili	6,418	-	-	-	-
Tozeur	2,336	-	-	-	1,010
Gafsa	9,522	7,000	6,279	6,716	6,716
Sud	32,226	7,000	6,279	6,716	7,826
Tunisie	189,774	-	-	-	-

Table 5.1-30 Number of rabbit

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

The number of bee house (Table 5.1-31) and production volume of honey (Table 5.1-32) are shown below. Total number in the South is almost flat in recent five years. Production volume remains very low (74t in 2012), but honey production as well as rabbit breeding above is also promoted by OEP for getting additional income of farmers.

	2008	2009	2010	2011	2012
Tataouine	200	150	120	120	220
Médenine	2,000	2,000	2,100	2,000	2,000
Gabès	-	-	-	-	-
Kébili	156	330	330	551	326
Tozeur	83	80	80	80	268
Gafsa	5,500	5,500	5,357	5,157	5,157
Sud	7,939	8,060	7,987	7,908	7,971
Tunisie	-	-	-	-	-

Source: Résultats de l'enquête sur le suivi de la campagne agricole 2009 - 2010, les gouvernorats du sud en chiffres 2008-2012.

	2008	2009	2010	2011	2012
Tataouine	1	3	2	3	3
Médenine	25	25	25	25	25
Gabès	-	-	-	-	-
Kébili	1	2	2	3	0
Tozeur	55	1	1	1	1
Gafsa	40	45	45	45	45
Total	122	76	75	77	74

Table 5.1-32Production volume of honey (t)

Source : les gouvernorats du sud en chiffres 2008-2012

(d) Production of fishery and aquaculture

Production volume and value of fishery and aquaculture in Médenine and Gabès are shown in Table 5.1-33. The total production volume and value remain flat in recent five years, and the reasons are assumed to be the limitation of marine resources and relatively stable unit price of fish products. By fishing method, coastal fishing and light fishing are the major methods in terms of production volume.

According to the interview with APIP and fishermen in Médenine, major varieties by fishing method are bluefish for light fishing, sardine for offshore fishing, dorado, sepia, clam, and octopus for coastal fishing, sea buss and sea bream for aquaculture, and sea wolf, grey mullet for lagoons such as El Bibane and Boughrara in Médenine. In addition, sponge fishing is known as one of the traditional fishing methods in the South, and characterized by its high value for ornamental use of local people and for industrial use.

		20	08	2009		2010		2011		2012
		Prod. (ton)	Value (TND 1,000)	Prod. (ton)	Value (TND 1,000)	Prod. (ton)	Value (TND 1,000)	Prod. (ton)	Value (TND 1,000)	Prod. (ton)
	Coastal fishing	7,706	46,714	7,638	47,035	9,986	58,458	8,735	47,029	8,735
	Offshore fishing	305	1,431	362	1,679	380	1,821	261	1,299	261
	Tuna fishing	-	-	13	88	-	-	-	-	-
Méde- nine	Lagoon and aquaculture	221	1,618	200	1,197	191	1,350	117	921	423
	Light fishing	7,668	11,241	6,925	10,374	6,847	11,017	5,547	9,230	5,547
	Sponge fishing	44	6,119	355	36,756	10	783	63	8,694	9
	Shell fishing	242	881	216	554	313	838	306	989	54
	Total	16,186	68,005	15,709	97,682	17,727	74,266	15,029	68,162	15,029
	Coastal fishing	1,770	10,730	1,655	10,191	2,574	15,068	1,917	10,321	2,332
	Offshore fishing	6	28	3	14	2	10	-	-	-
	Tuna fishing	-	-	-	-	-	-	-	-	-
Gabès	Lagoon and aquaculture	-	-	-	-	-	-	-	-	-
	Light fishing	6,339	9,293	4,367	6,542	5,019	8,076	4,821	8,022	4,789
	Sponge fishing	133	18,495	84	8,709	148	11,947	177	24,426	-
	Shell fishing	-	-	-	-	-	-	-	-	108
	Total	8,248	38,546	6,109	25,457	7,743	35,100	6,915	42,769	7,229
	South	24,434	106,551	21,818	123,139	25,470	109,367	21,944	110,932	22,258
Tunisie		100,578	-	100,256	-	102,066	-	108,000	-	112,400

 Table 5.1-33
 Production volume of fishery and aquaculture

Source: les gouvernorats du sud en chiffres 2008-2012, annuaire statistique de la Tunisie 2005 - 2010, péridique de conjoncture n°94 janvier 2012 et n°98 Janvier 2013 (production), ONAGRI (value)

(2) Framework of Agricultural Development

(a) Institutional framework

The Ministry of Agriculture, Water Resources and Fisheries is in charge of agricultural development in Tunisia. According to Decree No. 2001-419 of 13 February 2001, the functions of the Ministry of Agriculture, Water Resources and Fisheries are mainly to manage the departments concerned, to develop policies and plans in the context of national plans for economic and social development, to ensure the promotion of the sector, to help create favourable environment for the development and promotion of agriculture, livestock breeding, and fishery.

The ministry of Industry, Energy and Mining is in charge of agri-food processing in Tunisia. According to Decree No. 2010-3215 of 13 December 2010 amending and supplementing Decree No. 95-916 of 22 May 1995, the functions of the Ministry of Industry, Energy and Mining in terms of agri-food processing is to develop and implement government policy in collaboration with relevant departments, to develop and implement the laws and regulations, to ensure the establishment of strategies for the development of agro-industrial infrastructure, to strengthen competitiveness of agri-food industry, and to develop quality standards for food products in collaboration with the departments and agencies concerned.

Authorities and organizations related to agricultural development in Tunisia are shown in Table 5.1-34.

	Authority	Outline (related laws)			
	Direction Générale de la Production Agricole	Is responsible for the promotion of agricultural production.			
	Direction Générale de la Protection et du Contrôle de la Qualité des Produits Agricoles	Is responsible for the supervision and quality control on agricultural products.			
	Direction Générale de la Pêche et de l'Aquaculture	Is responsible for the development and promotion of fishery and aquaculture.			
The Ministry of	Office de l'elevage et des paturages	Is responsible for the development and promotion of livestock and pasture, and plays an advisory role and technical reference for public authorities.			
Agriculture, Water Resources and Fisheries	Office National de l'huile	Controls and support olive farmers to improve productivity, promote the quality of the Tunisian olive oil, develop and enhance its export as well as regulating the local market. (Decree No. 7013 of 16 October, 1970)			
	Commisariats Régionaux du Développement Agricole (CRDA)	Is responsible for promotion and supervision on agricultural activities at local (Governorate) level. (Law No. 89-44 of 8 March, 1989)			
	Agence de Promotion des Investissements Agricoles (APIA)	Promotes private investment in agriculture, fisheries and related services as well as the activities of the first integrated transformation projects of agriculture and fisheries.			
	L'Agence de la Vulgarisation et de la Formation Agricoles (AVFA)	Is responsible for the implementation of programs relating to plans for economic and social development and mainly in training and extension. (Law No. 99-31 of 5 April, 1999)			
The ministry of	Direction Générale des Industries Alimentaires	Is responsible for the research, development, and promotion of agri-food industry.			
Industry, Energy and Mining	Agence de Promotion de l'Industrie et de l'Innovation (APII)	Promotes private investment in agri-food industry.			
	Groupement Interprofessionnel (Fruit, vegetable, meat and milk, poultry and rabbit, fish)	Contributes to market regulation, the promotion of quality Tunisian products, marketing and promotion of exports of Tunisian agricultural products. (Decree No. 1165-94 of 23 May, 1994)			
	Union Tunisienne de l'Agriculture et de la Pêche (UTAP)	Represents agricultural farmers and fishermen, and is responsible for the defense of their interests and protect their rights, provision of intensifying training courses for farmers.			
Others	Groupments de Développement Agricole (GDA)	Consists of local farmers, and manages agriculture water supply and facilities. (Law No. 99-43 of 10 May, 1999)			
	Société mutuelle des services agricoles	Is a mutual agricultural services company funded by and consists of local farmers, of which main activities are to provide inputs an services necessary for agricultural activity, supervise its member to increase the productivity and profitability, to promote marketing of agricultural products, etc. (Law No. 2005-94 of 18 October, 2005)			

Table 5 1-34	Authorities and	organizations	related to	agricultural	development
14010 5.1-54	Tumornes and	organizations	Terated to	agricultural	uevelopment

Source: Summarized by JET based on the website of each authority/organization

Table 5.1-35 shows the number of local organizations related to agricultural production by Governorate, including those mentioned above.

	Agricultural cooperatives		Agency for agricultural		Collective	Agricultural
	Number	Member	extension and training	ventilation	association	group (GDA)
Tataouine	4	213	6	11	0	61
Médenine	5	781	6	22	14	91
Gabès	13	904	6	32	99	10
Kébili	9	1,732	5	4	105	-
Tozeur	1	253	5	26	77	83
Gafsa	5	213	7	32	152	-

Table 5.1-35 Number of local organizations related to agricultural production by Governorate

Source: Commissariat Régional au Développement agricole, 2012

(b) Political framework

The Ministry of Agriculture, Water Resources and Fisheries has formulated 12th Development Plan for 2010-2014 composed of four pillars shown below. The Development Plan consists of the evaluation on the past progress of agricultural development, proposed policies corresponding to the four pillars, and expected volumes of production, trade, and investment during 2010-2014, but there is no projection by Regions or Governorates. The new Development Plan after 2014 has not been elaborated as of June 2014.

(i) **Promotion of food security**

Since food is a key element in achieving the dignity and sovereignty of people, Tunisia seeks to ensure food security through the development of the agricultural sector, considering the volatility of the markets in which global food is becoming scarcer than ever and it needs to be self-sufficient.

(ii) Increasing the competitiveness of the agricultural sector

For agricultural promotion in domestic and international market, competitiveness of agricultural sector should be increased through optimizing natural and local resources based on the principle of sustainable development, increasing productivity considering internal and external pressures, promoting research and modernization of the sector, taking advantage of information and communications technology, and the enhancement of administrative and financial services, transportation and logistics, maintenance, and simplifying administrative procedures.

(iii) Promotion of export

Measures for the promotion of export should be taken from the viewpoint of reinforcing internal and external marketing, storage condition, and logistics for export.

(iv) Valorisation of natural resources

Considering not only economic condition but also social, environmental, and climatic condition, natural resources such as water, soil, forests and pastures should be valorised in a sustainable way and properly managed for the future agricultural development.

(c) Supporting units and infrastructure related to agriculture and fishery

Table 5.1-36 shows the number and capacity of olive oil mill and dates in the South.

As for olive, most of them are processed into olive oil at oil mils in the South, and the bulk products are sent to Sfax and Tunis for bottling and/or export to EU countries such as Italy and Spain, according to the staff of the institute of olives in Médenine.

As for dates conditioning unit, some of them have dates collecting stations apart from the conditioning unit, so that the raw products from dates farmers can be sorted according to the quality before processing. According to the interview with CRDA in Tozeur, the number and capacity of dates conditioning unit in Kébili and Tozeur is sufficient at present in terms of the production volume.

	0	il mill	Dates conditioning unit					
	Number	Number Capacity (ton/day)		Capacity (ton/day)				
Tataouine	18	180	-	-				
Médenine	156	2,700	-	-				
Gabès	33	255	-	-				
Kébili	2	2	12	14,400				
Tozeur	-	_	22	30,100				
Gafsa	51	820	-	-				

 Table 5.1-36
 Number and capacity of olive oil mill and dates conditioning unit

Source : Commissariat Régional au Développement agricole, 2012

The number of infrastructure for fishery (Table 5.1-37) and fishing boat (Table 5.1-38) are shown below. According to the interview with APIP in Médenine and Gabès, aging infrastructure especially fishing boat and lack of the number of workshop are one of the most serious problems for fishermen.

Table 5.1-37 Number of infrastructure for fishery

	Port	Platform	Workshop	Ice factory	Refrigerated transport vessel
Médenine	5	3	9	29	152
Gabès	2	-	21	7	139

Source: Commissariat Régional au Développement agricole-service de Pêche, 2012

Table 5.1-38	Number of fisl	hing boats b	y fishing method
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	Coastal fishing			Tuna	Offshore	Light	Drifting	Round	
	Ordinary	Motorized	Total	fishing	boat	fishing boat	net	haul net	total
Médenine	1,518	680	2,198	1	2	18	8	-	2,227
Gabès	274	224	498	10	-	-	-	58	508

Source: Commissariat Régional au Développement agricole-service de Pêche, 2012

5.1.2 Competitiveness Analysis

(1) Agriculture

(a) Dates

(i) Factor conditions

As described in Chapter 5.1.1, dates are one of the major agricultural products in the South in terms of area, production volume, and value. The major variety of dates is Deglet Nour which is known as its sweetness, and it accounts for approximately 70% of the production volume. In addition, the number of variety of dates is said to be more than 300 at present and some of them are superior to Deglet Nour in

terms of its nutrition. So, there seems to be a room for future development of other varieties focusing on nutrition, and medicinal and cosmetic use.

On the other hand, some dates exporters pointed out that the productivity of dates in Tunisia is 1/3 of that in the US, which means there would be much room for improvement of agricultural method, quality control, and saving of input such as water consumption under serious shortage of water in the South. In addition, many farmers and the officers of the Centre of the Formation of Agricultural Production (CFPA) point out that it needs to establish safer method of harvesting, since many workers have faced the danger of falling off from the top of dates tree.

As for dates processing, there are also sufficient resources such as dates collecting unit and conditioning factory mainly in Kébili and Tozeur, as described in Chapter 5.1.1. In addition, the capacity of storage facilities for dates is said to be approximately 60,000t in the South.



(ii) Demand conditions

Dates factories in Kébili and Tozeur are now producing many kinds of dates product such as organic dates and conditioned dates whose moisture content is adjusted, and dates coated with glucose, etc. according to the demand of local market and international market such as EU countries and Gulf countries. As a result of these efforts, dates of Tunisia of which more than 90% are produced in Kébili and Tozeur have won the first position in international market in terms of the value.

(iii) Related and supporting industries

Although there are a number of dates collecting unit and conditioning factory, the number of dates processing factory for producing jam and syrup which have high value is very limited in the South. In addition, supporting industries such as package manufacturer are not located in the South, but in Tunis and Sfax, and Algeria for petroleum products. In terms of establishing industrial cluster and reinforcing value chain, these supporting industries need to be developed in the South.

Furthermore, according to the interview with Interprofessional Group of Fruits, some intermediate collectors/buyers of dates are not necessarily well organized and equipped, and it might influence on quality and quantity of dates in an undesirable way. It seems that one of the promising alternatives is to promote the establishment of agricultural cooperatives for collection and transportation of dates which are the role of the intermediate collectors/buyers at present.



(iv) Firm strategy, structure and rivalry

Typical sales strategy of dates producers in the South is to store large amount of products in preparation for high demand in Ramadan season. The competition in local market seems to be very hard considering the number of competitors employing the same method and strategy. As for export, some dates exporters have specific target countries such as France, Germany and Russia. The strategy for the promotion of export is examined in collaboration with Interprofessional Group of Fruits, but some dates exporters refer to the necessity of national office specialized in dates as well as olive for making more robust and effective strategy for marketing and export promotion.

(v) Markets and competition

Tunisia is the world's largest exporter of dates in value, and the fourth largest in volume. It can be said that dates of Tunisia, especially that from the South which accounts for approximately 90% of the whole volume of export, has already had high competitiveness in international market. It seems that the competitiveness can be much stronger through further improvement of productivity and marketing.

Donk	Country	Export Value (US\$ 1,000)			
Капк	Country	2009	2010	2011	
1	Tunisia	176,280	200,091	211,451	
2	Iran (Islamic Republic of)	55,819	134,001	160,251	
3	Saudi Arabia	1,650	78,126	86,293	
4	Israel	59,169	63,381	85,869	
5	Pakistan	42,716	48,690	64,081	
6	Iraq	46,886	35,913	46,851	
7	United States of America	22,304	25,339	33,436	
8	France	27,061	32,112	33,083	

 Table 5.1-39
 Major exporters of dates in the world by export value

Source: FAOSTAT

Donk	Country	Export Quantity (t)			
Канк	Country	2009	2010	2011	
1	Iraq	183,701	120,123	138,437	
2	Pakistan	111,715	121,681	113,358	
3	Iran (Islamic Republic of)	68,837	106,760	112,030	
4	Tunisia	77,254	84,282	86,910	
5	Saudi Arabia	1,593	73,362	77,795	
6	United Arab Emirates	56,240	50,068	51,214	
7	Algeria	12,000	10,393	28,143	
8	Egypt	14,659	19,562	23,792	

 Table 5.1-40
 Major exporters of dates in the world by export quantity

Source: FAOSTAT

(b) Olive and olive oil

(i) Factor conditions

As described in Chapter 5.1.1, olive is one of the major agricultural products in the South along with dates in terms of area, production volume, and value. Major varieties of olive in the South are Zalmati and Chemleli for olive oil and Zarrazi for table olive. Zalmati can endure with limited water, but production quantity is lower than that of Chemleli, according to the staff in the institute of olives in Zarzis. In addition, there are a number of oil mills especially in Médenine, of which capacity is sufficient enough to correspond to production volume fluctuating every year due to rainfall condition. On the other hand, some issues have been observed such as lack of rain, aging of olive farmers, insufficiency of agricultural road, and expensive forages which is indispensable for organic olive production accompanied by livestock breeding and its organic waste.



(ii) Demand conditions

Consumers not only in local market but also in international market have severe eyes on the quality of olive oil. So, olive oil mills also pay much attention to the quality considering international criteria of olive oil quality, such as extra-virgin olive oil which has to contain no more than 0.8% free acidity and has to be judged to have a superior taste, having some fruitiness and no defined sensory defects. Since the evaluation on olive oil also affects on unit price, olive farmers devote to improve the quality of olive.

(iii) Related and supporting industries

As described in Chapter 5.1.1, the number of oil mill is sufficient in the South, and the quality test of olive oil is also available in some oil mills. But, oil mills in the South have to depend much on these supporting industries mainly located in Sfax and Tunis, since there is no manufacturer of can and glass bottle, and few bottling factory in the South. In terms of reinforcing value chain of olive oil, these supporting industries need to be developed in the South. While solid olive waste shown in the picture below are used as a part of animal feed and contributes to circulative use of organic substances in neighbourhood, high disposal cost of liquid olive waste is one of the serious issues for oil mills. Since the liquid olive waste can be used as irrigation water, fertilizer, and other biologic by-products after proper treatment, supporting industry related to liquid olive waste treatment need to be developed in the South.



Test on olive oil quality (Institute of olives in Médenine)

Waste from olive oil mill (Tataouine)

(iv) Firm strategy, structure and rivalry

At the stage of production, a number of olive farmers collectively engage in producing quality olive oil under international criteria. At the stage of bottling and export, strategy for the promotion of export is elaborated by exporters in cooperation with public bodies such as National Oil Office and Promotion Program for Olive Oil under the Ministry of Industry, Energy and Mining. At present, it can be said that there is a strategic discontinuity between production and bottling/export, since there are only a few examples of geographical indication (GI) marketing in Tunisia, in which the origin of the raw materials is indicated on final product.

(v) Markets and competition

As shown in Table 5.1-41 and Table 5.1-42, Tunisia is the fourth largest exporter of virgin olive oil in value, and the third in quantity, but there is a large gap between two major exporters, Spain and Italy. It is well known that Tunisian olive oil is used as a raw material of olive oil product in Spain and Italy, and Tunisia has lost much value added which is supposed to contribute to the profit of olive and olive oil producer in Tunisia. There is no specific figure regarding the olive oil exported from the South, because some kinds of raw olive oil from different Regions are often mixed by bottling companies to make better tastes and flavours.

Donk	Country	Export Value (US\$ 1,000)				
Kalik	Country	2009	2010	2011		
1	Spain	2,144,708	2,468,509	2,574,387		
2	Italy	1,334,989	1,467,627	1,633,436		
3	Greece	312,261	279,603	310,697		
4	Tunisia	395,544	309,316	285,866		
5	Portugal	168,612	211,555	271,056		
6	Syrian Arab Republic	65,568	65,225	120,000		
7	Morocco	9,945	54,620	83,313		
8	Argentina	62,620	43,079	71,025		

 Table 5.1-41
 Major exporters of olive oil in the world by export value

Source: FAOSTAT

Table 5.1-42 Major exporters of olive oil in the world by export quantity

Donk	Country	Export Quantity (ton)			
Kalik	Country	2009	2010	2011	
1	Spain	660,694	846,855	846,137	
2	Italy	293,389	343,292	363,564	
3	Tunisia	141,688	108,772	100,294	
4	Greece	88,399	80,854	86,807	
5	Portugal	36,928	48,984	64,941	
6	Syrian Arab Republic	19,110	17,438	40,000	
7	Morocco	3,080	20,882	36,004	
8	Argentina	18,951	12,028	22,631	

Source: FAOSTAT

(c) Arboriculture other than olive and dates

(i) Factor conditions

As described in Chapter 5.1.1, typical products vary by Governorate, such as fig in Médenine and Gabès, pomegranate in Gabès, and almond in Gafsa. In some Governorates which have oasis, arboriculture products are often produced by traditional three-layer system of oasis agriculture shown in the picture below. Traditional canal irrigation and mixed varieties of plants can create moderate climate for arboriculture.

On the other hand, it is said that some farmers recognize arboriculture other than olive and dates as for domestic (home) consumption and tend to grow much varieties in less volume, excluding some products referred to above. In addition, the number of fruits processing unit (e.g. for dried fig) for commercial products is said to be insufficient in the South. To promote arboriculture other than olive and dates in the South, it is needed to increase production volume under collective activity of farmers such as agricultural cooperatives, and to increase the capacity of food processing unit for producing commercial products which have relatively high value.



(ii) Demand conditions

As described in Chapter 5.1.1, some products such as pomegranate of Gabès have already got an excellent reputation in domestic market not only in the South but also in the whole Tunisia. On the other hand, regarding the other arboriculture products which are produced less is mainly for home consumption and/or local market, consumer's eye on the quality of the products seems to be less severe compared to that in domestic market in Tunisia.

(iii) Related and supporting industries

As described above, the number of food processing unit such as a producer of dried fruits and juice is very few and scattered in the South excluding that of dates. In addition, supplier of raw materials such as packages is not located in the South, which is the same as that of olive and dates. These supporting industries need to be developed in the South along with collective and large amount of the production of arboriculture products.

(iv) Firm strategy, structure and rivalry

Excluding some products which have already had certain production volume and reputation in domestic market, it needs to be promoted to increase production volume under collective activity of farmers for expanding business under a robust strategy.

(v) Markets and competition

As for export, the volume of production of these products is much lower than that of major exporters among neighbouring countries, such as Turkey, Iran, and Morocco for fig, Spain and Italy for almond. In the case of pomegranate of Gabès, it used to contribute to the export to Libya before revolution, but the value added of the products were considered to be lower than the export to other countries such as EU and Gulf countries. It seems that it is better to at first focus on domestic market, and concentrate on increasing production volume, and improving quality and productivity.

(d) Vegetables

(i) Factor conditions

As described in Chapter 5.1.1, many varieties of vegetables are produced on irrigated farmland in the South. Products are mainly for local market, but due to the limitation of water and farmland expansion,

the production volume of vegetables in the South is not enough to satisfy the demand of local people. Some of them are provided from the Central Region such as Sidi Bousid and Sfax.

On the other hand, some products such as tomato produced in greenhouse in Gabès and potato in Tataouine are supplied to domestic market in Tunisia as off-season vegetables which have relatively high value. In addition, one major producer of tomato in Gabès exports approximately 5,000t (as of 2013) of packaged tomato to EU and Gulf countries. The tomato is made in 42ha of greenhouse under modernized operation system such as automatic supply of irrigation water, liquid fertilizer, and agricultural chemicals.



(ii) Demand conditions

As described above, production volume of vegetables is insufficient for local demand in the South, excluding some products going to domestic and international market. Considering the difference of freshness and transport cost of vegetables from the other regions, vegetables produced in the South can meet consumer's needs in local market.

The farmers of off-season vegetables are targeting to specific season in specific regions/countries in which the demand of some vegetables become large due to the insufficiency of production volume of their own.

(iii) Related and supporting industries

The number of agricultural cooperatives funded and managed by local farmers is gradually increasing in recent years under the promotion of the Ministry of Agriculture, Water Resources and Fisheries, and some of them provide agricultural materials for farmers such as vegetable seed, fertilizer, agricultural chemicals, and equipment for irrigation at reasonable price.

In relation to oasis waste management and provision of organic substances, experimental compost station is operated by local NGO in Gabès for the purpose of effective use of organic oasis waste, and organic compost is sold to local farmers. To promote organic agriculture under circulative use of local organic substances, compost stations managed by a group of local farmers, cooperatives, and NGOs need to be developed in the South.



(iv) Firm strategy, structure and rivalry

In relation to the sales strategy of off-season vegetable farmers described above, some farmers who have greenhouses can change the varieties of vegetables in a few months period according to price variation in the vegetable market, taking advantage of hot spring water for climate control. According to the interview with farmers who have greenhouses in Kébili and Tozeur, they are carefully focusing on the price variation and finding the opportunity to sell large amount of vegetables to major supermarkets.

(v) Markets and competition

Farmers focusing on domestic and international market of off-season vegetables are targeting niche market of other regions/countries, so they can avoid excessive competition as long as the quality of their products is maintained.

(2) Livestock Breeding

(a) Factor conditions

As shown in Chapter 5.1.1, the number of sheep, goat, and cattle decreased in recent years in the South. One of the reasons is expected to be high cost of forages and formula feed. It is said that production volume of forage crops in the South tend to fluctuate depending on climate condition of each year. In the year of poor harvest, the breeders has to buy certain amount of forages from the other regions at higher price of which transport cost is added, even though a part of the cost is subsidized by the Ministry of Agriculture, Water Resources and Fisheries. According to the interview with livestock breeders in the South, many of them are suffering from high cost of forage crops and formula feed, and some are even considering giving up livestock breeding in the near future. In the case that livestock breeding is managed along with olive or dates farming, the condition seems to be better to some extent since a part of forages can be substituted by such organic substances as olive leaves, olive pomace, and disqualified dates.

On the contrary to animals above, the number of broiler hen, laying hen, and cow is stable or increasing in recent years. Goodness of feed efficiency of hens and selling price of those animals or livestock products such as eggs and milk is expected to be one of the reasons of the trend.



(b) Demand conditions

There are some products whose production in the South is assumed to be insufficient for the need of local people, such as poultry meat, egg, milk, and dairy products. According to the interview with breeders, demand of poultry meat, milk, and dairy product is increasing in recent years, and production volume of egg in the South is insufficient compared to national average consumption of eggs per population (100 eggs per person per year).

(c) Related and supporting industries

Some agricultural cooperatives in the South provide forages and formula feeds to breeders as well as other agricultural materials. But, as described above, the price of feeds tend to be high due to transport cost from the other regions. It is not the common case, but one formula feed factory managed by agricultural cooperative in Gabès can sell the products at reasonable price by its own effort, and customers are coming not only from neighbourhood but also from the other Governorates.

There are some milk collecting units in Gabès and Gafsa, but collected milk is mainly for dairy product factories in the other regions. One large yogurt factory located in Médenine is one of the destinations of the milk, but there is no other industry related to dairy product.

Apart from private industries, OEP under the Ministry of Agriculture, Water Resources and Fisheries plays an important role through such supports as making inventory of individual livestock and providing health monitoring by veterinarians.



(d) Firm strategy, structure and rivalry

For farmers who have certain area of farmland for olive, dates and other products, livestock breeding is not necessarily the primary means of their business; it is often for getting additional income and/or organic substances, or only for home consumption. The number of breeders/business owners whose primary business is livestock breeding or livestock product processing seems to be low in the South, but some of them have a robust strategy for their business expansion.

According to the interview in a yogurt company in Médenine, the market of dairy products in Tunisia has been increasing about 6% annually, and the sales volume of the company increases even at a higher rate. The company can take advantage of proximity to the South and Libya, since all the competitors are located in the other regions.

One broiler factory in Médenine is facing the lack of breeder and poultry house, which means the production volume cannot keep up with the increasing demand in the South. The owner of the factory says that there is no competitor in the South.

(e) Markets and competition

As described above, local market of livestock products in the South is considered to be promising in terms of the difference between supply and demand. Since the freshness is an important factor to contribute to high competitiveness of fresh livestock products, it can be one of the promising alternatives to focus on local market in the South, and that of neighbouring countries such as Algeria and Libya, excluding the export of frozen products. Both the yogurt company and the broiler company in Médenine have exported their products to Libya taking advantage of the proximity to Tripoli, the capital of Libya.

(3) Fishery, aquaculture, and fish processed product

(a) Factor conditions

As described in Chapter 5.1.1, production volume of fish is stable in recent years, in which the increase of coastal fishing and aquaculture cover the decrease of light fishing and offshore fishing. Production volume of aquaculture and lagoon fishing has doubled in recent five years, and some potential investors in aquaculture are said to be waiting for the permission of the government. But, their projects have not yet been started mainly due to the delay of administrative procedure.

On the other hand, due to the decrease of aquatic resource derived from illegal operation and overfishing in the Mediterranean Sea, it is said that the number of fishermen and fishery infrastructure such as boats, and the volume of aquatic resource are not necessarily balanced at present. In addition, due to the old fishing boats and equipment, productivity and efficiency of fishing operation in Tunisia is said to be lower than those of other countries. Furthermore, environmental pollution of the Gulf of Gabès is harming to coastal fishing of the area.



(b) Demand conditions

According to the interview with the Interprofessional Group of Fish, there is high demand for fish in local market especially in coastal area of Tunisia. In addition to fresh fish, demand for fish processing products such as canned tuna and sardine are also high not only in local and domestic market but also foreign countries such as EU and Gulf countries, according to the interview with a fish processing factory in Médenine.

(c) Related and supporting industries

As described in Chapter 5.1.1, some fishermen claim the necessity of workshops for boat repair, but the primary issue seems to be the aging of equipment and infrastructure related to fishery and the necessity of renewal. As for aquaculture, there is no supplier of fish feed and medicine in the South, and most of them are procured from the other regions or imported from Italy and Spain. As for fish processing, more than 20 of fish processing factories in the South, but materials such as can and glass bottle which are not available in the South are procured from the other cities such as Sfax and Tunis. In addition, they highly depend on the import of tuna as a raw material. Furthermore, fish processing factories suffer from high cost of waste disposal such as head and bone of tuna. For saving the cost and using the organic substances more effectively, facilities for organic waste disposal need to be developed since there are some factories which have their own waste disposal facility in which remaining of fish is processed into fish feed, fertilizer, and industrial products.



Fish processing factory (Zarzis)

Fishing boat at workshop (Zarzis)

(d) Firm strategy, structure and rivalry

Since the number of fishermen's cooperatives is still low, it seems to be difficult for fishermen to collectively engage in activities under a robust strategy for fishery promotion. To seek for productive and sustainable fishing activities and to tackle complex issues such as limited resources, aging of fishing infrastructure, and illegal fishing, it is needed to at first raise awareness of the fishermen and to promote the establishment of cooperatives for proceeding collective activities.

The number of aquaculture companies and fish processing companies is not so large in the South, but some products clearly reflect the sales strategy of the companies such as many varieties of tuna can according to the needs of domestic and international market.

(e) Markets and competition

Both domestic and international market seem to be promising considering the decrease of aquatic resources and stable demand for fish and fish products. Aquaculture products such as sea buss and sea bream have got a good reputation in domestic market and are exported to France and Italy. Tuna and sardine cans of the major fish processing company in Médenine acquired the international standard and certification on products are highly competitive in domestic market and exported to the US, Canada, France, Japan, and Gulf countries.

5.1.3 Potentials and Constraints

(1) Constraints

Based on the result of competitiveness analysis in Chapter 5.1.2 and field survey conducted by JET, major constraints for the promotion of agricultural development in the South are summarized as shown in Table 5.1-43, followed by detail examination below the table.

Categories	Constraints
	 Limitation of water resource Limitation of farmland Limitation of aquatic resources
Resources	 4) Lack of human resources (skilled labour, trainer, engineer, and young farmer) 5) Lack of collective and modernized agriculture and fishery 6) High operation cost and insufficient opportunity for financing
Value chain	7) Insufficiency of value chain in the South8) Lack of supporting industry
Infrastructure	9) Insufficiency of infrastructure
Governmental support	10) Insufficiency of governmental supports and delay in administrative procedures

Table 5.1-43 M	lajor constraints	for the prop	notion of	agricultural	development	in the	South
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(a) Limitation of water resource

The most serious problem for agricultural development is water scarcity in the South, as illustrated by the significant use of underground water from deep aquifers which are not naturally recharged, high salinity of underground water which is not suitable for many products, low and fluctuating rainfall, and illegal connections to the water system.

(b) Limitation of farmland

Along with the water scarcity, there are a lot of issues related to farmland such as fragmentation of agricultural land due to inheritance, collective land ownership issue which can be an obstacle for those who want to use the land as security for a loan from a bank, lack of room for farmland expansion represented by high percentage of cultivated area/cultivable area, farmland threatened by desertification, salinization and depletion of irrigated land due to over-intensified use of farmland.

(c) Limitation of aquatic resources

As described in Chapter 5.1.2, the amount of aquatic resources is decreasing mainly due to overfishing and illegal fishing. In addition, sea pollution seriously affects on coastal fishing.

(d) Lack of human resources (skilled labour, trainer, engineer, and young farmer)

The lack of human resources is one of the serious constraints. Not only the lack of skilled labours during the harvest season, but also the lack of motivated young farmers and fishermen as well as trainers and engineers who are familiar to modernized agricultural technology are also serious problems considering human resource development for the future.

(e) Lack of collective and modernized agriculture and fishery

The number of agricultural cooperatives is increasing, but it needs to be promoted more for productive, structured, modernized, and efficient agricultural management along with the reinforcement of GDA in terms of management of irrigation water supply.

(f) High operation cost and insufficient opportunity for financing

In view of farmers, high operation cost for labours, agricultural materials such as fertilizer, forage, and agricultural chemical, and transport is one of the constraints for agricultural development. High transport cost is apparently related to the distance from input suppliers most of which are located in Sfax and Tunis and poor road infrastructure.

As for financing to cover the cost above, several farmers and factories have benefited from grants and state subsidies as part of the benefits provided by the Investment Code or under regional programs. But farmers do not always meet the requirements of commercial banks in terms of ability to repay, the clearance of their land records, and the age limit of the potential beneficiary.

(g) Insufficiency of value chain in the South

Considering value chain of agricultural and fishery products which is composed of procurement, production, processing, bottling/packaging, transport, export and/or sales, players in the South are only involved in production and a part of processing. That is, major part of value added created in the value chain goes to the players in the other regions, not those in the South.

(h) Lack of supporting industry

Although there are some food processing factories which are highly competitive in domestic and international market, there is few supporting industries connected to the activity of the factories in the South. In addition, since each factory tends to be located alone and does not form the cluster with supporting industries, one cannot take advantage of economy of scale.

(i) Insufficiency of infrastructure

Insufficiency of high-speed roads network is one of the causes of high transport cost for raw materials and final products. In addition, national roads and Governorate roads are not properly maintained. Furthermore, aging of fishery infrastructure and lack of waste treatment unit for organic waste can also be constraints in terms of infrastructure.

(j) Insufficiency of governmental supports and delays in administrative procedures

In view of farmers and private companies, governmental supports such as subsidy for forages, transport cost, and initial cost of the project are not enough to motivate them to keep or expand their business activity. In addition, motivated investors often have to wait for a long time to start the project due to the delay of administrative procedures.

(2) **Potentials**

Based on the result above, products which are considered to have high potential in the South are summarized as shown in Table 5.1-44, followed by detail examination below the table. In addition, following four approaches are recommended for tackling the constraints above and maximizing value added of proposed products through utilization of unique local resources in the South.

- Reinforcement and sophistication of value chain
- Development of industrial cluster for food processing
- Further promotion of using unique local resources
- Introduction of modernized agricultural technology for sustainable development

Table 5.1-44 Major products expected to have potentials in the South and recommended approaches

	Recommended approaches for promotion considering local characteristics of the South						
Products considered to have high potential	Reinforcement and sophistication of value chain	Development of industrial cluster for food processing	Further promotion of using unique local resources	Introduction of modernized technology for sustainable development			
1) Dates	0	0	0	0			
2) Olive oil	0	0	0				
3) Other arboriculture products	0	0					
4) Off-season vegetables	0			0			
5) Newly developing local products			0				
6) Chicken, milk and dairy products	0	0	0				
7) Aquaculture and fish processing products	0	0					

for promotion

(a) Dates

There is so much room for increasing value added of dates products by the reinforcement of value chain especially through the sophistication of marketing mainly represented by packaging and branding. And, it is important to develop industrial cluster for dates in and around Kébili and Tozeur to expand the extent of contribution of the South to the value chain, since the contribution at present is limited to production and a part of packaging.

In view of farmers, promoting the development of agricultural cooperatives, circulative use of oasis waste as organic substances, the valorisation of unique varieties of dates other than Deglet Nour also contribute to increase productivity and value added. In addition, appropriate farm management and installation of modernized irrigation system are also effective. As shown in a picture below, one dates farmer in Tozeur achieved 20% larger yield than another farm through proper maintenance of farmland, and the other farmer installed modernized irrigation system which can save approximately 80% of water consumption compared to conventional irrigation.



(b) Olive oil

As well as dates, it is important to develop industrial cluster for olive oil production in and around Médenine as a leading Governorate in the South to enhance the involvement in the value chain. Considering the current status that most of the olive oil are exported as bulk product, it can also be one of the alternatives to promote the branding of final products of olive oil in the South in connection with unique local varieties of olive such as Chemleli (further subdivided in Chemleli Zarzis, Tataouine, and Djerba) and Zalmati through geographical indications. As many olive farmers have already practiced circulative use of organic substances between olive and livestock breeding, and it can be an advantage to increase the volume of organic olive oil which has high value added.

(c) Other arboriculture products

Though the production volume and value are much lower than dates and olive oil, some arboriculture products such as pomegranate of Gabès, fig of Médenine and Gabès, and almond of Gafsa seem to be promising. For further increase of production volume and value added, it is important to develop supporting industries such as packaging and fruits processing, and to promote the development of agricultural cooperatives for increasing productivity and collective agricultural activities.

(d) Off season vegetables

In view of exploring the niche market, off-season vegetables represented by tomato of Gabès, potato of Tataouine, seasonal vegetables of greenhouses in Kébili and Tozeur seem to be one of the promising products in the South. To increase production volume of off-season vegetables, the limitation of water resources has to be overcome through the installation of modernized irrigation system and waste water recycle system as described in Chapter 6.2.6, and the productivity needs to be improved through collective agricultural activities by cooperatives, along with the improvement of transport infrastructure to supply fresh products to the market.

(e) Newly developing local products

Medicinal and aromatic plants such as wormwood, rosemary and some other herbs are locally grown and traditionally used as natural medicine and seasonings for local people. These products have not yet been fully developed for commercial use, but have so much room for valorisation as many research and development activities are ongoing led by Arid Research Institute in Médenine.

In addition, there is a possibility to promote new products such as moringa and spirulina which are suitable for climate of the South and have high nutrition and much room for processing into medicinal use. Moringa is known as a raw material of nutritious supplement among the US and EU countries and its oil which has so much value for lubricant of precision machinery, and now experimentally produced by one farmer in Tataouine. Spirulina algae, whose origin is central Africa, is produced by one agricultural cooperative in Sidi Bousid, and is known as its high nutrition and goodness of productivity (compared to soy, only 1/4 water and 1/2 surface are needed for an equal yield).²



(f) Chicken, milk and dairy products

While sheep and goat breeding combined by olive and dates production is common in the South, production of chicken, milk and dairy products seem to be promising considering large demand in the market. It is important to increase the number of broiler hen and cow to promote business expansion of current breeders along with the development of the cluster of supporting industry such as meat processing factory, milk collecting unit, dairy product factory, package manufacturer, and the supplier of forages and formula feed mixed with local organic substances in the South.

(g) Aquaculture and fish processing products

Considering the limitation of aquatic resources, aquaculture and fish processing products are considered to be promising in the South. As for aquaculture, it is important at first to promote the activities of potential investors through accelerating the administrative procedures. In addition, the varieties of production need to be enhanced from sea bream, sea buss, and tilapia to other valuable products such as shrimp and tuna whose demand is so high in EU countries, the US, and Japan, etc. Furthermore, supporting industry related to the production of fish processing products such as can and package manufacturer, organic waste disposer and/or recycling factory should be developed as one component of food processing industry cluster.

² http://www.tunisia-live.net/2012/03/23/organic-agriculture-blossoms-in-tunisia/

5.2 Mining sector

5.2.1 General conditions

Mineral exploration and production activities are regulated by the Mining Code (law No. 2003–30 of April 28, 2003). Mines are state-owned properties in Tunisia, and they are regulated by the National Office of Mines, which also conducts geologic research, prepares geologic and geophysical maps, and promotes private operations of mines.

One of the most important minerals in the Southern Region is phosphate ore. The large reserves of phosphate ore in Gafsa have given rises to the phosphate industry in Gafsa. All mines and processing of phosphate in Gafsa are operated by the public enterprise, Compagnie des Phosphates de Gafsa (CPG), which currently employs 17,000 people.

Table 5.2-1 shows the other major mining firms in the Southern Region in the selected minerals. The extraction of these minerals are carried out by private firms where Ministry of Industry, Energy and Mining gives them concession for exploitation. The mining law of Tunisia stipulates that, for natural stone such as gypsum, limestone, and marble (but not sand, gravel, and clay), the extractor has to conduct processing activities minerals they extract at least within 2 years after they start extraction. Thus, the firms that exploit gypsum, limestone, and marble also conduct processing activities of these minerals.

Substance	Name of firm	Location of extraction	Note
Gypsum	SIPS	Tataouine	The firm also processes gypsum ore to powder.
	MEDGYP	Tataouine	The firm also processes gypsum ore to powder.
	STHL	Tataouine	The firm also processes gypsum ore to powder.
	SLCM	Tataouine	The firm also processes gypsum ore to powder.
Limestone	T ET T STONE	Kébili	The firm is limestone tiles and decorative materials maker.
	LES CARRIERS DU SUD	Gabès	The firm is processing limestone to calcium powder for livestock feeds.
Marble	SOMAGA	Gabès	The firm also process marble to tiles.
Red clay	SOCETE DE CERAMIQUE	Gabès	Brick maker.
	BRIQUETERIE BELMABROUK	Kébili	Brick maker.
Sand and gravel	CARREIERE ERSIFA	Kébili	The owner of this firm also own Nouvelles Pavets du Sud (cement pavement and building material maker)
	GRAND CARRIERE DU SUD	Médenine	The firm sells sand local construction firms
	SIMCOM CARRIER SUD	Médenine	The firm sells sand to Kaouech Beton (concrete maker)
Salt	SAHARA SEL	Tozeur	
	COMPAGNIE GENERALE DES SALINES DE TUNISIE	Médenine	

 Table 5.2-1
 Major mining firms in the Southern Region

Source: List made by the JICA project team based on their fieldworks.

Crude oil and gas production are governed by the Hydrocarbons Code (law No. 99–93 of August 17, 1999) and its supplement (law No. 2002–23 of February 2002). There is a significant volume of

petroleum reserves in Tataouine, and currently seven companies engage in oil extraction and refining. These firm are ANADARKO, ENI, OMV, WINSTAR, SODEPS, SVI, SITEP, and some of them are 100% foreign capital and others are partly foreign capital (there is no 100% Tunisian capital enterprise). These firms sell their oil to the public enterprise, Entreprise Tunisienne d'Activités Pétrolières (ETAP), which is responsible to export oil.

There is one natural gas producer in Kébili, PRINCO, which is Italian enterprise.



5.2.2 Competitive analysis

(1) Factor conditions

According to CPG, the reserves of phosphate ore in the Gafsa mining basin amount to 700 million tons.

As Table 5.2-2 shows, by 2010, CPG had produced more than 7.0 MT annually, and thanks to this, Tunisia ranks 5th in the world in phosphate production between these periods. However, the extraction and production have sharply declined due to the social disruptions in Gafsa after the revolution in 2011. One important aspects of the social disruption is that the considerable pressure to CPG for new employment by the society, especially by young unemployed people in Gafsa. To show their discontents, these people had been conducting in sit-ins on the workplace of the CPG, cutting roads and railways, in all mining delegations of the governorate.

The decline of the phosphate production by CPG led to the sharp decline of phosphate acid and other phosphate products by Group Chemique Tunisien (GCT).

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Extraction (MT)	12.3	12.3	11.8	12.4	11.6	11.3	13.2	2.9	5.1
Production of Marketable	7.9	8.0	8.2	7.8	7.6	7.2	8.1	2.3	2.6
Phosphate (MT)									
Local Sales (MT)	6.6	6.5	6.5	6.3	6.5	5.6	6.6	3.2	4.7
Export (MT)	0.6	0.8	0.8	1.2	0.9	0.5	0.7	0.15	0.09

Table 5.2-2 Evolution of extraction, production, local sales, and export of Phosphate by CPG

Source: Gafsa en chiffres 2010-2012, ODS

There are also various other mineral resources that can be exploited further in the South. Table 5.2-3 lists the examples of it.

Substance	Major areas	Potential Uses		
Feldspathic sands	All over the South	Stoneware, Ceramics, Earthenware		
Silicate	Tataouine	Medical plaster		
Cosmetic clay	Tataouine	Thalassotherapy, Cosmetic use		
Quartz sands	Gafsa	Glassware: flat glass, tableware, bottles, Insulating bricks and aerated concrete		
Calcium carbonate	Gabès, Gafsa Kébili, Tataouine	Building materials: building stone, cement, Filler material: products, detergents, PVC, ceramics, animal nutrition, Medical use		
Marble stone	Gabès, Gafsa Tataouine	Marble stone, Building materials		
Gypsum	Gafsa, Tataouine	Plaster, Portland cement, Ultimax cement, Fillers		
White dolomite	Gafsa	Ceramics, Glassware, Painting		
Benthos clay	Gafsa	Drilling mud, Bleaching oils and additives		
Clay for earthware	Gafsa	Earthenware, Porcelain		
Cherts	Gafsa	Sulfur filtration, Filtration of vegetable oils, Wine filtration		

 Table 5.2-3
 Major mineral substances that can be exploited in the Southern Region

Source: List made by JICA project team based on the discussion with Office National de Mines (ONM)

(2) Demand conditions

The demand for construction material and thus the raw materials are thought to be increasing in the short run due to the current construction boom in Tunisia and expected reconstruction boom in Libya. The increase in the demand in the local market and nearby area would be a definitely an advantage for the development of the sector.

(3) Related and supporting industries

Most of the firms in this sector have to import their machineries as the machinery makers are not locally available. Even though these firms are capable of maintaining their machineries but have to ask the machinery makers to send technicians for repairing machineries.

(4) Firm strategy, structure and rivalry

Exploitation of minerals are relatively capital intensive activity. Also, the mining industry is highly regulated sector where investors need the concession of exploitation by the government. These characteristics make the number of firms in this sector small and relatively low competition among the firms in the sector.

(5) Markets and competition

The demands phosphoric acid are expected to increase in the long run due to the increase in demands in agricultural commodities and thus fertilizers. Yet the supply of phosphoric acid is also forecasted to increase by late 2030s, as shown in Figure 5.2-1. Thus, the market of phosphorus acid seem not to have increasing or decreasing trends by that period (even though there may be short-term disruptions).



Source: International Fertilizer Association



As shown in Figure 5.2-2, the global demands for gypsum is forecasted to increase in the next ten years. Furthermore, the demand for construction material and thus the raw materials are thought to be increasing in the short run due to the current construction boom in Tunisia and expected reconstruction boom in Libya.



Figure 5.2-2 Forecasts of worldwide gypsum consumption by 2023.

5.2.3 Potentials and constraints

There are large reserves of various kinds of natural minerals that can be exploited in the South, and this is definitely a big assets for the future development in this region. However, there are a number of constraints for new investments for mining industry, which include the following points.

- Exploitation projects are generally capital-intensive, requiring investors (Tunisian or foreign) having large financial capacities.
- These projects use specific technologies closely related to the nature, composition and physico-chemical properties of these substances. The choice of technology and equipment

requires a preliminary phase of studies, analysis and tests that can take several months and require significant funds.

- The development of these complex projects requires a structured organization of the promoter, which means that it is rarely accessible to young or new developers.
- The challenge for new developers to obtain financing and the necessary guarantees.
- Difficulties in obtaining various permissions and administrative notifications (changes in the vocation of the land, concessions, building permits, approval of the EIE)
- The lack of rapid transport infrastructure (highways and railways), linking it to other neighbouring governorates, Sfax and Tunis.
- The status of lands containing deposits of useful substances, which may lead to difficulties for exploitation.

The future development of phosphate industry is largely dependent on the social stability in Gafsa.
5.3 Industrial Sector

5.3.1 Textile sector

(1) General conditions

Table 5.3-1 depicts the number of enterprises and employees in textile sector in the South in 2012. It shows the concentration of the textile firms in Gabès and Gafsa in terms of the number of employees. One can also see that textile sector is an important field of economic activity in terms of job creation, generating about 18% of total employees in the manufacturing sectors. Indeed, textile sector is characterized by a highly labour intensive industry, which only requires relatively light machineries such as sewing machines and cutters in the production process.

 Table 5.3-1
 Number of enterprises and employees in textile sector in the South (2012)

	Number of enterprises	Number of employees
Gabès	82	1,822
Gafsa	30	1,921
Kébili	25	165
Médenine	16	836
Tataouine	19	310
Tozeur	5	500
Total textile sector	177	5,554
Total all manufacturing sector	1,954	30,001

Source: Sud en chiffres 2012, ODS

Table 5.3-2 and Table 5.3-3 show the major textile firms in the Southern Region.

Table 5.3-2	List of textile companies	that sell their products to	off-shore markets (except in Gafs	sa)
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Region	Company name	Activities	Products	Foreign participant country	Year estab- lished	Share Capital DT	Employees
Médenine	HADJI PALM TEX	Manufacture of pull overs and similar articles in knit fabric - Manufacture of work clothes and uniforms - Manufacture of outerwear.	Other knit items - Skirts - Slacks - Working clothes.		2011	18000	71
Médenine	STE HAJJITEX	Manufacture of pull overs and similar articles in knit fabric - Manufacture of work clothes and uniforms - Manufacture of outerwear.	Working clothes - Skirts - Other knit items - Slacks.		1998	210000	59
Médenine	INTERNATIONAL DOUIDA ALL CREATIONS	Diverse household linens - Manufacture of clothing and accessories.	Table linens - Other home linens - Other items and accessories.	France	2007	8500	25
Médenine	SADOK HADJI	Handmade rugs.	Rugs, klims, mergoums, etc		1973	N/K	10
Gabès	TUNISIE SOUS-VETEMENTS MAILLE	Manufacture of under garments.	Underwear: underpants, shorts, etc	France	2012	250000	247

Region	Company name	Activities	Products	Foreign participant country	Year estab- lished	Share Capital DT	Employees
Gabès	GOLFE TEXTILE	Manufacture of outerwear - Manufacture of under garments.	T-shirts - Slacks - Jeans - Skirts - Dresses - Other outerwear.		1990	170000	90
Gabès	HEALTH PRODUCTION PRODUCTS	Manufacture of work clothes and uniforms.	Working clothes - Individual safety equipment (glasses, masks).		2011	340000	60
Tozeur	DUNETEX	Manufacture of outerwear.	Jeans.	Belgium	1999	20000	200
Tozeur	CASTILLIA	Diverse household linens.	Chair slipcovers.	Belgium	2000	1040000	179
Tozeur	SANDROSE	Manufacture of outerwear.	Dresses - Jackets.	Belgium	1996	100000	150
Tozeur	STE 3G CONFECTION	Manufacture of outerwear.	Jeans - Slacks.		2012	120000	60

Source: Tunisian Industry Portal, APII

Table 5.3-3 List of other major textile firms in the	South
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Region	Company name	Activities	Products	Year establish ed	Share Capital DT	Employ ees
Médenine	CENTRE JRAD D'ARTISA NAT	Handmade rugs.	Rugs, klims, mergoums, etc	1991	N/K	220
Médenine	DIGITAL-T EX	Textile finishing - Miscellaneous textile industries - Manufacture of work clothes and uniforms - Manufacture of outerwear - Manufacture of under garments.	Working clothes - Slacks - T-shirts - Woven cloth processing: whitening, dying, printing, finishing - Embroidery.	2009	150000	105
Médenine	STE CONFECTI ON DU SUD	Diverse household linens - Manufacture of work clothes and uniforms.	s - Manufacture orms. Working clothes - Bedding - Table linens - Other home linens.		50000	80
Gabès	STE GABESIEN NE DE FRIPE	Miscellaneous textile industries.	Fraying.	1991	500000	100

Source: Tunisian Industry Portal, APII

Sewing clothes at DUNTEX, Tozeur	Cutting at Golfe Textile, Gabès	Examples of final products at Golfe Textile, Gabès

(2) Competitiveness analysis

(a) Factor conditions

As Table 5.3-2 shows, there are several textile companies that sell their products to off-shore markets. These firms include the firms which are partnership with foreign companies (such as Dunetex and Castillila) and subcontractors of foreign firms (such as Golfe Textiles and Hajitex). In addition to this, Benetton group has been based in Gafsa since 2009 and has 22 subcontractors in the region, generating 1,500 jobs.

The main processing activities of these firms are sowing and cutting stages of the textile manufacturing, which are highly labour intensive. The major reason for these firms to locate their plants in the Southern Tunisia is its low labour cost.

On the other hand, there is no or very little design and finishing activities of the textile manufacturing process, which are more knowledge and technology oriented. There is also no school or research centre for such activities in the Southern Region.

Many of these firms have problems with the transportation as they have transport their products to Tunis by truck where it is shipped overseas. This is because that there is no regular commercial container ships which go from Gabès or Médenine ports. As a result, the Southern Region becomes less attractive than other coastal areas of Tunisia for investors to locate their plants.

Furthermore, there is no popular apparel brand makers in the Southern Region; most of the popular Tunisian apparel makers are concentrated in Sfax, Tunis, and Monastil.

(b) **Demand conditions**

The market for the high quality apparel products in the South is small. Even though there are many consumers who are keen for high quality apparel products in the Northern Tunisia, they basically prefer European brands to domestic brands.

(c) Related and supporting industries

There is no firms that produce good quality fabrics in the South, so most of the textile and apparel makers import their raw materials. The machinery for the production such as sewing machines and cutters are also not available locally, so they have to import them.

(d) Firm strategy, structure and rivalry

The major textile firms in the South are subcontractors or partners of European apparel makers and do not directly compete with each other in the consumer markets. Thus, the competition levels of this sector in the South is not intense.

(e) Markets and competition

Many of the textile firms which target off-shore market face the sluggish demand due to the recent economic slow-down in the European economy. For example, as Table 5.3-4 indicates, the total consumption on textile and clothing in EU-27 have not been recovered since 2008.

		L		0		
Year	2007	2008	2009	2010	2011	2012
Household consumption (billion Euro)	492.7	482.8	451.1	470.1	481.6	482.7

Table 5.3-4 Evolution of household consumption on textile and clothing in EU-27 countries

Also, the textile industry face a keen global competition in the exporting markets. Indeed, as indicated in Table 5.3-5, the rank of Tunisia in the export of textile product is not high (49th in 2012). There are many other emerging countries (which, thus, has price competitiveness) that are successful in marketing a large volume of textile products in the international markets.

Country	Value of export (US\$)	Rank
China	95,450,159,528	1
India	15,273,943,438	2
Turkey	11,054,288,746	7
Pakistan	8,704,735,270	10
Czech Republic	2,438,135,939	20
United Arab Emirates	2,217,588,893	22
Poland	2,053,853,130	24
Bangladesh	1,633,660,508	28
Egypt	1,364,634,875	29
Romania	1,134,558,082	31
Tunisia	456,411,172	49
Morocco	355,095,532	52

Table 5.3-5Value of textile export by selected countries in 2012

Source: WTO Database

(3) **Potentials and constraints**

As textile industry face fierce global competition whose main players includes low cost emerging countries, it would not be easy to attract investors in this sector. However, improvement of general investment conditions and infrastructure (such as transportation) and promotion would encourage investment and production in this sector.

Promotion of design and finishing product activities, which would move up the value chain of the business, would be one direction for the development of this sector. Yet the firms in the Southern Region lack the skills in design and marketing and necessary technology for finishing products, and the schools and research centres which would promote these activities are also absent in this region.

5.3.2 Chemical sector

(1) General condition

Table 5.3-6 depicts the major firms in the chemical industry in the Southern Region. One can see the prominence of Group Chemique Tunisien (GCT) in this sector, which produces phosphate related products (phosphate acid, DAT, DCP, TSP) and hire thousands of employees. Indeed, there is an agglomeration of chemical firms around the plants of GCT in Gabès, where some other chemical firms use the phosphate related products made by GCT and produce such chemical products as fertilizers and detergents,

Also, there are two other prominent chemical companies in the South; Amur Plastics, which produces plastic construction materials, and Innovation Packaging Technologies, which produce PET bottle.

Region	Company name	Activities	Market	Foreign participant country	Year Establis hed	Share Capital DT	Employees
Gabès	GROUPE CHIMIQUE TUNISIEN (USINES DE GABÈS)	Nitrogen and fertilizer products.	Off-shore		1972		3,572
Gafsa	GROUPE CHIMIQUE TUNISIEN (USINE DE M'DHILLA)	Nitrogen and fertilizer products.	Off-shore		1985	20,141,882	981
Gabès	STE CHIMIQUE ALKIMIA	Chemical products for Industrial use.	Off-shore		1976	1,947,253	519
Gabès	INDUSTRIES CHIMIQUES DU FLUOR	Basic inorganic chemical products.	Off-shore	Jordan	1976	21,000,000	227
Kébili	AMEUR PLASTICS	Plates, sheets, tubes and profiles in plastic - Plastic packaging.	Off-shore		2006	1,170,000	190
Gafsa	STE TNNE D'EXPLOSIFS ET MUNITIONS	Explosives.	Other	Italy	1985	10,008,000	183
Gabès	SALAKTA FERTILIZER COMPANY	Nitrogen and fertilizer products.	Off-shore		2005	1,334,000	88
Gabès	STE DE FABRICATION DE POUDRE (GABÈS)	Chemical products for Industrial use.	Other		2010	400,000	80
Médenine	INNOVATION PACKAGING TECHNOLOGIES	Plastic packaging.	Other		2004	5,000,000	80

 Table 5.3-6
 Major firms in chemical industry in the Southern Region

Source: Tunisian Industry Portal, APII



(2) Competitiveness analysis

(a) Factor conditions

Southern Region hosts the large state-owned phosphate processing maker, GCT. It owns 3 plants in Gabès (which produce phosphate acid, DAP, DCP, and nitrogen ammonium) and 1 plant in Gafsa (which produce TSP). GCT itself is that 2nd largest exporter of TSP and 3rd largest exporter of phosphate acid in the world. The large volume of production of phosphate products is possible due to the supply and the reserve of phosphate ore in Gafsa. Phosphate ore is transported from Gafsa to Gabès by train, and the processed phosphate products are exported to all over the world from the Gabès port.

The presence of GCT plants in Gabès has attracted the other chemical makers which use phosphate products of GCT as raw material. These firms include ALKMIA, which produces STPP, (raw material

for detergent) and TIMAB, which produce MCP and DCP (raw materials for livestock feed). Also, there are some firms in Gabès which produces containers and packages for chemical products such as STE DE FABRICATION DE POUDRE and STARPLAST. The presence of these firms in Gabès forms the agglomeration of chemical related firms there.

The presence of the agglomeration of chemical related firms in Gabès generate the large reserves of specialized professional in that region. For example, GCT alone hires 150 engineers in Gabès. Also, the Chemical department of the University of Gabès has been producing many of the young professionals in this field.

There is a plan of project by GCT which enable to produce purified phosphoric acid, which is likely to be realized in a few years. The purified of phosphoric acid can be used as raw materials for the manufacturing many types of fertilizers and food products. This will give opportunities for new business to produce new products which use purified phosphoric acid.

One important constraint for the development of this industry is the transportation final products. For example, as there is no regular container ship service in Gabès port, some of the chemical firms have to transport their products to Sfax to export. The biggest bottleneck in the chemical industry in the South rest in the social and environmental areas. As shown in Table 5.3-7, the production volume of phosphate related products by GCT dropped dramatically after the revolution. The main reason for it is the shortage of phosphate production and due to the strikes within the company and social unrest in Gafsa area (see Chapter 5.2.1).

In 2010, total sales of GCT was US\$1,700 million and the profit was US\$300 million. Yet GCT incurred loss in 2013, as it has been producing at the 60% of their capacity (GCT needs to produce at least 80% of its capacity to get profit).

Year	2007	2008	2009	2010	2011	2012
Production (1000 T)	461.1	495.5	414.3	456.9	229.0	289.8
Exportation(1000 T)	446.5	422.7	463.4	422.9	244.2	281.9

Table 5.3-7 Production and export of phosphate unit in the plant of GCT, Gafsa

Source: ODS

GCT also faces the problems of pollution and wastes which are generated during the production process. For example, GCT has been dumping phosphate gypsum to the sea, which causes severe environmental problem. Yet they could not find another way to deal with this waste, as no community accepts to dump it in to their proximity area and not recycling firm there can deal with phosphate gypsum. Also, emission of SO2 from the GCT plant have been bringing about the complaints to the firm and the unrest from the surrounding communities. Responding to these social discontents to the firm, GT plans to start environment related projects and hired 2,300 local workers for the projects, even though the detailed plans of the projects have not been set yet.

There are a couple of recycling firms for plastic products, but they are typically operating at under-capacity. This is due to the fact that the number of collectors of waste are few, as people are usually not willing to do this job as they will be regarded as lower class.

(b) **Demand conditions**

Final consumption points of the phosphate related products produced in Gabès and Gafsa such as fertilizer and detergent are mostly foreign countries, so the demands of these products are basically driven by the foreign markets.

On the other hand, plastic materials for construction (such as sewage, irrigation, and drainpipe) and PET bottle produced in the South are mainly sold in the local markets of the Southern Region. The market of these products appear to be maturing as the expectation and requirements of the users have been increasing. The products qualities have also been improving as the producers respond to it.

(c) Related and supporting industries

GCT receives the supply of wet phosphate and dry phosphates (raw materials of their products) form the state-owned enterprise, Compagnie de Phosphate de Gafsa (CPG), which engages extraction and processing of phosphate ore. The business of GCT is significantly affected by the producing capacity of GCT.

There are some metallic parts workshops in Gabès, which produce metallic parts for big chemical plants (such as tube and chimney) and also give maintenance service on big machines of these plants. There is no firms in the South that can handle the problems of industrial wastes of chemical plants described above. There is no firm in Tunisia that produces the raw material for plastic materials (PE, PET, and PBC), so the plastic makers have to import them from other countries.

(d) Firm strategy, structure and rivalry

The main markets for GCT and big fertilizer and detergent makers are foreign countries and face keen international competition. On the other hand, there is no competitors for plastic construction maker and PET maker in the South (which is their major market), and thus Amur Plastics and Innovation Packaging Technologies do not face significant competitive pressures.

(e) Markets and competition

Table 5.3-8 shows the medium term forecasts of global demand and supply phosphoric acid. The total demands for phosphoric acid is forecasted to increase due to the rise of demand in agricultural commodities. Yet the global supply of phosphoric acid is forecasted to catch up the demand. The markets for phosphoric acid is thought to be stable in the short run.

As written in 5.2.2.(5), the long-term demand of phosphoric acids is forecasted not to have increasing and decreasing trends by late 2030s. The demand for plastic material for construction is thought to be increasing in the short run due to the current construction boom in Tunisia and expected reconstruction boom in Libya.

	2013	2014	2015	2016	2017
Supply capacity	54.6	57.2	58.7	60.3	63.7
Potential supply	45.5	46.9	48.5	50.2	52
Fertilizer demand	36.1	37.1	38.1	39	39.8
Non-fertilizer demand	5.2	5.4	5.5	5.7	5.8
Distribution losses	0.8	0.8	0.9	0.9	0.9
Total Demand	42.1	43.3	44.5	45.6	46.5
Potential balance,	3.4	3.6	4	4.6	5.5
% of supply	7%	8%	8%	9%	10%

 Table 5.3-8
 World phosphoric acid potential supply demand balance (million metric tonnes)

Source: International Fertilizer Industry Association

(3) **Potentials and constraints**

A large volume of reserves of phosphate ore, agglomeration of chemical sector firms in Gabès where GCT plays central role, and the accumulation of experts for chemical industry give significant advantages for the further development of this sector in the South. However, its development is constrained by the future development of social unrest in Gafsa and is also dependent on its ability to deal with the environmental problems.

5.3.3 Construction material sector

(1) General conditions

Table 5.3-9 lists the major firms in the construction materials sector in the Southern Region. One can see that there are various types of producers and processors such as extractor of sand, gypsum, and limestone, cement and brick makers, concrete products and tile makers, and stone sculptures.

Types	Major firms
Extractors	SIPS (gypsum)
	MEDGYP(gypsum)
	STE LES CARRIERES DU SUD HAMDI FRERES (stone)
	STE LES NOUVELLES CARRIERES DU SUD (sand and gravel)
	LES CARRIERS DU SUD (sand and gravel)
Brick makers	BRIQUETERE BELMABROUK
	SOCIETE DE CERAMIQE
Clinker maker	STE DES CIMENTS DE GABÈS
Cement and concrete products	BETON MANUFACTURE DU SUD
makers	LES NOUVELLES PAVEES DU SUD
	SIREP BETON
	KAOUECH BETON
Gypsum products maker	PLATRIJO
Tile makers	STE LES CARRELAGES DU SUD (ceramic tiles)
	STE DE CARRELAGE MODERNE (cement tiles)
	LES EXTRS CARRELAGES DE GABÈS (cement tiles)
	SOMAGA S.A (marble tiles)
Decorative construction	T ET T STONE (limestone products)
materials makers	DAR STONE (marble products)

 Table 5.3-9
 Major firms in the construction materials sector by type in the Southern Region

Source: List made by the JICA project team based on their fieldworks



(2) Competitiveness analysis

(a) Factor conditions

Many of the raw materials for the construction material production are available in the Southern Region. These raw materials include red clay for brick production, sand and gravel for cement products, gypsum and limestone for building material and clinker production. Even though there are several firms which extract these raw materials, the large reserves of marble in Tataouine is exploited at this moment.

As shown in Table 5.3-9, the Southern Region hosts producers and processors in each value chain of the sector from the extraction of raw materials and to the production of final products. However, the number of high quality final goods producers is very small where T ET T STONE and DAR STONE which produce decorative construction materials are exceptional.

Gypsum makers, who export their markets, claim that due to the lack of commercial ports in the South, they have to transport their products to Tunis when they sell their products to foreign countries. This is a significant cost disadvantage in their business. On the other hand, most of other producers in this sector target the markets of the Southern Region and adjacent areas (including Libya), and, thus, transportation is not a major problem for their businesses.

(b) Demand conditions

High priced building materials such as decorative natural stone tiles has started to be popular in the Southern Region, as the demands for sophisticated and decorative houses and building have recently been increased.

(c) Related and supporting industries

Most of the producers have to import their machineries mainly from Europe as the machinery makers are not locally available. Even though the producers are basically capable of maintaining their machineries but have to ask the machinery makers to send technicians for repairing machineries.

(d) Firm strategy, structure and rivalry

Most of the producers in this sector in the South do not have many competitor within their business domain and thus do not face severe competition. Indeed, the market structure of this sector tend to be monopoly or oligopoly where firms do not face severe competition within a specific geographical area. This is caused by the fact that the producers in this sector require medium and large scale machinery in their production processes and their final products are relatively bulky and thus are costly to transport. These characteristics prevent the entries of a large number of firms into a market of specific geographical area.

(e) Markets and competition

The demand for construction material are thought to be increasing in the short run due to the current construction boom in Tunisia and expected reconstruction boom in Libya.

(3) **Potentials and constraints**

Existences of various kinds of raw materials and producers in various stages of value chain of this sector are great assets for industrial development of the South. Comprehensive development strategy which intends the improvement of technology and skills and the increase in value additions in mining and construction material sectors and the promotion of housing markets would be effective for the development of these sectors.

5.3.4 Mechanicals and metal sector

(1) General conditions

As shown in Table 5.3-10, there are several large and medium sized mechanical and metal sectors in Gafsa and Gabès.

Region	Company name	Activities	Products	Year Estab- lished	Share Capital DT	Employ- ees
Gabès	STE INDUSTRIE METALLIQUE GLE	Metal construction structures - Metal cisterns and reservoirs - Mechanically soldered works.	Work linked to boilers - laying piping on an industrial site - Metal frames for industrial equipment - Other metal reservoirs and cisterns.	1978	650,000	134
Gabès	BEN RHOUMA INDUSTRIES	Metal construction structures - Mechanically soldered works.	Metal frames for construction - Construction site sheds - Assembly of boiler materials - Work linked to boilers - laying piping on an industrial site.	2000	3,630,000	75
Gafsa	STE DE MONTAGE ET MAINTENANCE INDUSTRIELLE	Metal construction structures - Mechanically soldered works.	Metal frames for construction - Construction site sheds - Work linked to boilers - laying piping on an industrial site - Nuclear reactors and nuclear boiler works.	1990	600,000	60
Gabès	STE TNNE DES SERVICES INTERNATIONAUX	Metal cisterns and reservoirs - Mechanically soldered works.	Work linked to boilers - laying piping on an industrial site - Other boiler works - Other metal reservoirs and cisterns.	2011	30,000	50
Gabès	STE IND ET SERVICES	Metal cisterns and reservoirs - Mechanically soldered works.	Assembly of boiler materials - Work linked to boilers - laying piping on an industrial site - Other metal reservoirs and cisterns.	2002	100,000	46
Gafsa	STE D'ETUDES ET DE CONSTRUCTIONS INDUSTRIELLES	Metal construction structures - Mechanically soldered works - General mechanics.	Work linked to boilers - laying piping on an industrial site - Tools mechanical parts (reaming, milling, lathing) - Other metal construction.	2010	1,600,000	45
Gabès	ENT DES TARVAUX INDUSTRIELS ET PETROLIERS	Metal construction structures - Mechanically soldered works.	Metal frames for construction - Metal frames for industrial equipment - Assembly of boiler materials - Work linked to boilers - laying piping on an industrial site.	1994	100,000	30

 Table 5.3-10
 Major firms in mechanical and metal sector

Source: Tunisian Industry Portal, APII



(2) Competitiveness analysis

(a) Factor conditions

There are some agglomerations of firms in this sector in Gabès and Gafsa. These firms mainly provide metal and mechanical materials for heavy industries such as chemical and mining industries. There are also some smaller size firms such as SOMATI,BRI, GZI, SIMG, SES in Gabès, which provide maintenance services for big machines for heavy industries in the Southern Region. Thus, the activities this sector are complementary to those in heavy industries in the South. As the mechanical and metal sectors develops, there are some accumulation of technical professionals for the specific activities in this sector in Gabès.

(b) **Demand conditions**

Demands for more sophisticated metal materials have been increasing as the heavy industry firms require continuous renovation of their plants. The demands for environmentally friendly metal materials (such as chimney) have also been rising.

(c) Related and supporting industries

Big machineries needed for this sector is not available locally, so the firms have to import them from other countries.

(d) Firm strategy, structure and rivalry

The number of big firms in this sector is very small, as these firm require large machineries and capitals. Thus, they do not face much competition.

(e) Markets and competition

There are bigger agglomerations of firm in this sector in the Northern areas and Sfax, so the mechanics and metal firms in the South mainly target the industrial firms in the South.

(3) **Potentials and constraints**

As the main target customers of the mechanics and metal firms in the South are heavy industrial firms in the South, the development of this sector largely dependent on the development of heavy industry sectors in the South.

5.3.5 Electric and electronic sector

(1) General conditions

The Japanese firm, Yazaki, locates its plant in Gafsa. The plant produces wiring harness, which exported its assembly firms in Europe. The plant began production in 2009 and has 1,020 employees. The other firms in this sector are small scale in the Southern Region.

(2) Competitive analysis

(a) Factor conditions

There is very little production base in this sector. The productive activities of the Yazaki plant is highly labour intensive and low technology, and thus the technological base in this sector is also limited.

(b) **Demand conditions**

There is no big firms which require large amount of electric and electronic parts in the South.

(c) Related and supporting industries

There is virtually no supporting industries basis for this sector in the South.

(d) Market and competition

As the number of firms is very small in this sector, the competition level is quite low.

(3) **Potentials and constraints**

There is limited production and technological bases for large scale development of the sector.

5.4 Tourism

5.4.1 General conditions of the tourism sector in Tunisia

Tunisia is a country which has great touristic resources due to its rich historical background of over 3,000 years, such as the Phoenician, Carthage, Roman, Byzantine, Islamic and Berber epochs and the colonial period dominated by the Spanish and the French. The tourism in Tunisia also provides tourists with a variety of touristic products form its natural resources, such as 800 miles of stunning white-sand beaches along the Mediterranean sea, part of the Atlas mountains of northern Africa, part of Sahara desert, and UNESCO's world natural heritage sites, which tourists can enjoy during the whole year based on its great advantage of geographical location in northern Africa.

Since 1962, the government of Tunisia (GoT) has considered the tourism sector as a priority sector in terms of economic development for the country. Consequently, many tourist zones have been established and the capacity of hotels has been more than tripled from 1970 to 1990. Tourism in Tunisia was first developed along coastal tourist zones, such as Hammamet, Sousse and Djerba. Now, Tunisia has become one of the leading tourism destinations in Africa, competing with Egypt and Morocco, and it has been considered one of the favoured destinations for Europeans, who like economical vacations.

Following figure, the latest 5 years' tourist trends in three Maghreb countries, shows that the number of tourists has clearly been influenced by the political crises in 2011 called Arab Spring.



Source: Tunisia (Ministère de l'Intérieur), Morocco (Ministère du Tourisme), Egypt (Central Agency for Public Mobilization and Statistics)

Figure 5.4-1 Number of tourists in three Maghreb countries (2008-2012)

The following table and figure shows the characteristic of Tunisian inbound tourism and that non-resident arrivals are evidently increasing during the summer season in coastal regions, with Djerba-Zarzis being the first destination in Tunisia followed by Sousse and Nabeul-Hammamet, and western parts (inland areas) being always lower than eastern parts (coastal areas). While beach tourism absorbs the largest volume of tourists, cultural and historical activities in inland areas has a lot of potential that are not integrated enough into the beach tourism.

Considering this situation, the tourism development in Tunisia has to take into account how to minimize the seasonal fluctuation between summer and winter and regional disparities between coastal and inland areas. Moreover, now, tourism shall consider how to involve local communities. In this context, the GoT is trying to exploit the new tourism products, especially ecotourism supported by international donors, meeting with the high-end European market.

District	Region	January	February	March	April	May	June	July	August	Septembe	October	November	December	Total	Total District
	Bizerte - Beja	1,118	740	1,195	1,490	1,235	1,558	1,928	1,779	1,693	1,224	1,207	1,103	16,270	
North - east	Nabeul - Hammamet	8,538	9,819	20,285	36,616	45,674	72,763	95,495	101,770	83,067	42,241	15,527	13,447	545,242	931,090
	Yasmine - Hammamet	11,463	13,674	24,857	27,314	33,085	41,767	46,307	57,106	49,238	31,633	15,704	17,430	369,578	
North - west	Tabarka - Ain Draham	2,182	1,550	3,451	2,808	3,432	5,260	8,441	8,850	6,086	3,080	2,921	3,946	52,007	52,007
Oraștina Trada	Tunis - Carthage	43,830	41,681	50,461	55,143	55,138	51,922	48,991	37,529	55,288	47,527	48,522	47,292	583,324	640 000
Greater Tunis	Tunis - Sud	652	739	1,079	1,879	2,190	5,204	8,413	7,033	5,053	1,622	537	607	35,008	618,332
	Sousse	20,023	16,002	26,099	39,917	42,076	69,071	105,775	110,961	98,067	57,378	30,428	28,332	644,129	
	Monastir - Skanes	5,494	7,050	10,933	22,471	35,178	51,970	68,630	69,457	51,297	27,021	8,551	7,434	365,486	1,244,649
Centre - east	Mahadia	2,816	2,608	4,790	5,883	10,715	21,617	26,701	30,922	25,101	14,536	4,603	2,999	153,291	
	Sfax	8,001	5,856	6,704	8,246	7,273	6,679	6,096	5,354	8,907	6,961	6,475	5,191	81,743	
Contro woot	Sbeitla - Kasserine	286	173	245	471	264	238	213	196	329	273	312	324	3,324	27 250
Centre - west	Kairouan	2,250	1,660	2,085	2,387	2,149	1,314	1,494	1,752	1,941	2,382	2,205	2,407	24,026	21,350
	Gabes	2,294	2,235	2,886	3,525	2,544	2,082	1,994	1,651	2,782	3,399	2,261	1,928	29,581	
South - east	Djerba - Zarzis	22,835	28,872	44,909	83,394	69,619	89,155	131,345	137,349	109,796	84,716	46,693	26,690	875,373	915,144
	Tataouine	415	495	977	1,759	1,334	734	715	612	785	718	928	718	10,190	
Courth woot	Gafsa - Tozeur	5,194	5,910	8,603	12,776	8,986	9,344	12,274	14,648	14,501	11,589	6,450	6,479	116,754	200 742
South - West	Kebili	6,784	6,423	10,301	16,997	14,842	15,555	21,052	28,099	25,486	19,508	9,749	8,193	182,989	299,743
	Total	144,175	145,487	219,860	323,076	335,734	446,233	585,864	615,068	539,417	355,808	203,073	174,520	4,088	,315

Table 5.4-1Number of non-resident arrivals in hotels by region and month (2012)

Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »



Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »

Figure 5.4-2 Non-residents' arrivals in hotels per region per month (2012)

(1) Tourism trend and competitiveness

In 2012, Tunisia's place on the World Economic Forum's Travel and Tourism Competitiveness Index (TTCI) out of 139 countries, according to the evaluation with following sub-indexes, was 47th and it was

relatively high compared with other Arab and Mediterranean countries: Turkey (50th), Jordan (64th), Egypt (75th) and Morocco (78th), although Tunisia experienced a political event called Arab Spring in January 2011.



Source: World Economic Forum « The Travel & Tourism Competitiveness Report 2012 »

Figure 5.4-3 Index of the World Economic Forum's TTCI

Tunisia was also ranked in 51st place on the World Bank's ease of "Doing business" indicator in 2014³, compared with Turkey (69th), Morocco (87th), Jordan (119th), and Egypt (128th), out of 189 countries. In detail, while Tunisia was ranked high in terms of "Trading across borders" (31st), "Getting credit" (109th) and "Dealing with construction permits" (122th) could be remarked as one of bottlenecks in doing business with Tunisia.

(a) Inbound tourism markets

The number of total non-resident arrivals on 31 December 2012 was 5,950,484 tourists, an increase of 24.4 % compared with 2011.

Nationality	January	February	March	April	May	June	July	August	September	October	November	December	Total
Europe	72,991	86,465	118,993	227,700	249,252	366,688	495,990	504,432	379,919	253,953	115,597	93,131	2,965,111
Arab Maghreb	226,904	160,560	241,733	229,549	238,509	216,252	233,235	224,092	296,590	227,140	257,825	290,877	2,843,266
North America	1,867	1,886	2,679	2,527	3,407	3,201	2,657	2,424	2,071	2,317	1,805	1,699	28,540
Middle East	2,634	2,500	3,164	3,001	2,986	4,079	3,550	2,839	3,374	3,420	3,691	3,828	39,066
Africa	2,436	2,036	2,511	3,710	2,732	3,284	3,929	3,221	4,418	4,472	3,638	3,085	39,472
Japan	1,288	756	528	369	386	354	341	538	558	693	1,112	1,079	8,002
China	349	310	290	239	377	274	342	183	365	273	268	501	3,771
Australia	79	97	117	117	135	161	188	167	156	169	132	124	1,642
Brasil	139	154	155	158	179	170	244	203	198	339	106	146	2,191
Other Countries	1,662	1,048	1,674	1,608	1,436	1,659	1,995	1,593	1,649	2,043	1,417	1,639	19,423
Total	310,349	255,812	371,844	468,978	499,399	596,122	742,471	739,692	689,298	494,819	385,591	396,109	5,950,484

 Table 5.4-2
 Number of non-resident arrivals at borders per nationality per month (2012)

Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »

(b) European and Arab Maghreb markets

Regarding the tourism in Tunisia, Europe and Arab Maghreb countries are the main market that occupies 97.6 % of the total tourists arriving in Tunisia. European arrival at the borders was 2,965,111, an increase of 39.0 % compared with 2011. Tourists from the Arab Maghreb countries (Algeria, Libya,

³ The World Bank, IFC « Doing Business 2014 »

Morocco and Mauritania) arriving at the borders totalled 2,843,266, an increase of 19.3 % compared to 2011.



Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »



The above figure shows that while the European tourists typically increased during the vacation season in the summer, the tourists from Arab Maghreb countries arrived in all the seasons equally.

(c) Middle Eastern and African markets

The tourists from Middle Eastern and African countries totalled 39,066 and 39,472 with a decline of 63.1 % and 43.5 % compared with 2011, respectively. The number of tourists from Middle Eastern and African countries had been affected by Islamic religious events, such as Ramadan and L'Aid.



Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »



(d) Asian markets

While the tourists from Japan have been increasing since the political event in 2011, 8,002 tourists with an increase of 156.5 %, the tourists from China were limited to only 3,771 with a decline of 68.2 % compared with 2011.

The following figure shows that the number of Asian tourists was increasing during the winter season on the contrary. This trend may include some suggestions to improve seasonal fluctuation in the tourism in Tunisia by developing Asian markets.



Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »

Figure 5.4-6 Number of non-residents from Japan and China (2012)

(e) Domestic market

The following figure shows that seasonal fluctuation of the number of nights spent by residents (Tunisiens and foreigners in Tunisia) was not relatively significant compared with by non-residents. This trend may also include some suggestions to improve seasonal fluctuation in the tourism in Tunisia as same as the case of Asian markets.

On the other hand, Tunisiens' market was limited only 13.48 % (4,048,457 nights) of total nights spent in Tunisia.



Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »



(2) Key economic indicators

From the viewpoint of the economy, the tourism sector has great potential to contribute to regional development, especially by improving the regional disparities and employment by creating jobs; e.g., hotel staff, souvenir shops, restaurants, producers of handicrafts, transportation services.

The following table shows that, in 2012, the total amount of investment in the tourism sector was 222,500 million TND; the total number of tourists to Tunisia amounted to 5,950,464, mostly from Europe (France, Germany, Italy, UK) and Maghreb countries, and the total revenue generated by tourism

sector amounted to 3,175.3 million TND and it covered 27.3 % of the trade deficit in 2012⁴.

According to the WTTC's report⁵, the direct contribution of Travel & Tourism to GDP was 4,279.7 million TND (6.6% of total GDP) in 2011, and it is forecast to rise to 6,392.5 million TND with an increase of 3.3% from 2012-2022 (in constant 2011 prices). Travel & Tourism also contributed 191,500 direct jobs (5.9% of total employment) and is expected to create 219,000 jobs (5.4% of total employment) by 2022. In addition, the number of international tourist arrivals expected by 2022, totalling 8,144,000, will generate an expenditure of 4,680.3 million TND. Tourism is the most productive activity in terms of revenue for local economy, however, large disparities between the richer coastal areas and the inland areas still remains in Tunisia.

	2008	2009	2010	2011	2012
Investments (Million TND)	253,617	309,271	376,443	208,204	222,500
Visitors (non-residents)	7,048,999	6,901,406	6,902,749	4,785,119	5,950,464
Nights spent (non-residents)	35,048,653	31,556,910	32,066,857	17,207,634	25,920,529
Number of hotels	837	856	856	861	840
Number of beds	238,495	239,890	241,528	242,146	241,997
Total revenue from tourism (Million TND)	3,390.2	3,471.9	3,522.5	2,432.6	3,175.3
Additional value (A.V) (Million TND)	1,916.4	1,980.8	2,027.1	1,474.6	1,932.1

Table 5.4-3 Key economic indicators of the tourism sector in Tunisia

Source: ONTT « Le Tourisme Tunisien en Chiffres 2012 »

(3) **Political framework**

(a) 11th Economic and social development plan (2007-2011)

The GoT launched a five-year national economic and social development plan in 2006. The following table summarizes the objectives of the tourism sector according to the 11th Plan.

Indicator	Target during 11 th Plan				
Nights spent	51,000,000				
Hotel occupancy rate	58.5 %				
Total revenue from tourism (Million TND)	5,100				

Table 5.4-4 Outcomes of the 11th Plan

Source: ONTT « Annual Report 2012 »

The objectives of the 11th Plan is to develop the human capacities through creating training facilities as well as to re-establish bilateral and multilateral cooperation with the third countries. From a quantitative point of view, Tunisian tourism had expected more than 50 million nights spent including an increase of the total revenue from tourism of 5,100 million TDN by 2011.

(b) Tourism strategy 2010-2016

In May 2009, the Ministry of Tourism launched a study to prepare a midterm development strategy target for 2016 that was entrusted to the French consultant company, Roland Berger, and financed by the

⁴ ONTT « Le Tourisme Tunisien en Chiffres 2012 »

⁵ World Travel & Tourism Council (WTTC) « The Economic Impact of Travel & Tourism TUNISIA 2012 »

AFD (Agence Française pour le Developpement). The study consisted of three phases: (i) diagnosis of current situation of the tourism sector; (ii) setting objectives horizon 2016; and (iii) strategy and action plan.

After the diagnosis, the strategy proposes three main objectives: (i) competitiveness; (ii) profitability and (iii) sustainability, and five priority axes to be addressed: (a) product innovation and diversification; (b) tourism promotion; (c) institutional framework; (d) financial restructuring, and (e) compatibility of the tourism web network.

In compliance with the objective of "product innovation and diversification", the improvement of (i) certification quality, (ii) promotion, (iii) accommodation and (iv) tourism products was proposed. After the political crises in 2011, since the strategy had to be revised considering the current economic situation, it will be updated by the ONTT in 2014.

	2009	2014
Nights spent (non-residents) (Million)	32.1	45.9
Hotel occupancy rate (%)	50.7	54.3
Total revenue from tourism (Million TND)	3,523	5,365.7

Table 5.4-5Outcomes of the Strategy 2016

Source: Strategy 2016, ONTT « Annual Report 2012 »

(4) Institutional framework

Considering the sustainable development of Tunisian tourism, the new strategy shall be prepared in collaboration with not only the public institutions concerning the tourism sector but also other sectors such as transport, environment and culture. In addition, the private sector is the main actor on the tourism sector. In terms of sector wide approach, sustainable tourism development would be realized by contribution of the following organizations:

(a) Ministry of Tourism (MoT)

The Ministry of Tourism is responsible for the preparation and implementation of government policy through:

- Undertaking studies and research related to tourism;
- Preparing draft laws and regulations for tourism activities and implementing them;
- Identifying programs and projects to be implemented under the plan and the appropriate accompanying measures with submission them to the Government for approval;
- Implementing decisions made by the Government on tourism, either directly or through organizations, institutions and enterprises under its supervision.

The MoT is also responsible for improving and promoting tourism through supervising, monitoring and controlling tourism investment and promoting the quality of facilities in the tourist zones.

(b) Office National Tunisien du Tourisme (ONTT)

The ONTT is the main executive body of the MoT and is responsible for implementing the national strategy in the tourism sector. According to this role, the ONTT develops national tourism strategy, ensures the implementation of regulations for the sector, provides professional training and support for

public or private entities, and promotes tourism products through marketing tourism resources in Tunisia and abroad.

In each governorate, the ONTT has a branch, Commissariat Régional du Tourisme, which provides assistances to private entities in the region, and services and information to tourists at airports or in city centres to facilitate their travel.



Source: ONTT « Annual Report 2012 »

Figure 5.4-8 Organizational chart of the ONTT

(c) Agence Foncière Touristique (AFT)

During the 60's, Tunisia experienced a rapid growth of tourism along coastal areas. However, due to the lack of urban planning, this resulted in illogical expansion of tourism activities regardless of infrastructure, environment, nature and cultural resources. In this context, the AFT has been established since 1973. The AFT is responsible for managing and developing the necessary land and infrastructure for realizing touristic projects in tourist zones.

(d) Fédération Tunisienne des Agences de Voyages et de Tourism (FTAV)

The FTAV is a national organization/syndicate, which consists of travel agencies, tour operators and rent-a-car companies, totalling around 800 companies in Tunisia acting on its behalf for the public authorities and official bodies.

The FTAV certifies the quality of travel agents and provides them a certification and constantly works to

ensure economic and social stability of its members to facilitate their activities. Each FTAV member pays 500 TND/year in membership fees and collected membership fees are used as subsidies for tourism events, and promotion activities by the FTAV.

(e) Fédération Tunisienne de l'Hôtellerie (FTH)

The FTH is a syndicate of hotel owners. The FTH contributes to promoting the hotel industry in Tunisia through:

- Strengthening the entire cooperation between members in the hotel sector;
- Reconciling difficulties which may arise between the hotel businesses and application of any laws or regulations;
- Improving the hotel industry through customer research and incentive to invest by studying key economic, technical, commercial, advertising, tax, legal and professional issues;
- Establishing and managing any funds for the promotion of hotels and tourism under legislation and regulations.

For example, in the tourist zone of Djerba and Zarzis, 104 hotels (94 % of the hotels) are members of FTH.

(f) Ministry of Culture and Heritage

In order to conserve and to develop tourism resources, such as cultural, historical and architectural heritage, museums and music, contribution by the Ministry of Culture and Heritage is essential from the viewpoint of sustainability. The Ministry is mainly responsible for:

- Managing the programs and projects aimed at the preservation of national identity and the contribution to the enrichment of human culture;
- Managing the strategies and programs in collaboration with relevant institutions to ensure the protection and enhancement of heritage in the broadest sense,
- Promoting private investment in the fields of culture and heritage preservation
- Developing international cooperation programs in the fields of culture and heritage preservation, and supporting relationships with international and regional organizations concerned with issues within the remit of the Ministry.



Source: Ministry of Culture and Heritage



(g) Agence de Mise en Valeur du Patrimoine et de la Promotion Culturelle (AMVPPC)

The AMVPPC has been established since 1988 as a non-administrative public institute under the Ministry of Culture and Heritage. The AMVPPC is responsible for implementing government policy in the various cultural fields, particularly in the field of presentation and interpretation of archaeological and historical heritage (about sixty sites, monuments and museums) and their management.

The Agency also participates in the development of cultural tourism, promotes national cultural production in all its forms as well as investment in cultural industries. The AMVPPC is entrusted to manage the museums, such as Bardo Museum in Tunis as well the Popular Arts and Traditions museums of Djerba, the Sahara museum in Douz and archeological sites.

(h) Institut National du Patrimoine (INP)

The INP is a public administrative institution also under the Ministry of Culture and Heritage.

INP is the scientific and technical agency responsible for establishing the inventory of cultural, archaeological, historical, civilizational and artistic heritage. The missions of the INP are:

- To preserve, protect and restore archaeological sites, historical monuments and traditional urban buildings;
- To organize and undertake inventory research and exploration in archaeological, historical and civilizational areas from different periods;
- To collect traditional heritage and folk arts, to show their civilizational value and to conduct inventories studies and exhibitions;
- To undertake all the research, preservation, protection, restoration and exhibition of historical, scientific and artistic documents;
- To develop museums, collections and methods of exposition;
- To publish scientific and cultural documents for the purpose of dissemination;
- To develop human resources through training of various scientific and technical fields.



Source: INP web site

Figure 5.4-10 Organizational chart of the INP

(i) Ministry of Trade and Handicrafts

The missions of the Ministry of Trade and Handicrafts, particularly in the field of handicraft products are:

- To guide investments in the sector of traditional arts, handicrafts and monitor projects;
- To provide regulation of the sector of traditional handicrafts and artistic productions;
- To support the protection and expansion of handicraft activities
- To collaborate with relevant institutions, in terms of development of the traditional arts and handicrafts sector;
- To support and provide vocational training programs to improve the quality and competitiveness of handicraft products and the qualifications of the artisans.

(j) Office National de l'Artisanat (ONAT)

The ONAT is an autonomous public company under the Ministry of Trade and Crafts. The main task of the ONAT is to implement the national strategy for development of the handicraft sector, including:

- Development of professional skills of the human resources in the handicraft sector;
- Management of the promotion and marketing of handicraft products toward domestic and international markets;
- Promotion of the investment and the creation of employment in the artisan sector;
- Improvement of the quality of handicraft products by implementing a system of standards, certification and technical quality control for the local market and export;
- Development of international cooperation in order to implement programs for the development of the handicraft sector;
- Assistance with the planning of the infrastructure required for the development of the handicraft sector, such as craft villages in all governorates.

(k) Ministry of Environment and Sustainable Development

The GoT is trying to improve the products of tourism to make them more attractive to the European market. Considering the great potential in natural tourism resources in Tunisia, such as the Sahara desert, Chott, Berber villages, which have not been developed yet, the GoT has tried to exploit new tourism products, especially ecotourism for the high-end European market since the last decade.

In this context, the Ministry of Environment and Sustainable Development conducted a study for preparing an ecotourism strategy in Tunisia that was supported and financed by the GIZ from 2007 to 2013, taking into account the importance of this area, and necessity of the enforcement of skills of ecotourism in order to protect the valuable natural environment.

In 2013, The Ministry and GIZ also published a manual for sustainable management of the oasis systems to protect the unique ecosystems in Tunisia in collaboration with various departments, including the Observatoire Tunisien de l'Environnement et du Développement Durable (OTEDD), the Agence Nationale de Protection de l'Environnement (ANPE) and other related stakeholders.

(5) Legal framework

(a) **Protection of historical and natural heritages**

The Heritage Code, Law 94-35 of 24 February 1994 relating to the protection of historical and natural

monuments and sites, defines regulations for the protection of archaeological, historical and cultural heritage in state-owned land (Domaine public de l'Etat).

(b) Management of national parks

The Forest Code, Law No. 88-20 of 13 April 1988, provides the basic legal framework for the creation of national parks conservation of the natural environment in Tunisia. In compliance with the provisions of the code, a national park management plan for each park is set by order of the Minister of Agriculture.

According to the Decree No. 89-832 of 29 June 1989 relating to the organization and role of the Commissariat Régional de Développement Agricole (CRDA), the CRDA is responsible for supervising all the regional services of the Ministry of Agriculture, Water Resources and Fisheries, including management of national parks.

(c) Ecotourism

According to the Decree No. 2005-2122, relating to the functions of the Ministry of Tourism (MoT), the MoT is responsible for implementing the government policy in the field of tourism, conducting studies and evaluations related to the tourism sector, implementing the programs and projects included in the national economic and social development plan, and establishing the conditions for touristic activities. The ONTT, as the implementing body of the MoT, is responsible, in particular, for the promotion of sustainable tourism, including ecotourism and cultural tourism through the Action Plan of Cultural Tourism (PACT).

(d) New types of accommodation

While Tunisian tourism has been developing during the last 20 years, choice of accommodation has been very limited to mainly large scale hotel in tourist zones owned by major hotel groups or economy hotels in the capital of the region.

In 2013, in order to meet the recent tourism trend and needs of alternative tourism, such as ecotourism and agro-tourism, the Minister of Tourism has developed technical specifications for creating new types of accommodation, for example, the order of the Minister of Tourism of 29 July 2013 defines the minimum standards for providing accommodation services in the categories of "Cottages" and "Boutique hotels".

(6) Major projects financed by donors

The AFD have assisted in preparing a midterm national tourism development strategy for 2016 since 2009 and it will be updated in 2014, considering the current economic situation after the political crises in 2011. In the Southern Region of Tunisia, donors now particularly focus on the field of development of alternative tourism in inland areas.

The World Bank group is financing the "Ecotourism and Conservation of Desert Biodiversity Project" in cooperation with the Ministry of Agriculture, Water Resources and Fisheries and the ONTT. The project focuses its interventions on the national parks and three parks in the Southern Region: the Dghoumes national park in Tozeur, the Jebil national park in Kébili and the Bouhedma national park that stretches over Sidi Bouzid and Gafsa.

Project name	Duration	Project cost	Financer	Governorate	Intervention area
Cultural Heritage Project	2002-2007	23.79 M USD	World Bank	Médenine (Djerba)	Museum development
Strategic study of the Tunisian tourism sector by 2016	2009-2012		AFD	—	Policy making for mid-term strategy in tourism sector
Sustainable Management of Oasis System	2010-2013		GIZ	Gabès, Gafsa, Kébili, Tozeur	Policy making for ecotourism
Ecotourism and Conservation of Desert Biodiversity Project	2013-2018	9.05 M USD	World Bank	Gafsa, Tozeur, Kébili	Policy making for National Park Management
Tataouine – Italie : Tourisme et Agriculture Network	2010- On going		Italy	Tataouine	Creation of tourist circulation, Agriculture development
Djerba Hotel School Restructuring and modernization project	2013-2014	2.7 M TND	—	Médenine (Djerba)	Modernization of Hotel School
Creation and securing of income and employment for young people through tourism	2013-2014	_	GIZ	Médenine (Djerba)	Vocational training
Tourism Promotion Capacity Development Project	2012-2015	130 M JPY	JICA	Tozeur, Kébili	Creation of web site in Japanese
Alternative Tourism Development Project in southern Tunisia	2014- On going	7.0 M TND	Swiss Cooperation	Gabès, Tataouine, Médenine	Tourism Development of the Berber culture

Table 5 4-6	Tourism projects	s financed by d	lonors in the S	Southern Region
10010 5.4-0	Tourisin project	s maneca by a	ionors in the	Joumern Region

Source: JICA Expert Team

More recently, on 28th of November, 2013, Switzerland signed an agreement to fund the "Alternative Tourism Development Project in Southern Tunisia" in the governorates of Tataouine, Médenine and Gabès, in order to develop the unique tourist products based on the Berber heritage. The program's objective is to establish the Destination Management Organizations (DMO) structure in the region. The DMO aims to create jobs and reduce poverty in the regions particularly affected by unemployment.

As part of the preparation of the program, a platform of local actors active in alternative tourism was formed, including the ONTT, travel agencies (FTAV), hotels (FTH), food services, handicrafts producers, environmental agencies, the CRDA, the IRA, local NGOs and the ODS officers.

5.4.2 Competitiveness analysis of the tourism in the Southern Region

Competitiveness analysis was conducted according to the Porter's "Diamond analysis" as a tool for analysing macro and microeconomic competitiveness of tourism clusters.

(1) Factor condition

(a) Tourism resources

Targeted 6 governorates have rich tourism resources including the world famous resort in Djerba, traditional Berber villages in Matmata and Tataouine, and desert tourism in the Sahara. In addition, the Ministry of tourism intends to integrate high potential of handicrafts in the region for tourism development.



Source: JICA Expert Team



(i) Beach activities

Tourism in the region had focused on beach tourism in coastal areas. Djerba-Zarzis tourist zone is the first destination in Tunisia which accounts for over 90 % of hotels in the south-eastern region and accepts tourists from European countries for vacations, particularly in the summer, by offering various beach activities and services; e.g., Thalassotherapy.

(ii) Archeological sites

Archeological sites and monuments in the Southern Region have a history of more than 3,000 years in the Phoenician and Roman epochs. There are two most important sites, Meninx (Djerba) and Gigtis (27 km from Médenine), that are located in the governorate of Médenine.

However, in spite of its unique nature such as a Roman town by the Mediterranean Sea, they have not been well integrated into the tourism in



Gightis (the 1st Century)

the region and few tourists visit the sites. These archaeological sites also require investments for conducting scientific research and developing the facilities as an archeological park toward cultural tourism.

(iii) Berber villages

Unique Berber villages and architecture are located in the south-eastern region between Gabès, Médenine and Tataouine.

More than 150 unique collective granaries in the north of Africa constructed by the Berber people, called "Ksour", are spread around the region of Tataouine and Beni Khedache (Médenine). The Berber villages, such as Chenini, Douiret, Guermessa, now represent traditional tribal life in the mountains. These villages used to speak the Berber language, and women produce magnificent weaving textiles of wool.

The village of Matmata in the governorate of Gabès is well known for its unique cave dwellings.



Ksour Ouled Sultane

Chenini (Tataouine)

Cave dwellings (Matmata)

(iv) National parks

In the Project area, there are two areas registered as the national parks in Tunisia.

Jebil national park covers 150,000 ha of the Saharan desert in the governorate of Kébili. Various endemic species are listed on the IUCN's Red List, including sand gazelle (endangered), sand cat (near threatened), etc. Dghoumes national park covers 8,000 ha, and is located in the eastern part of the governorate of Tozeur. Characteristic desert species and a large number of migratory birds can be observed because of the proximity of the Chott el Jerid.

Since 2013, the World Bank group has conducted "Ecotourism and Conservation of Desert Biodiversity Project" in cooperation with the Ministry of Agriculture, Water Resources and Fisheries and the ONTT to prepare the management plan of the national park.

(v) The Sahara

The Southern Region includes the northern part of the Sahara desert in the African continent. Actually, various tourist products are offered in the areas of the Sahara desert, such as sun-set/sun-rise tours by 4x4 or camel, spending the night in desert at a nomad style tent, motor-gliders and animal hunting. Tourists can enjoy a silent night under the stars, sun-set/sun-rise on the horizon, beautiful wind sculpts of the sand and amazing mirages.



Mirage in the Sahara

Recently, mechanical tourism (car race, rally, 4x4, motocross, quad buggy)

has been promoted in the dessert area while eco-tourism in Sahara dessert is the main tourism product in the region. How to manage and control mechanical tourism seems to be the key issue for sustainable development for the tourism in the Sahara desert.

(vi) Oasis

Tozeur and Nefta, with their oasis that extend along the Atlas Mountains at the edge of the Sahara, are the two major cities known as the towns on the route of the ancient caravan trade, wool carpet and date productions in the south-western region. Gafsa is an oasis that extends from east to west between the southern and northern region, on the old caravan routes. Gabès is a unique coastal oasis now proposed for the UNESCO's world heritage list, where the gardens of henna and pomegranates spread under the



Oasis in Nefta

date palms, as a traditional oasis. Chebika, Tamerza and Midès are known for being mountain oases with high waterfalls into giant canyons and old village extends along the oasis.

(vii) Old médina

An old historic town called "Médina" is also an important tourism resource where tourists can understand traditional life in the region. The médina of Kébili was restored in 2009 by the INP in cooperation with the finance from the EU. The médina of Tozeur conserves a traditional village in oasis and its architecture made of brick and soil.



Old médina of Kébili

Tozeur Medina

(viii) Thermal springs

Thermal springs are one of great tourist products which have not been exploited yet considering existing rich resources in the region. 32 % of thermal water in Tunisia is available in the governorate of Kébili; e.g., Souk Lahed. Gabès also contains important thermal springs, especially in the El Hamma and these sources are natural outlets of hot water (70-80 °C). However, until now, thermal water is mainly used for agricultural purposes such as irrigation for oases.

(ix) Souk

In terms of the regional economic development, integration of local economy into tourism development is one of key factor. The word "Souk" means a shopping district or local weekly market in the Arabic countries where tourists can also enjoy shopping for local products or souvenirs, sometimes through the negotiation with merchandisers in the traditional way.



Houmt Souk (Djerba)

In the Southern Region, Houmt Souk in Djerba, Souk Jara in Gabès and Douz are historically important souk in terms of the trade of products from the Southern Region. The weekly camel market in Douz, fish market in Djerba and fisherman's wharf in Zarzis would also have a great potential of tourism.

(x) Traditional agricultural landscapes

Traditional agricultural landscape will be a potential tourism resource in the Southern Region in terms of alternative tourism such as agro-tourism or ecotourism. The concept of agro-tourism is integration between the tourism and agricultural sector, where the tourists can experience farming in the traditional way, eating fruits and vegetables which they harvested and making agricultural products such as wine, olive oil, fruit jam or juices at a local farm. These activities promote better understanding of traditional culture in the region by tourists.

On the other hand, these activities requires strong support from local communities, thus it is necessary for local communities to realize the benefits from the viewpoint of sustainable development.

In the Southern Region there is impressive scenery, such as the broad olive orchard in Zarzis which expands to the horizon, a traditional irrigation system by Berber people in mountain area called "Jessour", a traditional eco-system in the oasis, where tourists can experience the typical atmosphere and

traditional life of the region in a traditional agricultural landscape.



Olive orchard (Zarzis)

Jessour (Tataouine)

Palmeraie (Tozeur)

(xi) Museums

Museums have important roles for:

- Presenting and enhancing traditional culture, life, material, technique to both tourists and local people;
- Interpreting the historical, cultural, regional and political backgrounds of the region;
- Promoting local products; for example through Museum shops.

However, regardless of their important roles, the museums in the Southern Region have not been developed enough or promoted sufficiently and the number of tourists who visit the museums was limited even in the years before the political crises in 2011.

Table 5.4-7 Number of visitors at the sites and museums in the Southern Region

Museum	Number of Visitors (in 2009)				
Djerba Art and Tradition Museum	3,639				
Gafsa Archeological Museum	309				
Gabès Art and Tradition Museum	271				
Douz Sahara Museum	3,001				
Zarzis Municipality Museum	544				
Gightis (Médenine)	2,003				

Source : ONTT « Le Tourisme Tunisien en Chiffres 2012 »

(xii) Festivals

The Southern Regions have developed several festivals which are held between the fall and spring seasons and aim to enhance the traditional heritage of the region, such as lifestyles, typical folklore and handicrafts.

The international festival of Sahara in Douz, the international festival of oasis in Tozeur and the international festival of Saharan Ksours in Tataouine have become major cultural events in Tunisia which attract foreign tourists as well as domestic tourists.

		Season										
	1	2	3	4	5	6	7	8	9	10	11	12
Gabès												
Médenine												
Tataouine			F.I des Ksours Sahariens de Tataouine									
Gafsa												
Tozeur		Dune Electric	Festival des Oasis de Montagnes Tamerza		Festival des tentes Hazoua							F.I. des Oasis de Tozeur
Kébili					Printemps du Sahara							F.I. Sahara de Douz F.I Dattes de Kebili

Table 5.4-8 Festivals in the Southern Region

Source: JICA Expert Team / * F.I.: International Festival

(xiii) Handicrafts

Traditional handicrafts are also an important tourist product, in terms of regional economic development. In Tunisia, more than 350,000 artisans are working in the handicraft sector and the sector contributes 11 % to employment of active workforce and nearly 4 % to GDP.



Tribal carpet "Margoum" (Douz)

Jewelry shop (Djerba)

"Bakhnoug", cape for Marriage

In the Southern Region, tourists can find unique handicraft products in the region which have own history, traditional way of life, unique tribal design, and quality and technique passed down from generation to generation, such as traditional carpets called "Kilim", "Tapis" and "Margoum" from all over the region, traditional jewellery in Djerba and Zarzis, pottery and ceramics in Guerara (Djerba) and basketworks or wood work from palm trees in Gabes and Tozeur.

(b) Infrastructure

The Southern Region has two commercial ports in Gabès and Zarzis and three international airports in Djerba, Tozeur and Gafsa. There is a rail way from Gabès to the northern part of Tunisia and to the south-west and highway between Tunisia and Libya (under construction).

Project on Regional Development Planning of the Southern Region in the Republic of Tunisia Final Report



Source: JICA Expert Team



Road infrastructure is one of bottle necks for the regional development, particularly the connection between south-west areas and south-east areas, not only in terms of efficiency of logistic networks but also development of tourist circulation between major touristic poles in coastal and desert areas. Particularly, encouraging the tourists to go from Djerba, which is the first tourist destination in Tunisia, to inland areas will be the priority in terms of economic development and improvement to the seasonality of tourism in the region.



Congestion waiting for a ferry from Djerba to Médenine

However, while the importance of the connections between Djerba island and inland areas is rising, the connections between these two areas is still very fragile with only the deviation road via Zarzis that is from the Roman epoch and a ferry between Médenine with limited capacity, which causes congestion, sometimes for more than two or three hours during the daytime.

Rural road networks between small villages in the mountain areas between Matmata, Tataouine and Médenine are also important for developing cultural tourism in the region. Though many important Berber villages and Ksour are located in the area, many sections are still non-paved road and it is difficult to access sites.

Sanitation, electricity and telecommunication networks are also essential infrastructure for ensuring tourism development. The coverage rate of electricity is almost 100 % in the region and water supply and sewage house connection rates are 89.4 % and 58.3 % respectively⁶. Solid waste management is important for sustainable tourism development from the viewpoint of environment.

(c) Investment

Tunisia had developed tourism focused on the "Mass tourism" since 1960's and achieved great success, especially with investment in the development of tourist zones.

On the other hand, development of alternative tourism (ecotourism, cultural tourism) initiated by local

⁶ ODS « Les gouvernorats du sud en chiffres 2012 »

populations will be subject to financial and banking schemes created especially for small and medium sized-enterprises (SMEs) in order to obtain credit and guarantees for the small and medium-sized projects.

For example, the STB-SICAR provides credit for SMEs, however, the maximum amount of investment by the STB-SICAR cannot exceed 10 % of the total project cost or 49 % of the company's capital, and the average investment period shall not exceed seven years, despite tourism projects taking more time to appear profitable.

Covernoreto	Increased Hotel capacity	Investment (TND)					
Governorate	in 2012	Accommodations	Entertainment Services				
Gabès	0	0	80,000				
Médenine	1,278	39,270,700	3,977,500				
Tataouine	30	395,000	184,750				
Gafsa	0	0	282,000				
Tozeur	78	3,499,900	500,000				
Kébili	254	4,250,000	672,500				
Total South	1,640	47,415,600	5,696,750				

Table 5.4-9Investment on tourism sector (2012)

Source : ONTT « Le Tourisme Tunisien en Chiffres 2012 »

(d) Human resources

In order to develop the human resources and reinforce the professional capacities necessary for the tourism sector, the ONTT established "Centre de formation touristique" in 1976 as the official hotel school in Tunisia.

Eight centres provide professional training to students who will work in hotels or restaurants in Tunisia. In the Southern Region, a centre was established in Djerba and Tozeur. After a two-year course, the centre provides the following three official certifications corresponding to the specialty:

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1		1		1		
			-			

ONTT hotel school (Djerba)

Table 5.4-10	Professional	certification
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Name of Certification	Specialty	Condition of Admission
CAP (Certificat d'Aptitue Professionnelle)	Patisserie, Bartender, Cleaning staff	15-20 year-old, graduates of junior high school
BTP (Breve de Technicien Professionnel)	Cooking staff, Restaurant/Bar floor staff, Patisserie, Room service, Receptionist	CAP holders or 2 nd year students of high school
BTS (Brevet de Technicien Superieur)	Tourism promotion expert	Baccalaureat holders

Source : ONTT Centre de Formation Touristique Djerba

Specialty.	Dje	Tozeur	
Specially	BTP	BTS	BTP
Cooking technician	30	—	60
Restaurant and Bar technician	23	—	38
Patisserie technician	21	—	30
Housekeeping technician	9	—	14
Tourism promotion and tourism product development technician	—	16	—
Total	83	16	142

Table 5.4-11Number of graduates from hotel school (2012)

Source : ONTT « Le Tourisme Tunisien en Chiffres 2012 »

On the other hand, the genre of technical training provided by the hotel school has not been changed (receptionist, restaurant/bar service staff, cook and room service staff) since it was established in 1970's and it does not meet recent needs; (for example sommelier). In addition, local tourist guides, multilingual interpreters, skilled therapists for thalassotherapy, IT engineers for online services and entertainment staff are necessary in order to develop the tourism sector in the region.

(2) Demand condition

(a) Target segmentation

In order to understand and define the segmentation of tourist (nationality, low-end/high-end, young/old, men/women, family/couple, vacation/business, etc.), it is essential to develop the tourism strategy in the region, particularly from the viewpoint of marketing and promotion.

For example, several Asian or French Polynesian resorts, such as those in Bali, Thailand, Maldives, Tahiti and New Caledonia are currently trying to invite higher-end tourists by offering more sophisticated, personalized and stress free services exclusively for vacationers or honeymooners, such as private guest houses, private concierges and airport shuttles, without any disturbances.

In this context, current tourism products in the region does not seem to meet the demands of the high-end tourists, such as high quality and stress-free services in hotels and restaurants, quiet and safe environments, comfortable and convenient transportation and timesaving infrastructure. It could be said that making the tourism products more sophisticated, the region could invite higher-end tourists and consequently could expect more profit.

(b) Sophistication of the demand

In the diagnostic phase of the JICA survey, a tourism survey was conducted in order to identify the tourists' demands and tourism trends by confirming current tourism products/services provided in the Southern Region. Through the survey, 50 agencies with offices in Tunis and in 4 major touristic zones (Tozeur, Douz, Djerba and Zarzis) were interviewed, including in-bound tour operators and travel agencies categorized "A".⁷

⁷ The Tunisian « Decree No. 2006-2216 of 7 August 2006 » provides conditions and activities of travel agencies classified to the category A or B.

(i) What are the main constraints you faced with your tourism business?

This question cannot only identify the constraints with which travel agencies faced on promoting their products but also can measure the maturity or sophistication of the tourism market. If a tourism market is immature, the main constraints tend to be related to infrastructure, human capacity or legal and institutional arrangements. On the contrary, if it has been sophisticated, the main constraints could be related to the quality of services or diversity of services, which is personalized to specific segment.

The following figure shows that the constraints which 50 agencies pointed out are still strongly influenced by the political crises since January 2011. On the other hand, except the political and economic constraints, quality issues can be observed as the main constraints.



Source: JICA Expert Team

Figure 5.4-13 Main constraints

(ii) Which destinations / sites does the tour visit?

This question was intended to identify the destinations of the Southern Region included in the tourism products sold by travel agencies with offices in Tunis and Djerba-Zarzis a gate of international tourists, and tourists' demands and preferences must be reflected in the answer. If tourists have more choices of destinations and/or attractions, it could be said that tourism in the Southern Region will be more competitive.

The following figure shows the number of destinations included in 26 tours operated by 11 major agencies in Tunis and 23 tours operated by 19 agencies in Djerba-Zarzis.



Source: JICA Expert Team



(3) Supporting industry

Historically, tourist activities (accommodation, transportation and meals) are all packaged in advance by external inbound tour operators and/or hotels who offer "all inclusive" services.

The following table shows the situation of the main supporting industries in the region related to the tourism sector:

Governorate			Aco	commoda	Number	Touristic	Number			
Governorate	5 star	4 star	3 star	2 star	1 star	others	Total	of Beds	Restaurants	of Trovol
Gabès	0	1	3	5	3	11	23	1,931	3	7
Médenine	7	28	37	23	10	35	140	50,184	25	96
Tataouine	0	0	0	3	1	1	5	499	1	6
Gafsa	2	0	1	2	0	9	14	1,215	11	5
Tozeur	0	7	1	5	2	21	36	4,627	4	37
Kébili	0	3	4	3	2	20	32	3,603	2	27
Total South	9	39	46	41	18	97	250	62,059	46	178

Table 5.4-12Supporting industry (2012)

Source : ODS « Les gouvernorats du sud en chiffres 2012 »

(a) Services and products

(i) Accommodation

The recent orientation for tourism development in Tunisia, which can be characterized as "mass tourism", contributed to improving the quality of accommodation in Tunisia in meeting with the requirements of the tourists from European countries.

From the viewpoint of competitiveness, Tunisia has many large-scale hotels which can accept groups of more than 30-40 tourists, comparing with other Mediterranean countries, such as Italy, Spain and Greece. On the other hand, this approach resulted in a limited choice of accommodation and accommodation should be diversified according to the new trend of tourism, such as ecotourism, agro-tourism and medical tourism.

The following table and figure shows that the hotel capacity in the Southern Region may be almost enough for accepting the tourists throughout the year, even in the world famous tourist zones of Djerba-Zarzis and Gafsa-Tozeur.

							(%)			
Governorate	Hotel Category									
	5 star	4 star	3 star	2 star	1 star	others	Average			
Gabès	_	14.4	14.6	23.6	12.9	14.3	15.9			
Djerba-Zarzis	36.9	52.9	63.1	56.3	20.3	11.3	52.5			
Tataouine	—	—	—	11.0	38.9	7.1	13.4			
Gafsa-Tozeur	22.4	25.6	18.7	15.3	2.2	16.5	20.5			
Kébili	—	33.9	29.8	—	5.8	11.9	23.3			

Table 5.4-13Hotel occupancy rate by region and by category (2012)

Source : ONTT « Le Tourisme Tunisien en Chiffres 2012 »



Source : ONTT « Le Tourisme Tunisien en Chiffres 2012 »

Figure 5.4-15 Hotel occupancy rate by region and by month (2011-2012)

(ii) Restaurant

Table 5.4-12 clearly shows the imbalance in the number of hotels (250) and tourist restaurants (only 46) in the region. Indeed, most of tourists who stay in hotels in tourist zones will have to take dinner inside the hotels and will not have any choice of restaurants near the hotels within walking distance and where they can enjoy local food at local prices.

(iii) Entertainments

In the Southern Region various entertainment is provided by local companies, such as golf, horseback riding, scuba diving, bowling casino and quad riding. Excursions to the Sahara desert by camel caravan or 4x4 for experiencing the authentic scenery is one of the motivations for tourists to visit the region.

(iv) Public transportation

In terms of the tourist transportation in the Southern Region, there are limited user-friendly inter-city public transportation, particularly that individual tourist can use conveniently, thus most of the tourists in Tunisia dependent on the transportation that is provided by travel agencies through package tours or excursions.

It is difficult for foreign tourists to get basic information on public transportation services, timetables and prices not only before their travel but also after they arrive in Tunisia.

While many Tunisians use collective taxi (Louage) or inter-city bus (Sntri) for the purpose of inter-city travel, their quality is not suitable for the international standard of comfort and frequency of service. Thus individual foreign tourists are not able to arrange trips efficiently due to this inconvenience and lack of comfortable public transportation.



Inner-city Taxi

Inter-city Collective Taxi (Louage)

Inter-city Bus
(4) Market structure

(a) **Public sector**

The ONTT is the public entity responsible for promoting Tunisian tourism.

The ONTT has developed its web site to provide information for tourists and has opened branch offices in major client countries, including Japan, and tourist offices in the international airports and in city centres in the tourist towns, in order to facilitate the tourists or promote the Tunisian tourism by distributing promotion materials, such as maps and brochures.



ONTT Djerba Airport

(TND)

The ONTT is also assisting at international tourism conventions, such as the world's largest tourism fair, ITB in Berlin, Germany and the JATA travel showcase in Tokyo, Japan and it is considering the strategic importance of the foreign market for Tunisian tourism.

In addition, the ONTT controls tourism product quality and tourist services, and monitors the implementation of quality standards or classification, by conducting regular inspections on the hotels and travel agencies.

Regional Commissariat	Daily Operation	Equipment	Promotion Activities
Gabès	41,500	0	1,500
Djerba	55,500	65,000	8,000
Tataouine	34,500	0	3,500
Tozeur-Gafsa	32,000	0	7,000
Kébili	39,000	0	3,000
Total South	202,500	65,000	23,000

Table 5.4-14	ONTT's budge	t (2012)
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Source: ONTT « Annual report 2012 »

(b) **Private sector**

Tourism development is mostly dependent on the contribution of the private sector. From this point of view, it could be said that sufficient competitive environment among local companies already exists in the Southern Region (see Table 5.4-12). Hotels and/or travel agencies are competing with each other by proposing different types of tourism to attract the tourists. Indeed, while some hotels succeed in attracting many tourists, it can be observed that some hotels have closed, even in the tourist zone.

In terms of private sector development, many travel agencies, tour operators and rent-a-car agencies participate in the FTAV (Fédération Tunisienne des Agences de Voyage et de Tourisme), a national organization/syndicate of the tourism cluster, and try to improve their business circumstances by collaborating with the public sector. Similar to the FTAV, hotel owners have established the FTH (Fédération Tunisienne de l'Hôtellerie). The FTH has developed a practical web site⁸ for tourists that provide not only information about many hotels but also information about each region.

⁸ http://www.federal-hotel-tunisie.com/

5.4.3 Potential for and constraint of tourism development in the Southern Region

(1) Constraint

The GoT is trying to diversify the tourism products in the country to continue and to ensure sustainable growth and job creation in the sector. During the preparation of the national tourism policy, "Strategy 2016", the MoT conducted a diagnosis of the Tunisian tourism sector in order to identify the strengths and weaknesses of the sector.

The main weaknesses identified are: (i) seasonality of the tourism, including a lack of diversification; (ii) promotion of destination, particularly establishing regional identities in order to move away from the mass beach tourism; and (iii) quality of the current facilities, particularly degradation of the aging hotels and infrastructure; and (iv) quality of services, particularly lack of qualified professionals.

Based on above understanding, the following constraints shall be addressed, in order to develop the tourism sector in the southern region.

(a) Seasonality

The Tunisian tourism is mainly dependent on beach tourism in coastal areas during summer season (see the Chapter 5.4.1). In the Southern Region, of Djerba-Zarzis, tourism has a peak in August and the period from November to February is the low season. It is also observed a trend higher than average during April. This can be explained by the incentive to the tourists who would like to enjoy the mild climate in the region during this period. In terms of Saharan tourism, it is observed that the evolution of the Gafsa-Tozeur region was not suffering strong seasonal fluctuations opposite to that of the seaside areas. Seasonality of tourism causes some risks such as:

- Employment related to the tourism sector will be also seasonal and consequently regional economy will be unstable;
- Investment cost in infrastructure will be relatively high to meet peak demands such as drinking water and electricity and consequently maintenance costs will be increased during low season;
- Quality of tourism will be degraded and consequently it causes a negative impact on the tourism promotion;
- Rising prices of certain products and shortages of resources consumed by the local population.

(b) **Promotion of destination**

The absence of a policy on marketing and promotion for defining a clear image of destinations is critical issue. The recent tourism strategy in Tunisia seeks diversification of the tourism products. However, it resulted in dissipation of limited public financial resources and misunderstandings of regional traditions and culture by external tourists, despite rich and unique tourist resources.

According to the context of diversification, mechanical tourism, such as motor rally and motocross bikes has been promoted in several governorates in the desert areas of the Southern Region regardless of the situation that tourists who enjoy this type of tourism are a minority. These activities will not only destroy the valuable natural resources and environment but also harm the beautiful and peaceful image of the destination. Thus, it should be noted that an approach of diversification sometimes will have risks on the contrary.



Mechanical tourism Quad riding in the Sahara

(c) Urban planning

It should be noted that conventional urban planning concept in Tunisia is one of the serious physical constraints which prevents tourism development from integrating with local economy development. That is because existing tourist zones in the Southern Region have been developed completely separately from the city centre without any spatial relationships between existing local communities

Many tourists spend their stay only inside the hotel without going out from the tourist zone and consequently tourists do not spend any money at local restaurants or markets, because conventional urban planning did not consider or encourage any local restaurants or shops into the tourist zones. It seems that the urban planning concept for tourist zones has been only copy-pasted from that of 1960's until today and has not been changed.

(d) Infrastructure

An installation of new types of tourism (ecotourism, cultural tourism, etc.), particularly if these activities will be provided outside the tourist zone, will require following infrastructure to ensure environmental sustainability and to secure tourists:

- · Accommodation facilities harmonized with local environments and traditions;
- Sanitation (safe drinking water and sewerage system) and waste management facilities, which does not produce negative impacts on local resources and environment;
- Medical services for the tourists;
- Security services (local stations of police or national guards, etc.) to prevent the crime;
- Telecommunication networks for linking potential customers with local operators, and for emergency calls in case of accidents;
- Safe and efficient road networks, proper and convenient transport for the access to tourist sites which does not produce a negative impact on local resources or environment.

(e) Water resources

Water is essential to ensure sustainable economic development. However, considering the semi-arid climate and limited quantity and quality (containing salt not suitable for drinking water) of natural water resources in the Southern Region, to exploit additional water resources is a critical and urgent matter for economic development in the region. Groundwater in the region has been already over exploited more than its capacity and there is no room to meet with the additional demand from future economic development, including tourism.

In this context, the SONEDE (Société Nationale d'Exploitation et de Distribution des Eaux) is implementing several projects for the construction of desalination plants to produce drinking water from sea water and/or salty underground water. The ONAS (Office National de l'Assainissement) is also trying to reuse treated waste water for agriculture and/or golf courses in order to economize on the consumption of limited natural water resources.

(f) Adequate funding

Financial incentives provided for the tourism sector are not fully appropriate. Development of new types of tourism (ecotourism, cultural tourism, etc.) initiated by local populations will be subject to financial and banking scheme created especially for small and medium-sized enterprises (SMEs).

(g) Involvement of local population

Tunisian tourism had been developed through mass tourism by external investments coming from outside the region and with low impact on the welfare of local populations; however, regional development shall be initiated including dialogue with the local community at each step, and it is faced with varying degrees of awareness of stakeholders of planning, validation, implementation and operation of projects.

Above all, the implementation of new types of tourism, such as ecotourism and/or cultural tourism requires local initiatives more than those of mass tourism investments and utilizes of local resources. Consequently the benefits of ecotourism shall be returned to local populations. In this sense, tourism in Tunisia seems insufficient to contribute to regional development.

(h) Qualifications

Tunisia is the 2nd leading country in the field of the thalassotherapy following to France. However, while this activity is similar to a medical treatment, therapists work with neither any national standards nor official certifications that prove their technical skills and/or safety of their services. The genre of technical training provided by the hotel school has not been changed (only 4 courses: receptionist, restaurant/bar service staff, cook and room service staff) since it was established in 1970's and it does not meet recent needs (for example sommelier). Qualified and experienced local IT engineers are necessary in order to develop and maintain online systems for hotels, such as web sites, online reservation and payments.

(i) Interpretation

An installation of new types of tourism (ecotourism, cultural tourism, etc.) will require the support of businesses and professionals who are specialized, including guides, instructors, park rangers and botanists; however, are not always consistent with the proper knowledge of local agriculture, culture, health and environment.

Many tourist sites have no explanation maps, sign posts or boards that facilitate the tourists walking around the site and that teach the history and background of sites.

(2) **Potential**

To identify destinations is a critical issue for resolving problems of seasonality that strongly depends on the beach tourism in coastal area particularly in simmer season. While the region has great potentials based on the rich and unique tourism resources that can attract the tourists, several resources have not been well exploited.

(a) Cultural and natural resources in inland areas

Unfortunately, while cultural and natural heritages located in inland areas have a great potential of tourism, such as Ksour and mountain villages in Tataouine, cave dwelling in Matmata, roman ruins in Medenine and the Sahara, that has not been well managed and exploited until today. However, tourism for visiting these unique cultural and natural resources will be a motif of destination which can be a solution against the problems of seasonality and unemployment. Because this type of tourism is possible through the year and more preferable during autumn and winter season in order to avoid high temperatures during summer.

(b) Agriculture sector

Exploiting some tourism products in collaboration with the agriculture sector also has a great potential for new type of tourism. Agro-tourism is now widely known as a type of ecotourism that tourists can enjoy a wide range of agricultural activities that include cropping fruits and vegetables, riding animals, tasting local agricultural products, learning about making wine, olive oil or cheese, or shopping local products by staying in farm land local or a farmer's house. Agricultural landscape, such as Oasis, olive orchard and Jessour, also have a potential to be a tourism resources as a part of cultural heritage only found in the region.

Therefore, local farmers' participation and understanding are required in order to develop this type of tourism.

At the same time, from the view point of environmental and social considerations, some measures to protect the local communities against negative impacts from the tourism, such destruction of traditional cultures, ethics and natural environments, shall be taken into considerations.

(c) Handicraft sector

Handicraft sector is in close association with tourism sector and the ministry of tourism and the ministry of handicraft are sometimes consolidated in same organization in several countries. As mentioned above, the region has many handicraft products with rich historical and tribal back grounds.

On the other hand, despite its great potential the sector has not been well integrated with tourism development due to lack of promotion toward foreign tourists in close collaboration with different ministries.



Ksar without restoration (Ksar Ouled Mehdi, Medenine)

Irrigation system in Oasis since Phoenician age (Tozeur) Traditional weaving (Djerba)

(d) New domains

To exploit new domains of tourism is also important for creating new jobs. Considering geographical location between Europe and Africa, existence of international airports directly connected to Europe, large capacity hotels in tourist zone, temperate climate through the year, and qualified workers, MISE tourism⁹ or medical tourism could be recommended to the region. In particular, existence of geothermal springs where we can find all over the region would be a great potential for medical tourism associated with hot-springs.

On the other hand, hot-springs in Tunisia are designed only as Arab styled bath "Hmmam", exclusively for Arabic people until today.

⁹ MISE: Meetings, Incentives, Conferences and Exhibitions

So, there are some rooms to develop another style of bath by providing some medical services similar to that of the world famous hot springs in Baden-Baden, Germany¹⁰.

 $^{^{10}\} http://www.baden-baden.de/fileadmin/user_upload/stay_fit_-_get_fit_2010_englisch.pdf$

5.5 Information and Communication Technology (ICT) sector

5.5.1 General conditions

The government considers the ICT as one of the priority sectors for its economic development¹¹. The ICT sector has a high growth rate (14% in 2012) and represents 7.6% of GDP as against only 2.5% ten years ago. There are more than 1,800 private companies, and 3,000 - 4,000 jobs are generated each year¹². Accordingly, the Foreign Investment Promotion Agency (FIPA) features ICT among the six sectors for which foreign investments are particularly encouraged. The FIPA sheds light on opportunities in two main fields: (i) the Business Process Outsourcing, such as contact and call centres, marketing research, phone sales, technical support, assistance, remote work, data processing; and (ii) IT software and services (offshoring), such as software and web application development, application outsourcing (AO), systems integration, and advisory and assistance.

The investment in the sector amounted to some 3.9 billion dinars over the period of 2007-2011. A well-known investment destination of the ICT sector is the city of Elgazala, where the communication industry has significant presence. The Technopark in Elgazala, which was established over a decade ago, is equipped with modern facilities to meet the needs of businesses in high-tech sectors in the ICT, and serves for the development of SME as well as for the multinationals and large enterprises. Currently, it houses 90 companies including 12 subsidiaries of major international firms such as Microsoft, Ericsson, Alcatel Lucent, and Tunisian enterprises. Enfidha also hosts a Data Centre of Meninx Technologies started a Data Centre business since 2013. One feature of this Data Centre is that it utilizes the IBM's Green IT.

5.5.2 Competitiveness

The ICT infrastructure¹³ is well developed and organized in Tunisian territory, which is among the most up to date in the Mediterranean basin. The Tunisian telecommunications network is equipped with a multifunction broadband switch (voice, internet and multimedia), and the core networks that connect between cities have high-speed cables with 10-32 Gbps throughput. Within cities, optical communication network as well as micro wireless LAN networks are placed. According to the Network Readiness Index, Tunisia ranks 50th, positioning slightly behind Italy (48th) but in front of Turkey (52nd), Romania (67th), Egypt (79th), and Morocco (91st)¹⁴.

Apart from the infrastructure, other factors related to human resources (the presence of 441 certified auditors in the field of computer security, a large number of young graduates of more than 11,700 holding degrees in computer sciences and multimedia in 2011, etc.), the costs of business (rent, wage, operational cost¹⁵), and the regulations accentuate the sector competitiveness. As for the third factor, Tunisia has advanced in putting a suitable regulatory framework in place. The Supreme Council of the Digital Economy is established and there are legislations on e-commerce and e-signature, high technology and multipurpose complexes, computer security, protection of copyrights, among others. This progress has placed Tunisia 42nd with regard to the development and enforcement of the ICT related

¹¹ Government of Tunisia. National Industrial Strategy for the years leading up to 2016.

¹² Foreign Investment Promotion Agency (FIPA).

¹³ See section 6.4.1 (3) Internet of this report for more details.

¹⁴ World Economic Forum (2012). Global Information Technology Report.

¹⁵ Overall annual budget of a company to launch an offshore center in Tunisia is 30% cheaper than in Morocco and 50% cheaper than in Eastern European countries.

laws. This level of performance is falling behind countries such as France (22nd) and Germany (31st), but is ahead of Czech Republic (44th), Turkey (52nd), Italy (61st), Egypt (83rd), or Morocco (87th)¹⁶.

The government has set up 15 cyber parks over several regions within the country to promote the ICT oriented businesses. Though in practice, the dynamic evolutions of the sector has so far occurred mostly in the northern regions and development in the south regions have been limited in scale according with the way business opportunities are perceived.

Governorate	Number of firms	Number of employment
Médenine	2	15
Tataouine	6	26
Kébili	7	62
Tozeur	7	20
Gafsa	13	135

Table 5.55-1 Current Status of Regional Cyberparks (excluding Gabes)

Source : Ministry of Information and Communication Technologies

Given this context, the following section of this report will not discuss the development potentials and constraints of the ICT sector itself, but will focus on considering potential application of ICT to other sectors that are important in the Southern Regions, in light of creating synergy and cross-fertilization between them.

5.5.3 Potentials and Constraints

(1) Applicability to the Agriculture sector

- ICT crowd system. The crowd system will allow efficient and effective integrated management of farmland as well as sound farm business administration. Introduction of ICT crowd can respond to various needs such as better workflow of production-sales-profitability management, easier detection of remaining pesticides, output quality control, efficient environment control (i.e. green house, irrigation, etc.) that individual producers, cooperatives, or agriculture enterprises must deal with. In addition, seamless connection between the systems and reduced maintenance workload will increase convenience and cost merit to the users. The crowd system can be applied throughout value chain, and which in turn, strengthen the market-driven agriculture practices.
 - ✓ Production. Data collection and analysis which help improve: (1) production planning, (2) production (farmland condition data, production and growth data), (3) selection/storage/packaging (evaluation and control of freshness and quality, storage conditions).
 - ✓ Sales and logistics: (1) demand and supply matching and transport; (2) transportation control (tracking); (3) sales assistance (sales data).

¹⁶ WEF (2012)



Source: Various sources on the internet.



(2) Applicability to the Manufacturing sector

- Manufacturing Execution System (MES). This system helps improve efficiency throughout the manufacturing process, by allowing accurate planning and execution to well balance the production and shipment volume.
- Factory Energy Management System (FEMS). This system will permit effective planning of resource input and usage (electricity, gas, and other energy resources), thereby contribute to cost-effectiveness.

Introduction of these technologies will require: information collection system, control system, analysis system and communication network that interconnects those systems. Concerning the systems required, development of IT vendors and expansion of service will be expected. With regard to the communication network, if connection by internet is adopted, the idea is technically feasible with the participation of the existing service providers.





Figure 5.5-2 Example of Factory Energy

(3) Applicability to the Tourism sector

Augmented Reality (AR). AR is a technology that enables a user to see digitally enhanced view of the real world by adding layers of digital information on top of items in the world around him/her. The development of mobile AR system has become reality because the smartphones incorporate crucial hardware components for AR (i.e. global positioning system, compass, accelerometers and camera). In tourism, the AR technology can provide value-added services of an instant access to multimedia content tagged to geo-referenced landmarks and points of interest such as relevant cultural and historic information, or convenient information (i.e. restaurants, cafes, tea salons, souvenir shops, etc.); thereby enriches the overall experience of the travellers. AR can also integrate functionalities such as personalized recommendation based on location and user preferences, navigation to the selected points of interest, wireless connectivity to download multimedia contents, real-time interaction with other users in the destination.

Introduction of AR will require various inputs to become operational. On the technological side, well-designed website and mobile communication network are fundamental. On the contents side, extensively researched historic, cultural, and local information are essential. This will require going beyond collecting the existing information of touristic attraction by experts in the field but also a great deal of inputs from the local communities. Involving a multiple stakeholders in making the AR work will foster more diverse collaboration to strengthen the tourism promotion.



Source: Various sources on the internet.



5.6 Handicraft Sector

5.6.1 General context

Tunisia's handicraft sector offers a wide variety of products, ranging from products for daily use and for special occasions (i.e. kitchen utensils and products, jewellery, clothing/shoes and other fashion accessories, various home décor articles, etc.) for local population, as well as souvenir and other goods of both traditional and modern designs specifically targeting value added markets. According to the official registry, there are over 100 handicrafts varieties produced in Tunisia. Handicrafts also carry important underpinning cultural values inherited from long and rich tradition of the country.

The sector's contribution to the Tunisian economy is sizeable; it provides approximately 350,000 jobs (11% of the workforce) and represents 4% of the national GDP (2013). About 85% of the workers engaged in the sector are women. The annual export value of the sector has reached 380 million dinars, reaching nearly 3% of the total exports¹⁷. The important goods for exports (direct export = foreign markets, indirect export = purchase by tourists) include: tapestry and other weaving products ("tapis", "tissage"), wood-based articles, jewellery, metal and leather articles, clays and ceramics, and perfume¹⁸.

The National Handicraft Office (Office National de l'Artisanat Tunisienne: ONAT) under the auspices of the Ministry of Commerce and Handicraft, is the principal public agency entity responsible for implementing the sector strategy. Considering the handicrafts' historic background, which is deeply penetrated into the Tunisians' socioeconomic activities over generations, the sector strategy puts emphasis on making the sector economically and socially coherent. The Action Plans elaborated based on the strategy encompass five pillars, including: (i) institutional modernization (ONAT, legislative and regulatory environment, and regional development); (ii) upgrading of sector competence by reinforcing the technical expertise (training for the whole sector as well as the capacity building targeting the National Institute of Crafts for Research and Innovation); (iii) investments in incubator centre projects and in improving access to loan/grants by artisans and handicraft enterprises; (iv) strengthening marketing efforts by developing local and foreign trade networks, partnership with tourism sector, effective use of communication strategy); and (v) modernization of information and knowledge management.

For the period of 2000-2016, the government envisages improvements in the sector performance as follows:

- -the share of GDP from 3.8% to 8%
- -the average value added produced per artisan increased from 3,400 dinars to 11,000 dinars
- -the income improvement of an artisan from 2,000 dinars to 9,000 dinars
- -the share in export from 2.2% to 8.9%
- -the increase of average purchase amount per tourist from 42 dinars to 120 dinars
- -creation of 112,000 employment

5.6.2 Competitiveness

At large, the sector holds two competitive factors: the production structure and capacities; and the institutional supports in place.

¹⁷ ONAT data. 2013.

¹⁸ Based on ONAT data 2011 and the first six month of 2012.

(1) Scalable production base

In economic terms, the sector can spearhead particularly to respond to the needs to generate employment. As mentioned earlier, nearly 11% of the total Tunisian workforce engages in the sector. It is estimated that continuous investment in the sector can generate approximately 8,000 jobs annually, with approximate cost of 1,500 USD per employment. This cost is relatively lower compared to other economic sectors¹⁹.

The handicraft sector of the six governorates in south represents 22.5% of the total number of sector workers and 29.0% of the existing enterprise in the country²⁰ (Table 5.6-1). The exporting handicraft businesses heavily concentrate in Médenine governorate. The favourable factors found in the south (but not exclusively in south regions) are the access to a major airport, locally embedded technical production skills, variation and quality in product offers, and the use of inputs which are locally available in most cases (Table 5.6-2). Weaving products ("tapis", "tissage") are most commonly produced across the south regions with some different local attributes mostly in accordance with the availability of the raw materials. In Gabès, articles based on palm tree leaves and other kinds of vegetable fibres are found abundant (bags, baskets, fans, furniture, etc.), while in Médenine (Gelala) clay based potteries has long history of evolution as family business over generations. In Tozeur, traditional brick production comprises a fundamental part of the local industry. The brick industry of Tozeur is legislatively backed up because 20% of the outlayer of any building (i.e residence, shops, offices) in the governorate is obliged to use the Tozeurian bricks, thus generating constant demands.

Governorate	# of a	rtisans	# of enterprises		# of exporting enterprises
National	137,135	(100%)	1,455	(100%)	-
Gabès	7,672	5.6%	120	8.2%	2
Gafsa	9,462	6.9%	55	3.8%	3
Médenine	3,381	2.5%	87	6.0%	33
Tataouine	2,692	2.0%	7	0.5%	-
Tozeur	5,122	3.7%	32	2.2%	3
Kébili	2,570	1.9%	121	8.3%	3

Table 5.6-1Tunisian handicraft sector profile

Source: Elaboration based on ONAT data

Table 5.6-2	Major handicraft works	and raw materials in	south of Tunisia
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Governorate	Major activities	Raw materials used
Gabès	Weaving, traditional dress, embroidery, vegetable fibre rugs and products, jewellery, leather, painting	Rose stone, sand, wood, stone, palm tree based materials
Gafsa	Weaving, embroidery	Clay, vegetable fiber, wool
Médenine	Weaving, "grara", tapestry, silverware, "beskri", textile (coverage), pottery, goldsmith, leather	Clay, wool, skin/leather
Tataouine	Bedouin weaving, "fileli", silverware, "belgha", traditional shoes, vegetable fiber weaving, wrought iron, leathers, mats	Clay, wool, skin, olive tree, marble, stone, gypsum
Tozeur	Traditional brick, embroidery, weaving	Vegetable fiber, wool
Kébili	Traditional leather work, vegetable fiber, embroidery, weaving, traditional dress	Vegetable fiber, wool

Source: Elaboration based on ONAT data

¹⁹ Interview with ONAT official in Tunis.

 20 These statistics represent only those workers and enterprises registered in the ONAT system, and it is estimated that the actual numbers double these figures.

(2) Institutional framework

> Institutionalization and capacity building efforts

The Ministry of Commerce and Handicraft encourages investments in the traditional and modern handicraft sector to protect and expand the sector activities by assisting carrying out studies and collaborating with relevant actors. More concretely, ONAT plans and executes activities related to: (i) capacity building; (ii) export promotion (both domestic and foreign); (iii) market intelligence; (iv) investment promotion; (v) quality control; and (vi) infrastructure development (specifically related to overseeing the establishment of artisanal villages, which are public exhibition spaces adjacent to selected artisans' workshops).

In addition, four other public agencies are put in place to complement the implementation of the national strategy and to raise the competitiveness of the sector.

- National Council of Handicraft is in charge of choosing "national selections". The Council also evaluates the contribution of the sector in the economic, social, and cultural spheres, sets priorities and executes the set plans.
- National Federation of Handicraft, currently comprised of 13 national associations, represents those engaged in the sector and defences their professional, economic and social interests. It also conducts studies and researches with the purpose of improving the quality of the vocational trainings. The Federation has 2000 regional chambers and networks under UTICA.
- The Trade Council oversees the business related activities and the promotion of authenticity and effective functions of "souks" (traditional markets). Specifically, the Council develops training programs in business-related fields, encourages employment and investments and exports, identifies models that can be adopted by the National Institute for Standardization and Industrial Property, protects the endangered handicraft productions, and conducts competence studies.
- The Technical Centre for Creation, Innovation and Control of Rugs and Weaving serves to raise the overall technical competence of the sector by: (i) development and promotion of skills and craftsmanship, supporting creation and renovation while safeguarding originality and national heritage and encouraging the use of natural raw materials and techniques in an environmentally friendly manner; (ii) assisting artisans to develop technical methods and to improve the quality and diversification of input materials, and sales promotion (such as organizing annual fairs); (iii) establishing partnerships with higher education institutions and vocational training centres to validate the scientific and technological competences through R&D efforts; and (iv) collection and analysis of other information inherent to the sector activities.

Specific programs

• The National Program of Handicraft Development (Le Programme National de Developpment de l'Artisanat: PNDA) is a roadmap to mobilize human and financial resources to implement the sector strategy and achieve its overarching objectives. PNDA's main target beneficiaries are companies (nearly 3,500), small enterprises (nearly 30,000), independent family artisans, and domestic workers. PNDA project entails institutional development, knowledge development and technical skills upgrading to foster research and innovation, development of incubators craft enterprises, development of the training of trainers and curriculum development and training standards, evaluation of vocational training and education and action proposals for its

development, increase investments (introduction of ISO 9001 Certification in 200 enterprises, and creation of villages), quality promotion and marketing (development of standards and labelling standards of four featured products, development of e-commerce, development of promotional events), information and communication to enhance the knowledge base as well as dissemination using modern communication tools (TV channel featuring culture, tourism, and handicrafts, and establishment of National Handicrafts Museum).

• Vocational Training Program is a new initiative in the framework of the inter-institutional cooperation between the Ministry of Professional Training and Employment and the Ministry of Commerce and Handicraft with the purpose of optimizing the contribution of the sector for regional development. This Program will benefit young people (total target beneficiary is 2,400 youth) from different educational backgrounds (specialties and years of schooling) to receive vocational training to pursue a career in the handicraft sector, including start his/her own business. ONAT and the National Agency for Employment and Self-Employment (ANETI) are in charge of the program implementation.

> Support for Access to Finance

Majority of the stakeholders in the sector engage in the small scale businesses and in many cases, running operations with tight cash flow. At the same time, new entrants to the sector face difficulties to concretize their entrepreneurial endeavours because of the limited access to loans due to the lack of tangible assets involved in the activities. To address such issues the government has established several financing schemes to address such issues, facilitating the stakeholders to obtain seed capital and/or supplementary operating budgets (Table 5.6-3).

Financier	Beneficiary	Amount (dinars)	Interest rate	Repayment Period	Conditions
Revolving Fund of ONAT and Banque	Individual artisan (Tunisian nationality)	4,000	50/		Registered in the
Tunisienne de Solidarite (BTS) [1]	Handicraft enterprises/Supply and trading service providers	10,000	3%	4 years	ONAT system.
BTS grants	Artisan with high education diploma, or artisans with professional qualification base	100,000	5%	7 years for repayment	Self-financing of 5% of the project cost is required.
Revolving fund of Development Associations (Associations de Developpement)	Members ?	5,000	Maximum 5%	3 years	To cover the cost of raw materials or any other article necessary for production.
Fonds National de Promotion de l'Artisanat et des Petits Metiers (FONAPRAM)	Individual artisan Handicraft enterprises	50,000	0% for the FONAPRA M contribution, 10% for bank loan	11 years for FONAPRA M 7 years for bank loan	Use in combination with commercial bank loans. Self-finance between 4%~16% of the total project costs, depending on the total project costs.

Table 5.6-3Financing scheme of the sector

Financier	Beneficiary	Amount (dinars)	Interest rate	Repayment Period	Conditions
Fonds de Promotion et de Decentralization Industrielle (FOPRODI)	Industry sector of handicraft Benefits for the investor: -70% premium for technical assistance study (capped at 20 million dinars) -10% premium for investments in equipment (capped at 100 million dinars) -50% premium for intangible investments -50% premium for investments in technology (capped 100 million dinars)	5 million dinars	3% (public contribution part)	12 years (public contribution part)	70% commercial loan and 30% self-financing, which can be distributed as 10% of own fund, 60% FOPRODI, 10% venture capital, 20% other associations.
Banque de Financement des Petites et Moyennes Entrepries (BFPME)	New SME set up investments (costs between 0.1-5.0 million dinars) -Expansion of existing SME (costs between 0.08-4 million dinars) -Acquisition of equipment, civil engineering, intangible investments	Maximum 1 million dinars / project			Co-financing only. Direct financing by BFPME, and/or indirect financing using SICAR[2] (Societe d'Investissement a capital risqué du Group STB – venture capital)

[1] BTS finances micro-projects for people who do not normally qualify for commercial bank loans due to lack of assets.

[2] South regions of Tunisia hosts SODIS-SICAR (Société de Développement et d'Investissement du Sud) as semi-public venture capital.

Source: Elaboration based on ONAT data

5.6.3 Potential and constraints

As observed above, the performance of the handicraft sector has substantial economic and socio-cultural ramifications in Tunisia. The potentials of the sector growth in the South regions are undeniable due to the presence of authentic products, availability of basic materials and secular knowledge in the region. More importantly, southern regions have benefits thanks to its proximity to two major touristic zones of the country –Djerba/Zarzis in the coastal line and Tozeur/Nefta in the west. More than two million tourists inflow annually between the two touristic poles.

The Regional Development Program for Handicraft (Le Programme Regional de Developpement de l'Artisanat: PRDA)²¹, a regional pilot of the PNDA, covering governorates of Gabès, Kébili, Médenine and Tataouine, capitalizes on such location factor²². There are strong potentials for handicrafts sector to benefits in close connection with dynamic tourist sector that have been shyly exploited so far.

Foreign markets also remain important segments, however, marketing poses challenging tasks for the stakeholders (as described in the following section).

There are two main constraints which seem to hinder the growth and competitiveness of the sector: one is the underdeveloped supply chain and the other is limited marketing capabilities of the stakeholders.

²¹ PRDA identifies and locates the existing materials and skills locally available, carries out training of the artisans, enhances the logistic support for export, takes on modern marketing strategy (e-commerce), forming alliance with Fair Trade and NGO groups, etc. PRDA puts priorities on traditional weaving products ("Margoum" and "Kilim"), articles made of wood plant fibers, leather articles, marble and stone works, and traditional metal jewelry, among others. The actual status of execution and impacts of the project needs to be confirmed with the authorities. As of June 2014, the Program has not yet launched due to the lack of budget.

²² The implementation status of the PRDA needs to be confirmed.

(1) Supply chain management.

Interviews with the stakeholders revealed that obtaining the necessary raw materials have become an increasing issue that artisans face today²³. For example, artisans work in Kébili, Tozeur, and Tataouine may have to travel as far as to Gabès or Monastir to buy wool yarns or prepared animal skins (leather) of quality that match they need. Both travel expenses and time weigh heavily on their core activities.

One interviewee also commented on her limited financial capacity to purchase the materials with colour variations because of low cash flow during the production period. This, in turn, restrains the variation of the design and quality of the products. In sum, there is a room to improve the supply chain of raw materials as part of a strategy to strengthen the sector.

Potential solutions may include reinforcing the producers association to increase the purchasing power of the producers by establishing a collective purchase and/or storage system, or setting up raw material production factories (e.g. spinning mill factory for wool yarns) at locations of reasonable proximity from the artisans, among others. Discussion of potential measures requires further research of the status of producer organizations, on one hand, and supply/value chain situations, on the other hand, of different products.

(2) Marketing

There are two central issues in the area of marketing: market-driven production, including product development and modification, and sales and promotional activities.

The first issue occurs mostly due to the poor market intelligence on the artisans' side (or on the government side, if the government is held accountable for leading the marketing efforts). For example, they need to better understand the market needs, in particular, the "needs" and "wants" identified in different market segments so that the product designs including the raw materials used and production techniques employed are modified accordingly. In addition, the official quality certification system applied to "tissage" under the control of ONAT should be more effectively used to increase the awareness as well as value added and to promote the Tunisian brand in the competitive international market.

Regarding the second issue, the most prevalent problem is that artisans have financial and knowledge constraints to promote their products. For majority of the artisans, participation in the trade fairs (domestic and abroad) is the most important opportunity to promote their products and to establish sales channels. However, many lack knowledge and measures to grasp such opportunities. The financing schemes available for the artisans (Table 5.6-3) do not consider travel expenses as eligible use of loan²⁴, and some artisans barely manage the situation by seeking for microcredits at other financing institutions such as Enda-Inter Arab (the largest microfinance institution in Tunisia with 67 branches nationwide).

Besides trade fairs, viable approach to expand the promotional activities and sales channels seem to be fairly underdeveloped. In this regard, seeking for more strategic collaboration with the tourism sector to mutually reinforce themselves, possibly within the framework of the PRDA, constitute a critical step.

²³ According to the interviews with ONAT officials and the artisans engaged in producing leather and wool based small articles (bags, coin cases, and shoes), and weaving products (tapestry, carpet, traditional clothing).

²⁴ BTS financing also has rigidity which prohibits purchase of raw materials.

5.7 Solar Power Generation

5.7.1 General Context

Tunisia has favourable natural endowments to seek for an alternative energy policy. In case of south of Tunisia, abundant direct solar radiation indicates that solar-based energy generation should be progressively pursued. In fact, Tunisia has adopted a proactive policy of energy conservation and promotion of renewable energy over the last 20 years. Its commitment to renewable energy (RE) has reinvigorated when the country was facing a steadily growing energy deficit²⁵ on one hand, and growing energy demand²⁶ on the other, during the period when the international oil prices were hiking up. In this context, the use of RE became more sound and justifiable in comparison to the conventional technology for electricity generation as well as to address the energy security issue of the country.

Currently, the modalities of REs that Tunisia employs include hydraulic, wind, and solar, of which share in the total power produced in Tunisia (16,800GWh) is only 2% (2011). The share of solar power generated using Water Heating System (WHS), photovoltaic (PV) and Concentrated Solar Power (CSP) reaches just 2% (5MW) of the total energy produced by three RE segments combined²⁷.

5.7.2 Competitiveness

<u>Policy framework.</u> The development of RE requires implementation of coherent institutional, regulatory and incentive frameworks. It also needs substantial funding to fill the initial capital investments in particular. Given the natural and economic contexts, the Tunisian government has advanced in adopting necessary measures to create favourable environment to push RE strategies forward. In this regard, according to the Solar Indices of Ernst & Young, Tunisia has 12th most favourable renewable energy regime (Table 5.7-1).

In practice, a series of specific national policies has been introduced to promote RE; firstly materialized as the Three Year Program $(2005-2007)^{28}$. This program created the National Fund for Energy Saving (FNME) – a funding mechanism to support improving capacity of renewable energy technologies and energy efficiency. Following the encouraging results of the Three-Year Program, and at the same time, facing pressing needs to reduce the increasing burden of energy spending of the government budget, estimated at 12% of GDP in 2007, the Four Year Program (2008-2011) was launched. This Program set a benchmark to raise the share of RE in primary energy consumption to 4% by 2011.

In addition, the Tunisian Solar Plan (Plan Solaire Tunisien: PST) was elaborated to keep the national RE policy and continue with an energy-efficient and low carbon socioeconomic development path for the period of 2010 to 2016. The PST aims at facilitating the large-scale deployment of renewable energy for electricity generation with the purpose of achieving energy efficiency to meet the demands at home as

 ²⁵ As of 2011, electricity generation by renewable energy (RE) represents only 2% of the total power produced (16,800 GWh) in Tunisia.
 ²⁶ Total domestic electricity supply in 2011 was 15,957 GWh. The Tunisian per capital annual electricity consumption is

²⁶ Total domestic electricity supply in 2011 was 15,957 GWh. The Tunisian per capital annual electricity consumption is 1,200kwh. The industrial sector accounts for the largest share of energy consumption at 36% of overall final consumption, followed by the transportation sector (31%), buildings (residential and tertiary) (27%), and agriculture (6%).Resources have stagnated at around 7.5 million toe, while demand recorded sustained growth, reaching 8.2 million toe (2010). Energy consumption per capita was 0.55 tons of oil equivalent (toe) in 1990, 0.70 in 2000, and 0.78 in 2010. GSE (2013). Tunisia Energy Country Report. Focus on Electricity sector and renewable energy policies.

²⁷ Ministry of Industry, Energy and Mining (2013). "Le context energetique Tunisien".

²⁸ The Three-Year Program focused mainly on priority areas and mature industries that had relatively easy to mobilize resources to taken on initiatives to install cogeneration facilities and solar water heaters (SWHs), among others. Investments in RE and energy efficiency (EE) undertaken in this framework amounted around 250 million dinars (10% of which was public funding).

well as of connecting lines to exporting powers to the European markets. The export capacity is expected to reach 200MW from renewable energy by 2016^{29} . To achieve such purposes, the PST expects to implement 40 different projects, out of which 17 are solar components (thermal and electrical applications). The estimated total project cost is 3,369 million dinars and to be financed by both public and private sectors. In sum, the PST constitutes a framework for Tunisia's integration into the Mediterranean area, which will help Tunisia to establish itself as a regional hub for industrial and energy production.

Solar index ranking	Country	solar index	solar PV	solar CSP
4	Spain	58	56	63
4	Italy	58	63	42
9	Morocco	48	47	52
9	France	48	55	29
11	Greece	46	51	33
12	Portugal	45	49	35
12	Tunisia	45	44	48
12	Israel	45	47	38
19	Egypt	41	39	45

Table 5.7-1International Solar Indices 2012

Source: Ernst & Young 2012

Long term vision. Tunisia's long term commitment to RE is expressed in the establishment of specific targets: By 2030, 30% of the electricity production (total production of 37,000GWh) will be generated based on renewable energy sources (15% wind, 10% solar PV and 5% CSP). The production capacity of three types of RE to be installed will be 1500MW for wind, 600 MW for CSP, 2,000MW for PV respectively, and 1.5 million m² of Solar Water Heater (SWH).

<u>Institutional framework.</u> The National Agency for Energy Conservation is the responsible public entity for implementing the energy policy related to energy efficiency and REs as well as the management of the FNME. Additionally, the Energy Research and Technology Centre (CRTEn) has been established to strengthen the development and monitoring of energy ANME technologies and to ensure their optimal applications in the economic and social spheres. The principal fields of activities encompass: (i) the applications of PV systems for lighting; (ii) irrigation and water desalination using RE; (iii) the use of solar and wind power; and (iv) research on materials for PV applications. The CRTEn also engages in training senior managers in this field.

There is a consortium (MVV decon, ENEA, RTE-I, Sonelgaz and Tema) which has been established within the framework of the Mediterranean Solar Plan funded by EU. The consortium takes the leading role in monitoring the progress in Tunisia in terms of legal and regulatory convergence for future large scale deployment of RE, including solar energy. Table 5.7-2 summarizes their assessment of the status.

²⁹ GIZ (2012). Renewable energy and energy efficiency in Tunisia – employment, qualification and economic effects.

Aspects	Status	Details / Legal basis
National targets: Official RES Target 2020	Advanced	16% of total power generation capacity shall be from RES by 2016 and 40% in 2030. Specific targets have been defined for different RES sources.
Specific targets for different sources of RES	Mature	By 2016: Wind 505 MW, Solar 253 MW, Other 242 MW By 2030: Wind 2,700 MW, Solar 1,700 MW, Other 300 MW
		In addition, a total of 34 RES priority projects with specific targets have been defined.
Key legislation for RES and Energy Efficiency	Advanced	Energy Management Law 2004-72 establishes rules on energy conservation, use of renewable energy and energy substitution (modified by Lx 2009-07).
		<u>Investment Incentives Code Article 41</u> Tax and customs incentives for investment in energy conservation and RE. <u>Law 2005-106</u> created National Energy Management Fund (FNME). <u>Finance Laws 1995 and subsequent</u> defines the equipment that benefit from incentives.
RES Tariff support schemes.	Advanced ~ Mature	Law on energy management (Law No. 7 of 2009 and Decree No. 362 of 2009) and Ministerial decision of 2010 introduce Feed-in-tariffs (FITs) for self-producers. This regulatory framework encourages the firms to generate electricity to address their needs to curb the electricity bill. The law allows the firms to sell the excess not exceeding 30% of their production to STEG at the same price of the high voltage sale price of STEG. The electricity producers using solar PV connected to low voltage grid through PROSOL-Elec program are subject to the net metering system ³⁰ . The self-producers are authorized to use transmission services from STEG when the electricity is not generated locally. The transmission tariff is 0.005 dinar/kWh (18% VAT applicable). The period for which a tariff is guaranteed is negotiated/fixed individually for each Independent Power Production (IPP) project, following a tender procedure. For self-producers the FITs are equivalent to rates STEG selling tariffs. Tariffs are transparent and non-discriminatory as they are indexed on STEG's selling tariffs.
RES tax support schemes	Advanced	VAT and customs duty are exempted on equipment for RE.
Specific support schemes for solar projects.	Advanced	Specific programs that have been launched to promote RE such as PROSOL for the development of SWHs in the residential and tertiary sectors, PROSOL-Elec for development of grid-connected PV installation, and PROMO-ISOL for roof insulation grant various investment subsidies and facilitate access to credit for financing investments in RE. Main sources to fund these measures are channelled through: (i) loan line dedicated to energy management at 40 million euros by the AFD; (ii) long-term loan line dedicated to energy management at 50 million USD by the World Bank; and (iii) loan line from a private bank to finance the acquisition of SWH (Attijari Bank) ³¹ .

Table 5.7-2	Policy and Regulatory	framework to supp	oort RE in Tunisia
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Source: Consortium MVV decon/ENEA/RTE-I/Sonelgaz/Tema 2012

In addition, there are fiscal incentives to foster investments in the sector (Table 5.7-3).

Table 5 7-3	Fiscal incentives for solar energy investments	s in Tunisia
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Measures	Thresholds
Solar and wind lighting and pumping in agricultural farms	40% capped at 20,000 dinars
Production of electricity by households (HH) from solar PV low voltage grid-connected	30% capped at 2,300 dinars/kWp capped at 15,000 dinars/HH
Individual SWH	 200 dinars for SWH of 1 to 3m² surface sensor. 400 dinars for SWH of 3 to 7m² surface sensor.

³⁰ The consumer pays the balance between the energy produced and energy consumed at the same rate of sales applied by STEG. ³¹ UNECA. Study on innovative financing mechanisms for renewable energy projects in North Africa.

Measures	Thresholds
Tertiary SWH	Less than 15m ² sensors: Public subsidy of 30% of the SWH price capped at 150 dinars/m ² .
	<u>More than 15m² and Less than 30m² sensors:</u> Public subsidy of 30% of the SWH price capped at 150 dinars/m ² , and 10% premium financed by the Italian Cooperation through MEDREP program and UNEP (50 dinars/m ²)
	<u>More than 30m²</u> :Public subsidy of 30% of the SWH price, 25% premium by the Italian Cooperation, ease of the interest rate by 2 points and 6 dinars/m ² /year for 4 years maintenance, and capped at 300 dinars/m ²

Source: UNECA.

<u>Supply Side.</u> Tunisia has a decent size of pool of skilled labour and emerging capacity of manufacturing and assembly of the equipment. Through the execution of PROSOL Residential program (2005-2010), the supply side of the SWH market has significantly evolved: the number of equipment suppliers was increased from only 4 at the beginning of the project to 46 in 2010. Seven of them are manufacturers, and six production facilities are in operation: SOFTEN, SINES, SIER, BSI, Tech-Sol and Soltech. Soltech is the only manufacturer found in the south region as of December 2013 (in the industrial zone of Medenine). Besides the national products, around forty companies are importing SWHs from various countries including Greece, Turkey, Italy and China, and distributing them in the Tunisian market. Concerning the related services, Tunisia has over 1,100 small businesses (two to four people maximum) involved in installing individual SWH. There are also a dozen specialized companies qualified to assemble and install collective systems.

Similar growth pattern prevailed in the PV market. The Rural Electrification Program (PROSOL-Elec) facilitated the evolution of the market for decentralized solar PV system, for which the number of suppliers and the installers increased from 3 to 50. While installing the whole components of technology transfer in the country would take time, basic skills necessary for installation already exist and additional skills required for more complicated work will be easily acquired with some additional training.

5.7.3 Potentials and Constraints

Given the progresses in the policy and regulatory spheres, followed by positive empirical outcomes observed to date, the solar energy sector has encouraging prospects at large. Sustainable energy policy will continue to pave way for creation of new jobs as well as for fostering more diversified expertise in the relevant fields. Tax incentives and subsidies are dispensed to encourage development and construction, and the total investment in technology until 2030 projection is 2.87 billion TDN for PV (1,930 MW), 2.65 billion TDN for CPS (595 MW), and 0.93 billion TDN for SWH (700 MW)^{32,} including the costs to develop and increase the grid to meet the targets.

The price to adopt solar energy technology has become competitive as the SWHs, thermal insulation measures and PV installations on private houses can pay for themselves within a reasonable timespan (5-10 years). The growing demands for the solar energy applicable in different domains (residences, businesses, government facilities, etc.) should also trigger improvement of the local production capacity and accelerate the industrial integration of the sector. There has been a laboratory test and trials system that have been developed in light of the need to evaluate the eligibility of energy-efficient products with regard to tax breaks and dedicated programs, such as PROSOL, PROSOL-Elec and PROMO-ISOL³³, as

³² WI/Alcor; GWS/Alcor. (2012). Paving the Way for the Mediterranean Solar Plan ENPI 2010/248-486. National Roadmap for Tunisia.

³³ PROMO-ISOL is a roof thermal insulation project, using micro PV.

well as to cater to inspection requirements before products go on the market. These initiatives also result in generating employments^{34.} As national capacity becomes enhanced, the dependence on imports is expected to decrease gradually (Table 5.7-4). If successful altogether, a real network of local manufacturers and operators will be formed.

	PV	CSP	SWH
2010	85%	90%	40%
2015	70%	90%	40%
2020	65%	80%	30%
2025	65%	70%	20%
2030	60%	70%	10%

Table 5.7-4 Projection of Import rate of the whole system by segment

Source: GIZ 2012.

(1) Market Prospects

Solar Water Heater (SWH) market

As mentioned above, the supply side of the SWH market has significantly evolved. About 76% of the market demand is covered by local manufacturers/fitters, and the rest by importers^{35.} Over 180 models of individual SWHs are available on the market in 2010.

The market size in the residential sector reached the total turnover of around 176 million dinars over the 2005-2010 periods, with an average increase of 28% per year. As this market enters maturity, the growth pace beyond 2010 is expected to remain stable at around 100,000m² per year, with the goal being to reach an installed capacity of one million square meters by 2015.

With regard to the SWH adoption by tertiary sector, the funding support mechanism embarked in 2008, and the market has not really taken off. So far, only 4,100m² of solar collectors have been installed, generating a total turnover of 2.7 million dinars. There are 20 engineering consultancy firms specialized in the design and sizing of collective solar installations, 12 of them being certified by the Ministry of Infrastructure and specialized in installation and after-sales service. New firms rarely emerge in this segment as existing companies are expanding into new niche segments in fields related to their core business³⁶.

Photovoltaic (PV) market.

The evolution of the PV market has been propelled by the National Rural Electrification Program (PROSOL-Elec; 2005-2010) which facilitate installation of micro PV plants connected to the STEG grid. PROSOL-Elec has benefited 2,112 housing units, generating turnover of 3.6 million dinars. More recent adoption of PV for non-residential establishments exemplified by PV pumping units and brackish water desalination units leave significant potential growth margin for the market. For example, the Ministry of Agriculture, Water Resources and Fisheries (CRDA) has a program which employs the PV pumping system.

³⁴ Examples include the establishments for testing SWHs and thermal insulations, such as CTMCCT (15 jobs), The Borj Cedria laboratory (5 jobs), and the ENIT laboratory (5 jobs).

³⁵₂₆ GIZ (2012).

³⁶ GIZ (2012).

With an estimated average integration rate of over 50%, the PV market may offer the fastest potential of developing a domestic industry, attracting importers, fitters, local accessories suppliers, installers and small maintenance businesses. In this regard, industrial integration projects have been launched in support of local manufacturing and assembly of PV modules. Construction of two production units (4.5 million euros investment for a production capacity of 20 MWp in Beja, and 4 million euros investment for a production capacity of 15 MWp in Manouba) are underway, but none envisaged in the South regions. Moreover, the potential complementarities between the module manufacturers and the existing companies that produce relevant products should not be overlooked. In Tunisia, there are two companies produce batteries to store electricity produced by photovoltaic system, and over 300 companies in the electrical and electronics industries produce regulator, cables, junction boxes and connectors, and other equipment such as inverters.



Source: Elaboration based on UNECA 2013



➢ Cogeneration market^{37.}

The cogeneration potential in Tunisia is estimated at around 606 MW (522 MW in the industrial sector and 84MW in the tertiary sector). At the end of 2010 the capacity installed reached 27.5 MW, which represents less than 5.3 % of the industrial sector potential, leaving a substantial untapped market. There are only 2 suppliers in this segment. Although the Tunisian cogeneration market is not so strong compared to SWH and PV to establish local industries, expected expansion of the market will require the supply of accessories and related services, such as engineering, installation and maintenance, thus imply an undeniable growth potential.

> CPS market.

The proactive public intervention has laid foundation for private sector to explore the commercial application for solar power on a larger scale. The success of the development of CSP market in Tunisia, however, hinges on how the pioneer programs such as DESERTEC Initiative/the Mediterranean Solar

³⁷ Cogeneration refers to the generation of electricity and useful heat jointly. Cogeneration development was launched in 2001 in Tunisia with the publication of the Decree 3232 (2002). Actual installation has started in 2007.

Plan exemplified by TuNur will materialize³⁸. With the estimated investment amount of 5 billion euros and additional 150 million euros yearly over the course of operation lifetime (30 years), the plan involves establishment of 2GW CSP tower (annual production of 9,000GWh) plant in Kebili (10,000 ha of public land) with storage capacity, and envisages a high degree of industrial integration up to 60% in Tunisia^{39.} Expected value-added to take place in Tunisia are: (i) 1,500 construction jobs expected to start in 2014; (i) 500 jobs for the plant operation from 2015; and (iii) up to 20,000 jobs through expanding supply chain of new manufacturing industries (e.g. production of Heliostats⁴⁰). The export market prospect of electricity is reasonably well based on the fact that Italy is a large electricity importer (15% of its consumption) and possesses competence to serve as a hub for exporting to its neighbouring countries that maintain substantial demands⁴¹.

(2) Risks

A few risks of different magnitudes should be taken into consideration. In terms of regulation, Tunisia has moderate constraint regarding the segment of electricity generation to power transmission network (MT HT network). The market structure for self-production appears to be rigid and lacks flexibility because STEG monopolizes the transmission, distribution and sale of electricity (both wholesale and retail). STEG's purchasing price of surplus electricity is equal to 48 Euros/MWh on average per year, plus a fixed transmission contribution of 2.6 Euros/MWh. If prices of these resources become reasonably cheaper, further efforts to foster RE may become compromised. STEG is also the only entity allowed to import and export electricity. This may result in decelerating private sector participation. Furthermore, quota system and certificate incentive scheme, which are considered instrumental to strengthen the RE sector are absent in the current RE support policy.

Specifically concerning the SWH market, in which the growth of local manufacturers has emerged, the competition is likely to intensify in the coming years as opportunities on the international markets expand with quality improvement and use of product certification⁴². For successful market penetration, careful market segmentation and development of product that cater to the demands will be fundamental. In this regard, Tunisia has more advantages in knowledge-base to cater the specifications required in MENA markets because of similar climate conditions, compared Germany or China.

³⁸ Nur Energie Ltd and a group of Tun TuNur is a joint venture project between Tunisian investors led by TOP Group, aiming at launching the first solar export project between Tunisia and Europe. TuNur works with the DESERTEC Foundation and is a founding shareholder of Med Grid. Feasibility studies concerning the construction of under marine connectors between Tunisia and Italy have completed. Details of the progress need to be confirmed.

³⁹ TuNur project powerpoint. TuNur Ltd. 2012.

⁴⁰ Heliostats are flat plate mirrors on steel pylons with motors.

⁴¹ Italy has over 11GW interconnection capacity with its northern neighbors.

⁴² Strong competition with China and other Asian countries are foreseen.

CHAPTER 6 CURRENT STATUS OF PHYSICAL INFRASTRUCTURE

OF THE SOUTHERN REGION

6.1 Transportation

6.1.1 Framework of Transport Sector in Tunisia and Southern Region

(1) Policy and program

The framework related to the transport sector has been elaborated taking into consideration the following documents:

- The studies for the national master plan for transports (*Plan Directeur National des Transports*).
- The Law 2004-03 on Transport;
- Considerations on the result of previous five-year plans;
- The XIIth Plan (2010-2014).

The national policy can be defined based on the five-year plans. In addition, the National Transport Master Plan (*Plan Directeur National des Transports*), for which a study has been implemented by the group of Consultants ETIC-ISIS-BCEOM, should now be put into practice. In the Plan, the evolution of demand has been calculated based on a prediction of growth of GNP (PIB) of 6% per year for the 2006-2020 period (hence the rate of ownership of cars is forecast at 32.5% in 2020 based on a growth rate of 7.9% per year during the said period).

As one can see the prediction of growth which has been considered in the master plan is quite positive compared to present figures optimistic. Nevertheless, there is growth and general orientation is good. Therefore it is possible to take into account this forecast in the analysis by considering that the level of growth will be occur at a later date, but that the issues still remain worthwhile addressing.

(2) Political framework

The following section will consider the changes that have occurred since the 2011 revolution and take into account the fact that organization has been pursued based mostly on yearly programs, without any consideration of multi-annual programming until recently. The new constitution and ongoing corresponding institutional reforms, including the empowerment of local entities in particular and possible re-sizing with the creation of regions having more extended powers, may have drastically changed the layout of the picture.

(3) Institutional framework

(a) Ministry of Transport

The ministry which oversees the transport domain is the Ministry of Transport (Ministère des Transports). The ministry jurisdiction covers all modes of transport, including road, rail, sea and air. The air and port sectors are organized and managed by *Office de l'Aviation Civile et des Aéroports* (OACA), and *Office de la Marine Marchande et des Ports* (OMMP) which are under the umbrella of Ministry of Transport respectively. This system and structure of offices is often used in Tunisia.

Office is a public body with a non-administrative purpose which has an individual and financial autonomy.

(b)Ministry of Equipment, Housing and Spatial Planning

The infrastructure of roads, such as construction and maintenance, belong to the jurisdiction of the Ministry of Equipment, Housing and Spatial Planning (*Ministère de l'Equipement, l'habitat et l'aménagement du territoire*) The organization of the Regional Directorates (DREs) has been established by Decree No. 419 of 1985 published on 19 March 1985 and amended by Decree N° 512 on 25 February 2008 stating the attributions and organization of the DREs. The main functions of DREs (apart from DRE Tunis which has a special status) are to:

- Represent the Ministry of Equipment, Housing and Spatial Planning at the regional level in all committees related to their duties
- Operate services and coordinate its activities
- Follow up on the activities of the ministry at a regional level
- Follow up on studies and implementation of projects at a regional level and financed from the state budget
- Provide assistance to local authorities (*collectivités locales*) in following up on the studies and implementation of their projects
- Participate in the development of policy relating to areas of structural works (*ouvrages d'art*) and classified roads, buildings, civil, land use, housing, urban planning, architecture, the protection of cities against floods and air and sea ports
- Contribute to the imploring of the entrances to towns and ensuring the land use in the public domain of the State road,
- Manage, maintain and light roads classified in the public domain of the state road, and to manage and maintain tunnels, bridges and ferries
- Manage, maintain and classify rural roads
- Manage funds and personnel
- Establish technical land acquisition needed for the projects of the ministry at a regional level either amicably or through expropriation and monitoring of cases before the courts of the governorate, and in coordination with the central services of the ministry
- The application of laws and regulations relating to records and archives management

The Regional Directorate of Equipment comprises:

- Specific services including :
 - Directorate of coordination of technical services.
 - Sub-Directorate of Roads and Bridges.
 - Sub-Directorate of civil buildings, housing, urban and land planning.
- Common services including :
 - Sub-Directorate of administrative, financial affairs and archives.

(c)Others

Except for designated national roads (TBC), the city network is under the umbrella of the Ministry of Internal affairs (*Ministère de l'Intérieur*) and there is a dedicated funding by the cities for the maintenance of their roads.

Rural roads are under the jurisdiction of the Ministry of Agriculture, Water Resources and Fisheries.

The fishing harbours, the fishermen and the fishing industry are in the jurisdiction of the Ministry of Agriculture, Water Resources and Fisheries.

(4) Legal framework

The legal organization of transport in Tunisia results from Law 2004-33, *Loi portant organisation des transports terrestres* (Law on the organization of Land Transport). The main points of the text are as follows:

- "Land transport" comprises, by law: road transport, rail transport and the renting of vehicles.
- The State and the local authorities are elaborating and implementing a policy in this domain in the scheme of the social and economic development plans. They act in a way to ensure the coherence between transport and urban and land planning policy (art. 3).
- They promote the development and the use of public transport.
- Public authorities (*les pouvoirs publics*) construct and manage the infrastructure and take care of their maintenance so that they may be made available to the users in conditions that are safe and that enable correct use. They can contract with private companies on this issue (art.5).
- Public authorities are also in charge of R&D in the transport domain.
- The State is in charge of realizing general studies and master plans (*plans directeurs*) in a sectorial or national approach. These plans set up the programs for investment in infrastructure, in equipment, and in means of public transport for the medium and long term (art. 6).
- The State is particularly in charge of the following:
 - Assuming responsibility for financing the investment in infrastructure and studies, in particular for urban and regional transport;
 - Coordinating the regional planning for land transport;
 - Setting the rules for the financing of public transport;
 - Concluding contracts for operations and concessions in the domain of collective public transport;
 - Organizing the inter-urban transport of civilians, of tourists and of goods, and organizing vehicle rental.
- Within the boundaries of its powers (*compétences*), the regional authority in charge of transport organization should:
 - Coordinate the stakeholders in the domain of urban and regional transport;
 - Organize the urban and regional transport;
 - Elaborate and implement the regional transport plans;

- Propose the way of operating transport services;
- Other missions can be assigned to the regional authority by decree.
- The Governor represents the local authorities on this issue. The regional authorities should coordinate as much as possible.
- The public transport is financed by the users and, occasionally, the State, the regional authorities in charge of the organization of these services and the beneficiaries of the service. The beneficiaries are entitled to the right of recovery, the amount and recovery process of which are set up by decree (art.11).
- In case of free use imposed by the State or the authority, the carrier is entitled to claim for compensation of his shortfall (*manque à gagner*). The corresponding calculation is defined by decree (art.12)
- Private transport (non-touristic and non-public transport) is free and does not need any authorization, declaration or statement (art. 14).
- The state delegates the organization of the public transport to public companies. With the agreement of the State, these companies can contract out to private companies based on a competitive process (art. 20).
- The non-scheduled public transport of passengers (*transport public routier non régulier de personnes*) comprises:
 - Individual taxi (inside the urban perimeter);
 - Public taxi (fixed itinerary, tariff by the seat);
 - o taxi "grand tourisme" (long distances);
 - hire cars (*voitures de louage*) (tariff pending on mileage);
 - o rural transport (fixed itinerary inside a rural area);
 - o Occasional transport.
- The authorization to undertake such services is delivered by the governor (art. 23).
- With respect to transport of goods, there are two categories for transport: third party transport (*transport pour le compte d'autrui*, transport of goods billed or offered to the public) that requires authorization; and own-account transport (*transport pour propre compte*) that does not need any authorization.
- A terminal for ground transport (*gare de transport terrestre*) is a place used for embarkation and disembarkation of passengers, parking and storage of transport vehicles (art. 42). Its position is approved by the president of the commune or by the governor, if outside the municipal areas. Their creation is relevant to public authorities, professional organizations, public and private companies of bus transport.
- The decree also addresses several particular issues:
 - o Car rental;
 - o Conditions for occupying an activity of land transport;
 - Exploitation of road transport vehicles;
 - o Offences and sanctions ;
 - Various, transitional provisions.

As one can see the legal framework is State-centered, and also give to State-owned companies the

preeminence in organizing public transport. The present decentralization process may change this picture, with more powers to be allocated to the regional level (extent and modalities to be confirmed).

It is to be noted that in Tunisia the governor is nominated by the State, not elected like in Japan but nominated by the State). After this general overview, the following part of this chapter will focus on the southern part of the Tunisian territory (the study area), as per the terms of reference of the present study.

6.1.2 Roads

(1) Existing road network and organization

The existing network in Tunisia is considered to be of a good density (national average of 6.3 km² per 100km²) for a total length of the road network of 19,418 km (Source World Bank). Figure 6.1-1 shows the road network in the study area.

The Ministry of Equipment, Housing and Spatial Planning is in charge of road construction and maintenance (in particular through its directorates in the governorates). The road network in Tunisia is organized around the following categories:

- highways or *autoroutes* under the supervision of Tunisie Autoroutes, labelled A;
- national roads or *routes nationales*, labelled RN;
- regional roads or *routes* régionales (secondary, less traffic), labelled RR;
- local roads or *routes locales* for the complement of the network inside the governorate (RL).

In addition there are:

- municipal road networks, which depend on the city;

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Source: Office de la Topographie et du Cadastre

Figure 6.1-1 Road network in the Study Area

rural roads, used mainly for agricultural purposes, and which are relevant to the Ministry of Agriculture, Water Resources and Fisheries.

Altogether, the network in Tunisia consists of over 19,000 km of roads, of which 60% are paved, 360 km of highways and 2600 structural works.

(2) Statistics and key indicators

(a) Length and width

According to Table 6.1-1, the Governorate of Tataouine represents the largest part of the road network while the smallest network is in the governorate of Tozeur. Tozeur has the best service by national road with 87% of the network (Tozeur-Gafsa corridor), followed by Gabès, Kebili and Gafsa (each at approximately 45%). Médenine is left behind with a ratio of 8.5%, but the situation will change following opening of the highway.

	Auto- route (*)	R.N	%	R.R	%	R.L	%	Total	% of network
Gabès	0	323.000	45.4	126.890	17.8	261.340	36.7	711.863	10.8
Médenine	0	171.060	8.5	592.770	29.4	1,252.328	62.1	2,017.232	30.5
Tataouine	0	407.000	17.4	490.100	20.9	1,448.000	61.7	2,346.361	35.5
Gafsa	0	260.170	45.0	246.550	42.6	72.000	12.4	579.432	8.8
Tozeur	0	234.700	87.0	35.015	13.0	0.000	0.0	270.094	4.1
Kébili	0	294.300	43.5	244.600	36.1	137.885	20.4	677.543	10.3
(*) For r	eference								
Study area (total)	0	1,690.230	25.6	1,735.925	26.3	3,171.553	48.0	6,601.774	
	<u> </u>								
TUNISIA	356.331	4,745.589	24.4	6,495.693	33.4	7,833.451	40.3	19,431.064	

Table 6.1-1 Roads categories and lengths in the 6 Governorates (end 2012)

Source: ministère de l'Equipement

(total)

Note: DRE: Direction Régionale de l'Equipement, a branch of the Ministry of Equipment, Housing and Spatial Planning located in the governorate. RN: routes nationales. RR: routes régionales. RL: routes locales.

Table 6.1-2	Road widths	in the 6 Govern	orates (data - e	end 2012)
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	Classes of width							
	~	4,5 m	5,5 m	6,5 m	7,5 m	>	Separate	Length
	4,5 m	5,5 m	6,5 m	7,5 m	10,5 m	10,5 m	lanes	(km)
Gabès	13.500	72.500	19.300	354.150	13.840	31.415	32.635	537.340
Médenine		207.630	296.810	489.810	17.250	35.868	72.230	1,119.598
Tataouine		328.700	66.600	324.950	2.500	23.000	14.900	760.650
Gafsa		144.960	61.800	303.670	9.200	9.000	17.300	545.930
Tozeur		0.000	156.600	84.545	6.000	8.120	14.450	269.715
Kébili		158.185	57.400	168.350	38.900	13.650	10.150	446.635

Table 6.1-3 Road widths in the 6 Governorates (percentages - end 2012)

	Classes of width							
	<	4,5 m	5,5 m	6,5 m	7,5 m	>	Separate	Length
	4,5 m	5,5 m	6,5 m	7,5 m	10,5 m	10,5 m	lanes	(km)
Gabès	2.5%	13.5%	3.6%	65.9%	2.6%	5.8%	6.1%	537.340
Médenine	0.0%	18.5%	26.5%	43.7%	1.5%	3.2%	6.5%	1,119.598
Tataouine	0.0%	43.2%	8.8%	42.7%	0.3%	3.0%	2.0%	760.650
Gafsa	0.0%	26.6%	11.3%	55.6%	1.7%	1.6%	3.2%	545.930
Tozeur	0.0%	0.0%	58.1%	31.3%	2.2%	3.0%	5.4%	269.715
Kébili	0.0%	35.4%	12.9%	37.7%	8.7%	3.1%	2.3%	446.635

Table 6.1-4 Road widths in the 6 Governorates (cumulated data - end 2012)

Study area	13.500	911.975	658.510	1,725.475	87.690	121.053	161.665	3,679.868
%	0.4%	24.8%	17.9%	46.9%	2.4%	3.3%	4.4%	(Total)
SUB-TOTAL	1,583.985							
%		43,0%			57,	0%		

TUNISIE	467.615	3,391.645	1,642.037	7,152.050	397.526	579.878	1,300.703	14,931.454
%	3.1%	22.7%	11.0%	47.9%	2.7%	3.9%	8.7%	(Total)
TOTAL	5,501.297							
%		36.8%			63.2	2%		

Source: ministère de l'Equipement

The categories of width are quite homogeneous in the study area and the rest of the country. Nevertheless:

- The proportion of roads with separate lanes is of 4.4% instead of 8.8% for the country in general.
- The width of the road is an important factor for road safety. On this issue the 3 first categories are under the "normal" average of a threshold of 3.5m per lane (see standard cross section for RN1 supra). The cumulated percentage for Médenine sums up to 45.1%, which is over the national average (36.8%). This situation is still more severe in the governorate of Tataouine (52%) and of Tozeur (58.1%).
- This data must be double checked with the data concerning traffic in the area. In any case, areas of wider road could be considered for passing and overtaking vehicles and to alleviate problems.

(b) Pavement ratio

According to Table 6.1-5, all roads of the Tozeur governorate are paved, while the roads of Tataouine governorates are mostly (67%) unpaved, this being due to its peculiar geography and lower concentration of population and traffic. Elsewhere, paved roads have generally a lower percentage in the study area, except for the more urbanized governorates of Gabès, Médenine and Gafsa.

		Sealed roads (Km)		Dirt roads	Total
	Asphalt mixture	RS (*)	Total (km)	(Km)	(Km)
Gabès	307	230.34	537.34	173.89	711.23
Share of	57 1%	12 0%			
sealed	57.170	42.370			
Share of			75.6%	21 1%	100.0%
total			75.078	24.470	100.078
Médenine	523.711	595.887	1,119.598	896.56	2,016.158
	46.8%	53.2%			
			55.5%	44.5%	100.0%
Tataouine	169.1	591.55	760.65	1,584.45	2,345.1
	22.2%	77.8%			
			32.4%	67.6%	100.0%
Gafsa	232.82	313.11	545.93	32.79	578.72
	42.6%	57.4%			
			94.3%	5.7%	100.0%
Tozeur	107.215	162.5	269.715		269.715
	39.8%	60.2%			
			100.0%	0.0%	100.0%
Kébili	156.25	290.385	446.635	230.15	676.785
	35.0%	65.0%			
			66.0%	34.0%	100.0%

Table 6.1-5 Categories of paving in the 6 Governorates

General data for Tunisia:

TUNISIA	6 946,413	7 985,041	14 931,454	4 499,610	19 431,064
%	46.5%	53.5%	100.0%		
% of total			76.8%	23.2%	100.0%

Source: ministère de l'Equipement

(*) RS : revêtement superficiel, surface treatment

(c) Maintenance budget

Regarding the budgets for maintenance, they are constantly growing for the 6 governorates as shown in Figure 6.1-2.



Source: Ministère de l'Equipement

Figure 6.1-2 Maintenance budget for trunk and rural roads

Here also we can see that the trend is increasing budgets despite a shortage of available credit in 2012. The 2013 value recover from the 2012 drop. Apart from these light maintenance works there are some works of more importance, which include renewing the coating of the surface of the road. Detailed studies are made by the Ministry of Equipment. The budgetary constraints necessitate prioritisation and organization of multi-annual programming. The programming that has been in place since last year is to allow ongoing large projects longer than one year, as opposed to the previous system that was limited to yearly programmes. Note: In 2000, all the maintenance was done internally (*régie*); however, now it is the contrary with almost all works externalized and only a small part remaining internal. Hence a small local industry has been created for these maintenance purposes.

(d) Traffic volume

Traffic census survey targeting the whole of Tunisia is conducted at intervals of 5 years by Ministry of Equipment, Housing and Spatial Planning. The latest one was published in 2007 and the one for 2012 is under compilation. Figure 6.1-3 shows the Annual Average Daily Traffic (AADT) on main roads around the study area in 2007. The heaviest traffic over 10,000 veh./day can be seen on RN1 running along the coastal side. The second heaviest traffic over 5,000 veh./day can be seen on RN3 between Gafsa and Sfax.



Source: Recensement General de la Circulation 2007

Figure 6.1-3 AADT on main roads around the study area in 2007

(3) Outline of the traffic and logistic survey

(a) Objectives of the traffic and logistic survey

In order to understand the current situation of transportation and logistics in key node in the Southern Region and to use the results as basic information for formulation of development policy of transportation, "Logistic and Traffic Survey" has been conducted. The survey is composed of three types of investigation: i) Traffic Survey, ii) Roadside OD (Origin-Destination) Survey and iii) OD Interview Survey at Port. Each survey is scheduled to be carried out in two different seasons (February 2014 and September 2014) considering seasonal variation. In this report, survey results on February 2014 are shown. The "Logistic and Traffic Survey" has been carried out by a qualified local consultant commissioned by the Study Team. Survey points and contents of the survey are described below.

(b) Survey points

Regarding the survey points, 6 points at roadside and 2 points at the gate of port are set. The location of survey points are shown in the Figure 6.1-4.

(c) Contents of the survey

(i) Traffic Count Survey

The traffic count survey has been conducted to understand traffic volume that passes through the survey point by direction and by each type of vehicle. The survey has been carried out in the following manner.



Source: Esri

Figure 6.1-4 Survey points for the Traffic and Logistics Survey

Date and time of the survey

Date and time of the survey conducted are shown in Table 6.1-6. The survey date is scheduled to include 3 weekdays and 1 weekend day in order to analyse the daily variation. However, since Gabes Port and Zarzis Port do not operate on weekends, the survey at the gate of the port is carried out on 4 weekdays. The survey time at each point is for 12 hours in the daytime, while the survey time at 2 points on RN1(north-south traffic axis) and RN14 (east-west traffic axis) is for 24 hours to understand the ratio of daily traffic to daytime traffic.

Survey Point	Date	Time
No.1,3,5	23 rd (Sun)-26 th (Wed), February	12 hours (6:00-18:00)
No.2,4	23 rd (Sun)-26 th (Wed), February	24 hours (6:00-6:00)
No.6	19 th (Wed)-22 nd (Sat), February	12 hours (6:00-18:00)
No.7	24 th (Mon)- 27 th (Thu), February	12 hours (6:00-18:00)
No.8	17 th (Mon)- 20 th (Thu), February	12 hours (6:00-18:00)

Table 6.1-6 Date and time of Traffic Count Survey

Vehicle classification

Vehicle types for the traffic count survey are classified into following 13 types as with the national traffic census conducted by Ministere de l'Equipment at intervals of 5 years.

Vehicle classification (13 types)

(a) Bicycle, (b) Motorcycle, (c) Passenger Car & Taxi, (d) Minibus, (e) Bus, (f) Pick up,(g) Light Truck, (h) Truck, (i) Trailer, (j) Special Vehicle, (k) Construction Machine, (l)Agricultural Vehicle, (m) Livestock Car

(ii) Roadside OD interview survey and OD interview survey at port gates

The objective of the roadside OD interview survey is to understand the characteristic of traffic flow related to the passenger trip and logistics that passes through the survey point. The objective of OD interview survey at port is to understand the characteristics of logistics generating from and attracting to the port. These surveys are conducted by the direct interview of drivers at roadside and the gate of port. The survey has been carried out in following manners.

Survey point

Survey points are set to be control posts of the local police in order to stop vehicles safely and ensure security. The traffic count survey is conducted at the same point of roadside OD interview survey.

Date and time of the survey

Survey date is as same as the traffic count survey. Survey time is for 12 hours (6:00-18:00) at all survey points to ensure the security.

Interview item

The interview item is determined to analyse the characteristics of passenger trip and logistics. Interview items in the survey are as follows;

Common Interview Item	Interview item for Commercial Vehicle
Survey Date and Time	Type of Goods
Vehicle Type	Actual Load (ton)
Origin of Trip	Maximum load capacity (ton)
Destination of Trip	
Trip purpose	
Number of Passengers	

Zoning

In order to analyse the present traffic distribution and forecast the future traffic distribution, OD zone is determined as shown in Figure 6.1-5.

The zones are basically divided by governorate border in the study area and on a regional scale in the other areas. Since the logistics nodes such as port and railway station have much attracted and generated traffic, these facilities are set as individual zones.



Source: JICA Expert Team

Figure 6.1-5 Zoning map

(d) Result of traffic count survey

Figure 6.1-6 shows the result of the traffic count survey on each point which shows the Average Daily Traffic (ADT), the share of vehicle type, the daily variation of traffic and the ratio of daily traffic to daytime traffic. Major findings are summarized below the Figure.



Figure 6.1-6 Results of Traffic Count Survey

Major findings of the traffic count survey are as follows;

Traffic Volume

- The heaviest traffic volume, over 11,000 vehicles per day was observed at No.4 located between Gabès and Sfax on RN1.
- The second-heaviest traffic volume, over 9,000 vehicles per day was observed at No.1 located between Gafsa and Northern Tunisia on RN3.
- In the project area, north-south corridor has heavier traffic than east-west corridor.
- Gabes Port has heavier traffic than Zarzis Port.

Share of Vehicle Type

- Commercial vehicle ratio in the project area is approximately between 10% and 20%.
- Commercial vehicle ratio at No.4 is quite different from that at No.6 in spite of same RN1. Passenger car has very high share at No.6, while commercial vehicle ratio, particularly in the share of trailer, is highest of all points.
- Commercial vehicle ratio and the share of trailer at No.3, No.4 and No.5 linking to Gabes are higher than those at the other points.
- Motorcycle and bicycle have low share at every point.
- As the public transport, minibus has higher share than bus.

Daily Traffic Variation

- At No.4 and No.6 on RN1, traffic on weekend is heavier than that on weekdays.
- Daily fluctuation of approximately 2,000 vehicles per day is observed at every point between heaviest-traffic day and lightest-traffic day.
- Daily traffic volume tends to fluctuate at ports.

Ratio of Daily Traffic to Daytime Traffic

- Ratio of daily traffic to daytime traffic is 1:1.5 for most vehicle types.
- High ratio of trailer is observed at No.2. The cargo transport from and to Gafsa is supposed to be done during night time.

(e) Result of OD interview survey

OD tables for vehicle, passenger and freight by type of goods are prepared based on data obtained from OD interview survey. Results of OD survey are expanded to ADT by the expansion factors which are the ratio of sampled number in OD interview survey to the results of traffic count survey. The average traffic volume counted in the survey in February 2014 is corrected to AADT using the coefficient in *Recensement General de la Circulation 2007*.

Passenger number and freight volume are analysed based on the average passenger number by vehicle type and average loading weight calculated by the results of interview to each driver.

Figure 6.1-7, 6.1-8 and 6.1-9 show the vehicle flow, passenger flow and freight flow by type of goods at present.


Source: JICA Expert Team





Source: JICA Expert Team

Figure 6.1-8 Present Passenger Flow ('000 people/year)





Source: JICA Expert Team

Figure 6.1-9 Present Freight Flow ('000 ton/year)

Major findings of the OD interview survey are as follows;

Traffic flow and passenger flow

- The heaviest traffic flow of approximately 4,000 vehicles per day and largest passenger flow of over 5,000 thousand people per year are assumed between Gafsa and Sfax regarding the traffic related to the Southern Region.
- The strong connection with Libya is confirmed concerning road transport since more than 9,000 vehicles per day come and go between Libya and Tunisia.
- Many long trips from and to Greater Tunis and Central-East which have large population are observed.
- Traffic between east and west related to Tataouine, Tozeur and Kebili is lower compared with the longitudinal traffic through Medénine and Gabes.

Freight flow

- Regarding the share of goods weight by road transport, minerals such as phosphate, salt and coal, etc. have highest share.
- Many transports of minerals between western landlocked area and eastern coastal area are confirmed.
- As with the vehicle and passenger flow, the heaviest freight flow between Gafsa and Sfax is confirmed.
- Long distance transport related to Greater Tunis and Central-East is observed with regard to the transport of minerals compared with that of other goods.
- Regarding transport volume of fruits and vegetable, the strong connection between Greater Tunis and Libya is confirmed.
- Regarding the transport of seafood and minerals, the strong connection between Tataouine and Central-East, Sfax is confirmed.
- Low freight transport related to Algeria is confirmed.

(4) Road safety

As with in every country, road safety is an issue in Tunisia. According to available international statistics¹ quoting the World Health Organization, the data for 2011 (most recent available year for international comparisons) ranked Tunisia at the 71st place in the world (#1 having the worst results), with 1,967 deaths and a death rate per 100,000 inhabitants of 20.31.

Road traffic accidents were in 2011 the fifth cause of death after coronary heart disease, influenza and pneumonia, stroke and hypertension. As a mean of comparison, Japan ranked 189 in 2011 with a death rate per 100,000 inhabitants of 3.8, more than 5 times less.

Data for 2008 has been made available by the Euro Med² transport project, showing for that year 1,530 casualties. The figures indicated for 2011 are therefore not so good, showing an increase in the domain which goes against the good path acquired by the country during recent years.

Some elements have nevertheless been obtained during the interviews both from the Ministry of Equipment, Housing and Spatial Planning (central and local levels) showing that due to the limited level of traffic, the "black spots" are not so numerous, since the definition of a black spot implies "more than 5 accidents a year with casualties (death or wounded") and a minimum level of traffic accordingly.

During the site visits of this first mission, three potentially dangerous features could in particular be observed:

- No sidewalks in several cities/villages, therefore potential risks of mixed traffic and collisions between pedestrians and the general traffic (after enquiry it appears that corresponding works are supposed to be funded by the municipal budget with a budget allocated by the Ministry of Home affairs Ministère de l'Intérieur). For reference, pedestrians represent 28% of the casualties in Tunisia due to road accidents.
- Regarding traffic calming features/bumpers (ralentisseurs), the signalling is often on the spot without early warning, and the signal sign is of peculiar design and size. There is in addition no marking on the road, for instance, by paint.
- Also, some habitants install their own traffic calming feature, either made with sand or bitumen, without any signalling nor early warning, which may cause additional accidents while aiming at preventing ones (Note: the Police ask to remove them). A careful investigation could be made on a case by case basis and at the agglomeration level of the relevance of these features, and a comprehensive plan been established;

In view of a long term planning of road and road infrastructure in South Tunisian, this issue of road safety should be properly studied, in particular considering the fact that, with a planned increase of traffic (international, from other parts of Tunisia), proper signalling and easier visibility of the itinerary should become more important due to an increase of the number of first-time users of the infrastructure.

Also, the necessity of good/better signalling/formalizing of cities' inside areas should be emphasized

¹ http://www.worldlifeexpectancy.com/tunisia-road-traffic-accidents

² - "Status report on the implementation of Road transport Actions in MEDA Maghreb Countries", 2010.

and the separation of traffic pedestrians/other traffic is made.³ Regarding highways, maximum speed limit is 110 km/hr in Tunisia, 90 km/hr by rainy weather.

(5) **Public transport**

According to the elements obtained during the first mission and the study for the master plan for transport, private cars constitutes 2/3 of the passenger transport compared with 1/3 for public transport. Public transport comprises buses and cars, taxis, private cars and also the louage (inter-city taxi) which permit collective transport of a more limited number of people and often complement the offer by traditional public transport (size, time flexibility). They permit 58% of the trips in public transport (source: Ministry of Transport).

The point of supremacy of the public transport was prevalent in the Governorates which we have visited in the South. On this issue, it was noted that the gares routières (inter-city bus stations) were buildings of often a general overall quality and layout (in Kebili for instance) but that some refurbishment was sometimes necessary (glass canopy in Tozeur).

In addition, information of the public is often not exhaustive, not always updated and displayed company by company, i.e. not comprehensive for all departures and arrivals on the same bus stations, showing destinations and schedules) and that, in addition, the louage (inter-city taxi) station is located in other places in the city, making modal transfers uneasy or more difficult). According to this first mission, several inter-city buses companies are operating in South Tunisia:

- SNTRI, Société Nationale de Transport Interurbain
- SRT Gabès, SRT : Société régionale de transport
- SRT Gafsa
- SRT Médenine.

SNTRI (www.sntri.com.tn): situated under the umbrella of the ministry of Transport, the National Company for Interurban Transport (*Société Nationale de Transport Interurbain*) is a State-owned Company based in Tunis. SNTRI has following staff and equipment;

- Staff: 803 (31/12/2011).
- Number of bus routes: 41 + 2 international routes (Tunis-Tripoli, Sfax-Tripoli).
- Number of services / day: 89.
- Rolling stock: 187 coaches (31/12/2011)
- SRT: société régionale de transport: regional transport Companies for the public transport inside a Governorate, also under public jurisdiction.

These companies are State-owned companies. The public transport needed in sharp increase in terms of capacity of seats offered in order to match the demand (40% at first estimate by the Directorate of Transport in Kébili, so from actual 50 vehicles to 70 coaches).

On this issue it must be noted that SNTRI ensures the continuity of the rail transport in the area south of Gabès. In fact, there is no more rail transport South of Gabès and the passengers get on the buses of

³- On this issue, one can refer to the PIARC road safety booklets (diagnosis of existing infrastructure, planning of new ones <u>www.pairc.org</u>, and the recently issued "Mainstreaming Road Safety in Regional Trade Road Corridors" WP 97 by SSATP. These publications are available in French and English.

SNTRI with their train ticket and a combined tariff.

Going north, passengers from southern cities of Tunisia can board a train with a ticket purchased for their combined trip by bus. Apart from the possibility of expanding the rail network, this possibility of combining trips on various transport modes should be carefully studied in a view to develop further on the public transport in this Southern part of Tunisia, especially when the service by rail is scarce or non-existing

(6) Existing development plans

(a) Highways

The ongoing development projects of highways are indicated on Figure 6.1-10.

- <u>Sfax- Gabès</u> (155 km) Most of construction works have been completed.
- <u>Gabès-Médenine</u>(84km)
 This section is being done by cofinancing of JICA and African
 Development Bank (AfDB). The contractor has just started the mobilization of construction works.
 This section will be completed in 2017.
- <u>Médenine –Ras Jedir</u>(104 km) This section is under construction and will be completed in 2016 (by AfDB, JICA, Tunisie Autoroutes)



Source: Ministry of Equipement

Figure 6.1-10 Highway development project

- ECOSO project

It starts from Gafsa in the direction of

Sidi Bouzid then to Tunis (Suudies finances by EIB). The whole ECOSO project, which benefits from financing from the BEI for its studies, is of 360 km in length and of a total cost estimated at around 2500 million TND (according to local press⁴).

These projects of highways are mainly centred to Tunis and in the North-South direction. In order to complement this axis, the Ministry of Equipment, Housing and Spatial Planning would like to develop East-West connections either by creating new roads or, in most cases, by enlargement of existing axes and creation of 2x2 lanes roads. In the study area there is a dual-lane highway itinerary, partly under construction, the Sfax-Gabès-Médenine-Ras Jedir (Libyan border) highway. This highway is a part of the trans-Maghreb link (Note: in the agreement related to the trans-Maghreb highway, each country has to develop its own network).

Maximum speed limit of the planned highway will be 130 km/hr and design of 2x2 lanes with possible extension to 2x3 lanes on the platform. Once complete and open, the highway will generate lots of traffic. In the short or medium term the following links will have to be considered:

⁴http://www.africanmanager.com/149911.html

- Zarzis highway (in addition to Zarzis port Libyan border);
- Djerba highway (through the Jorf pass);
- Tataouine highway ;
- Medenine highway ring road around Medenine (increase of road transit traffic);
- Matmata highway (service of the area around Kébili); And general improvement of the network Tozeur-Gafsa- Gabès.

(b) Widening and 2-laning of National Road (then becoming motorways):

As per Figure 6.1-7, there are two projects in the study area:

- project Gabès-Gafsa (World Bank, TBC);
- project Gabès-Sfax (World Bank, TBC)^{5.}

As per considerations in the first chapter, one can also consider the possibility of 2-laning the road going from Gafsa to the Algerian border. Also in the longer term and linked to the strategy of the Ministry of Equipment, Housing and Spatial Planning to develop East-West axis of transport, one can think of:

- the connection Tozeur-Gafsa-Sfax ;
- The connection Médenine (south of the Chott...)

It is to be noted that between a 2-lanes motorway and a highway (*autoroute*), the main difference is the existence of crossings, which permit a better of the vicinity but are not as safe and comfortable (no circulation crossing) as highways.

(c) Road rehabilitation and improvement programs

There are 2 general programs of rehabilitation and 1 program of reinforcement on which the various operations are linked to. In addition there is a specific program for cities entitled Cities' structuring roads "*Voiries structurantes des villes*" and individual operations.

Type of work	Nb. Sections	Total length	Program	Stage	Plan
Rehabilitation	1	29	Rehabilitation of 570.9 km	Study	XII
Reinforcement	1	40	Reinforcement of 754.7 km (*)	Study	XII

Governorate of Gabès

(*) Matmata-Kebili

Total km for improvement	69
Total km in governorate (*)	537.34
Ratio (%)	12.8%

(*) Paved roads.

Governorate of Gafsa

Type of work	Nb.	Total length	Program	Stage	Plan
	Sections	(km)			
Rehabilitation	2	41.5	Rehabilitation of 570.9 km	Study	XII
""	3	65.21	Rehabilitation of 1300 km	Study	
""	1	8.2	Rehabilitation Metlaoui – GP3	Study	XII
Reinforcement	4	100.8	Reinforcement of 754.7 km	Study	XII
Ring road (*)	1	15	Cities' structuring roads (**)	Study	XII
Bridge	1	-	Structural Works	Study	XII

⁵ <u>http://documents.worldbank.org/curated/en/2014/02/19157512/project-information-document-concept-stage-tn-road-transport-corridors-p146502</u>

(Oued el Meleh)				
		(Oued el Meleh)	

(*) Rocade

(**) Voiries structurantes des villes

Total km for improvement	230.71
Total km in governorate (*)	545.93
Ratio (%)	42.3%

(*) Paved roads.

Governorate of Kebili

Type of work	Nb.	Total length	Program	Stage	Plan
	Sections	(km)		-	
Rehabilitation	1	31	Rehabilitation of 570.9 km	Study	XII
" "	1	57.4	Rehabilitation of 1300 km	Study	
Reinforcement	2	13.5	Reinforcement of 754.7 km	Study	XII
Total km for improver	nent	101.9			
Total km in governora	ate (*)	446.635			
Ratio (%)		22.8%			

(*) Paved roads.

Governorate of Médenine

Type of work	Nb.	Total length	Program	Stage	Plan
	Sections	(km)		_	
"""	2	64	Rehabilitation of 1300 km	Study	
Reinforcement	1	22.5	Reinforcement of 754.7 km	Study	XII
Link road (*)	1	6.3	Cities' structuring roads (**)	Study	XII
Ring road	1	23	Cities' structuring roads (**)	Study	XII
			Ring road around Zarzis		

(*) From Zarzis to Djerba (total: 50km) (route de liaison)

(**) Voiries structurantes des villes

Total km for improvement	115.8
Total km in governorate (*)	1,119.598
Ratio (%)	10.3%

(*) Paved roads.

Governorate of Tataouine

Type of work	Nb.	Total length	Program	Stage	Plan
	Sections	(km)		-	
Rehabilitation	1	33	Rehabilitation of 570.9 km	Study	XII
""	2	69	Rehabilitation of 1300 km	Study	
Reinforcement	1	43	Reinforcement of 754.7 km	Study	XII
Link road	1	50	Cities' structuring roads (**)	Tender	XII
			Liaison Tataouine - A1	(*)	
Bridge	1	-	Structural Works (Tlelit)	Study	XII

(*) – Selection of the consultant ongoing

(**) Voiries structurantes des villes

Total km for improvement	195
Total km in governorate (*)	760.65
Ratio (%)	25.6%

(*) Paved roads.

Governorate of Tozeur

Type of work	Nb. Sections	Total length (km)	Program	Stage	Plan
Rehabilitation	1	36.1	Rehabilitation of 570.9 km	Study	XII
"""	2	10.9	Rehabilitation of 1300 km	Study	
Reinforcement	2	30.5	Reinforcement of 754.7 km	Study	XII

Total km for improvement	77.5
Total km in governorate (*)	269.715
Ratio (%)	28.7%

(*) Paved roads.

The ratio of roads to be improved varies from 10-30%, exception made with Gafsa governorate (42.3%), this being due to in particular to the operation of reinforcement (4 sections, 100.8 km).

(d) Improvement of the access to Djerba Island

At present Djerba Island is served by its South-east by a road called "Route romaine" (Roman Road) built over an isthmus of land just aside the previous (and historic) roman road. There is another access by the South-West at the city of Jorf, but this is an access by ferry.

In order to boost the development of Djerba which has one international Airport (on the very north-east part of the island, see map) the following possibilities are under discussion:

> Widening of the existing road "Route romaine" to 2 x2- lanes: in fact the existing road is 2x3.5 meters of width with problems of crossings and is deteriorated by the passage of cars and heavy trucks. One possibility would





therefore be to expand this road to a 2x2-lane roads, with several bridges in order to maintain a proper water flow and facilitate the streams in the Boughara gulf area, a distance of 2.5 km between bridges being indicated (Note: there is already 1 bridge⁶ which has being built on the road in 2004-2006 (Length 160m).

ii) Replacement of the ferry service Ajim Djerba by a bridge, at the image of what has been done in Tunis (replacement of the Radès - la Goulette ferry by a bridge which has permitted the quick development of the area).

This project ii) has been considered on a PPP scheme. The problem is the low income form the ferry business at present since the tariff is 0.8 of a dinar (0.8 TND) where buses and visitors pay, not the pedestrians, hence some "free rider" systems of passengers coming by taxi to one edge of the "Detroit" and taking a new taxi after crossing for free, and vice versa. A system based on user-pay revenue has to take this history into consideration; a too important hike of the fees will have reverse effect on the users.

In any case, the length of the bridge would be of approximately 2,700 meters. The depth of water is relatively small (2 to 3 m) except on a section which is said to be 200 to 400 m (to be confirmed). In any case these improvements of the access to the island of Djerba should be accompanied by the improvement of the traffic conditions on the island, in particular in view for the traffic to reach Djerba airport without disturbing city life and quality of the leisure of tourists. Cost of the studies: approx. 5% of the cost of the infrastructure (source: DRE Medenine).

It should be noted that the decentralization process which should be put progressively in place in Tunisia may lead to the fact that the governorate of Medenine becomes more and more a key player

⁶Source:http://structurae.info/structures/data/index.cfm?id=s0018213

on this issue. It is also to be noted that the Island of Djerba as a whole could be considered in a comprehensive development process, including the two accesses and the service of the various parts of the Island, in a study putting in front the issues of sustainable development and environment.

(e) Trans-Saharan highway and traffic from Sub-Saharan African countries

Several considerations were made during the interviews regarding the "Trans-Saharan link(s)". In fact and in terms of related infrastructure or projects of infrastructure: Several studies have been made since decades regarding the possibility of a fixed linked crossing the Sahara desert from the North to the South.



Source: Review of the implementation status of the trans-African Highways and the Missing Links African Development Bank/UNECA, 2003

Figure 6.1-12 Cairo-Dakar Corridor – Link

As one can see, the priority road in Tunisia is the coastal road Libya – Tunis – Algeria. Most of the parts of this itinerary are already realized in Tunisia, other are under construction in the study area. In relation with the study area it seems therefore appropriate to consider at first glance that:

- North-south international road traffic will mainly enter South Tunisia either though Ras Jedir in the East or Hazoua in the West ;

In order to be totally accurate, this assumption should be checked by a specific study on the crossborder traffic in the Dehiba (Tunisia)-Wazin (Libya) area and in the area of Borj El Khadra (also known as the triple border - la triple frontière).

Period	Title of Project	Financed by	Project Cost
-2014	Sfax-Gabes Highway	EIB	
2014-2017	Gabes-Medenine Highway	JICA, AfDB	550 million TND
-2016	Medenine-Ras Jedir Highway	AfDB	456 million TND

(7) Major projects financed by the Government of Tunisia and by Donors

6.1.3 Railways

(1) Existing railway network and organization

The ministry of Transport is in charge of developing the construction modernization and extension of the railway network. The SNCFT (Société nationale des chemins de fer tunisiens) is responsible for the management of assets and properties and to operate railway services (passengers/goods) on the network, based on a concession contract signed with the State.

The SNCFT (4,871 staff in 2008, 4,388 in 2012) was created in 1956 (independence of Tunisia) and has been in charge of all network since 1967⁷. Previously, the « Compagnie des phosphates et des chemins de fer de Sfax-Gafsa » (now CPG, Compagnie des phosphates de Gafsa) had the monopoly of the rail network south of Sfax (which is one of the reasons for the overall shape of the network).

There are in Tunisia 471 km of railway lines with a standard gauge (1437 mm) and 1688 km of lines with a metric gauge (1000 mm). In addition, 8 km have double gauge. All railway lines in the study area are of metric gauge (rail of 46 kg/m). The network is shown in Figure 6.1-13.



Source: SNCFT

Figure 6.1-13 Railway network in Tunisia and the Study Area

There is no railway south from Gabès. This hampers a smooth development for the transport of passengers in the south (now operated by buses with a system of combined tariff with the train transport, 500,000 passengers per year being transported by bus) and for the freight transport (i.e. no train service for the Zarzis port and logistics area) or for existing or potential industrial sites and areas to be developed in the South. On this issue, the case of the development of the gypsum factory in the Tataouine governorate has been quoted several times.

⁷ - Decree dated 27 December 1956 for the creation of SNCFT and 1st January 1967 for the management of the network in the whole country.

The development of the network in the south part of Tunisia has been made primarily by and for phosphate transport. Therefore, the quality of the service (at least for passengers) has often described as "poor" or "to be improved" during the interviews. For instance:

- It takes 10 hours to reach Tunis from Tozeur (450 km, around 5 hours by car);
- The passenger rail wagons seen in Gabès and in Tozeur are said to have been commissioned in 1984.

In addition to the SNCFT trains, there is also a touristic train: "Le lézard rouge" (the red lizard). This train (6 cars) has been running since 1984 from Métlaoui (Gafsa governorate, Gafsa is located at 42 km) to the Gorges de Selja (Selja Gorge) nearby Redeyef. The length of the journey is 43 km.

(2) Statistics and key indicators

The railway traffic should be considered separately: freight rail (in its majority phosphates) and passengers.

(a) Passenger Transport in the Study area

According to the data provided by the ministry of Transport based on the master plan study, railway transport of passengers constitutes 5% of the global traffic of passengers and 14% of the public transport of passengers. There are 4 circulations of trains of passengers (circulation: return journey 2-ways) per day on the Gafsa-Sfax axis (20 circulations for freight). Figure 6.1-14 shows the total number of passengers and passenger-km in the 3 railway station in the study area. This Figure shows that Gabès is by far the biggest station (3/4 of the total number of passengers). The data enable to measure the year-on-year increase of the number of passengers in each of the 3 stations. The growth is progressive each year for the study period (note: 2007 to 2010).

Based on available data and despite the bias, passenger rail transport in the study area accounts for roughly 13% of the total value in Tunisia (for ¼ of the governorates), this being due of course to the scarce network in the study area. One good criteria to judge of the development of the activity is the passenger-km (PK) (1 unit: transport of 1 passenger by 1 km) which measures the transportation quantity of the network. There was an important growth of the PK for the departures (+25.2%) in 4 years, less for the arrivals. Nevertheless the number of PK departure is still 15% under the number of PK arrival, confirming the modal choice when possible.



Source: SNCFT

Figure 6.1-14 Total number of Passengers and PK in railway station of Gabès, Gafsa and Tozeur

As a breakdown of the number of passenger shown in Figure 6.1-14, the number of passengers of departures and arrivals (2007-2010) are shown in Table 6.1-7. The ratio of arrivals/departures is always greater than 1 (much greater in most cases), which can mean that the departing passengers may opt for another mode of transport if/when they have the possibility.

This is particularly important in Tozeur (more than 300% in 2007). This point is cross-checked which the interviews made there, which pointed out the poor reliability and comfort of train, with in addiction issues regarding the security in the trains (Note: as a general issue, SNCFT noted in its activity report 2012a +60.5% increase between 2011 and 2012 in the problems of safety/security due to various causes).

Station	Year	DEPARTURES Passengers (A)	ARRIVALS Passengers (B)	Ratio(B/A)
Gabès	2007	155,098	170,919	110.2%
	2008	155,508	176,154	113.3%
	2009	174,082	185,034	106.3%
	2010	184,784	195,034	105.5%
Tozeur	2007	6,521	19,663	301.5%
	2008	7,990	20,353	254.7%
	2009	12,305	21,832	177.4%
	2010	18,855	22,724	120.5%
Gafsa	2007	32,697	49,616	151.7%
	2008	36,209	50,841	140.4%
	2009	41,687	54,119	129.8%
	2010	42,906	54,470	127.0%

Table 6.1-7 Departures and arrivals in railway station of Gabès, Gafsa and Tozeur

Source: SNCFT

Also, the average income per passenger during the period was in 2010 11.9 TND in Gafsa, 15.1 TND in Gabès and 15.3 TND in Tozeur, which is in line with their respective positions on the line Tozeur-Gafsa-Gabès and corresponding distance on the network. It is to be noted that he price of the passenger transport is fixed by the ministry, and subsidized for various categories of users.

(b) Freight transport

Regarding freight transport by the railway, it represents 14% of the global freight traffic, including 10% contributed by transport of phosphates. Phosphates represent 2/3 of the rail freight in general in Tunisia. The ratio is as follows for whole Tunisia:

	Total	(Inc. phosphates)	%
Tonnage (1,000 tons)	4,299	2,793	65
Ton.km (million)	767	527	68.7

This data regarding freights is difficult to double check since their evolution is also based on the evolution of the economic activity and on the occurrence of strikes which may be the source of modal shifts for some periods. The variation of transportation volume of phosphates by the destination during the period 2008-2013 is summarized in Figure 6.1-15.

There was the relative stability of the traffic during the 2008-2010 period and the sharp decrease after 2010 (-65% for the total of the freight in 2011/2010), the quantities transported seem to have then stabilized since 2011.Regarding origin and destination, the most important transport takes place from the Gafsa area to Gabès, using the two railway lines (note: according to our interviews, the Gafsa

Gabès line should be able to carry 8 million of tons/year since its "double tracking" in the 80's - in fact the creation of a second single line -, vs. 4 million tons before. The quantities transported are well under this threshold).



Source: SCNFT

Figure 6.1-15 Transport of phosphates 2008-2013

The revenues for SNCFT have decreased accordingly, from 35,231 million TND in 2010 to 12,114 TND in 2011, before going back to 15,518 TND in year 2013 (which still constitutes a loss of revenues of 56%).

(3) Existing development plans

In its preamble, the Tunisian Constitution praises the effort of the Country "with a view to supporting Maghreb unity as a step towards achieving Arab unity, integrating with the Muslim and African nations, and cooperating with the peoples of the world". The project for the construction of a high speed train in Tunisia that will link Cairo, Tripoli, Tunis, Algiers and Casablanca is part of this vision. In addition, it is also a good tool in order to develop and foster mobility along its itinerary.

(a) LGV Project

This is specifically the case for the LGV project and its part in Southern Tunisia (1 hour Gabès-border to Libya, 4 hours Tunis-Tripoli). This project has been identified since a long time, and is in particular considered in the Euro-Med Transport project, funded by the EU.

(b) Electrification of existing line or new railway

According to the EuroMed transport, the electrification of existing line or new railway between the Libyan border in Ras Jedir and the Algerian border (location to be determined) could be considered for the implementation as follows:

- North-South connection (Tunis/Gabès);
- Connection with Algeria (Tunis-Algerian border);
- Connection link with Libya (Gabès-Libyan border).

The cost of the studies is estimated at 4 million EUR, the aim being to determine the cost of the project itself (note: according to Euro-Med Transport project some related preliminary studies have already been implemented). Financing has been requested to the European Investment Bank (EIB) and a work mission has been conducted on this purpose in 2012.

(c) Double tracking of the Metlaoui- Gabès connection

In fact there is no double tracking, but the creation of a new line connecting Gafsa to Gabès at the level of the Aouinet station, which permits to divert part of the freight and to give a new access to the industrial port and facilities of Skhira (note: bulk freight carrier wagons are used only in one direction) (project implemented).

(d) Prolongation of the railway from Gabès to Médenine

This project was financing by the Tunisian government and began implementation in the beginning of the 1980's but was stopped. The necessary land has nevertheless already been secured and some embankment works have been implemented (local Tunisian Government financing, project stopped).

(e) Projects quoted in the study for the national transport plan (study of 2004)

The study considered the 2006-2020 period. The diagnosis was a general rehabilitation of the network in the South and the double-tracking to Tozeur, all works scheduled at that time to be implemented during 11th plan (2007-2011). The project of the high-speed line was also mentioned, as a possibility to develop multi-modal freight logistic facilities and to facilitate combined transport of both goods and passengers (no financing sources indicated).

(f) Renovation of the railway Sfax-Gafsa-Gabes

French funding should finance the renovation of the railway Sfax-Gafsa-Gabes in order to improve the transport of phosphates and to unlock the regions from the Inland. In a first step 800,000 EUR of grant will finance the studies of the project. At a second step a loan could be made to SNCFT (43 Million EUR).⁸

(g) Other projects

In addition, various requests for improvements/development of the rail network or of the rail transport have been expressed during the interviews:

- SNCFT should be more "visible" with for instance ticket offices located inside city centres, not only in the stations, and which could also provide information on schedules, tariffs and transport possibilities, deal with claims, etc.
- The cars (wagons voyageurs)should be renewed and more comfortable,
- The rails should be changed from 45 to 60 kg/m of standard linear mass.
- an express train Tozeur-Tunis should be considered, and
- The reference speed for passenger's trains should be increased to 130 km/h.

(4) Major projects financed by the Government of Tunisia and by Donors

The most recent projects financed by the Government of Tunisia and by Donors in the study area are:

⁸ - Source: http://www.ambassadefrance-tn.org/345MEUR-de-prets-et-1MEUR-de-dons

Period	Title of Project	Financed by	Amount
2014 (TBC)	LGV line	EIB/BEI (TBC)	4 MEUR
			(study)
07/2013	Rail Gafsa-Gabès-Sfax	French ODA	0.8 MEUR
			(grant for study)

6.1.4 Ports

(1) **Port facilities, maritime network and their organization**

The general organization of ports in Tunisia (1,300 km of coasts) depends on the Ministry of Transport except for fishing ports which are relevant to the Ministry of Agriculture, Water Resources and Fisheries and is under the umbrella of the OMMP (*Office de la marine marchande et des Ports* - Merchant Marine and Ports Authority)⁹ which head office is in the port of La Goulette, located nearby the port of Radès, the largest port in Tunisia.

OMMP has a staff of 1,500, in line with its mission: - ensure proper and quick treatment of ships and goods mooring in Tunisia's commercial harbours and - ensure administration of 3 maritime issues: staff, ships and maritime safety.



All other activities in the port area are undertaken by private companies under a concession, according to OMMP. Ports play a particularly important role in the Tunisian economy,

since 98% of exports are made through the ports for a total volume of an average of 30 million tons, reduced to 25 million tons during the past years since 2011.

There are Gabès Port and Zarzis Port in the study area, all under the jurisdiction of OMMP. On the other hand, Skhrira Port, an industrial port managed by a private entity Trapsa (6 MT/year of petroleum and chemicals), is located in the Sfax governorate north from Gabès.

(a) Gabès Port

The activity of the port, created in 1972, is dedicated towards chemistry: the Tunisian chemical Group (groupe chimique tunisien GCT) ensures 60% of the traffic. The general layout and features of Gabès Port are shown in Figure 6.1-17.



Figure 6.1-16 Ports in Tunisia

⁹-OMMP has been created by virtue of the law n° 65-2 dated February 12th, 1965, modified by the law dated February 15th, 1972.

		-
	Item	Number
	Berths	10
	Draught (nominal)	10 to 12.5
10-1 AL	Draught (indicated min)	13.5
	Length of berths (total)	1830m
The All	Warehouses	1
ORT DE GABES	Surface of warehouses (total)	4000m ²
anas is st	Freight 2013	4 million tons
	Boats berthing in 2013	485
STED 1050	Sealed platform	50,000 m ²
O.M.M.P.	Dirt platform	100,000 m ²
1 The Using I I	Total platform	15ha
to manafic and a most a		

Source: OMMP

Figure 6.1-17 Layout and features of Gabès Port

The role of the port of Gabès is mainly dedicated to the chemical industry, and the port site as shown in the figure is blocked in its development by its industrial neighbours: STEG (phosphoric acid factory) and DAP (di-ammonium phosphate factory).

The trains coming to the port of Gabès make a stop at the Ghannouch rail yard (gare de triage) where they are dispatched and sent to the various factories and industrial complexes. In addition on the harbour, the cereals berth and the #9 and #10 berths are serviced by rail. The investments in this area have been made by OMMP. New investments are considered by OMMP in order to improve the railway station. However, the entrance channel to the harbour (3,220m, dredged at 13.5m) does not have an enough space for the passing of several boats, and the path along the quay is of a limited width, which makes uneasy the manipulation of other bulk freight and containers.

(b) Zarzis Port

Zarzis Port is apart compared to the other ports in Tunisia. Zarzis Port has the smallest cargo traffic (except La Goulette)¹⁰, no cereals, less berths and corresponding length. The slogan chosen by OMMP in order to categorize the port of Zarzis is quite different: "Un port limitrophe" (a border port). Zarzis Port has several characteristics as follows:

- the salt for export represents the highest share of handled goods
- there is one mooring dolphin for petroleum products.
- offshore petroleum companies use the port as a basis to feed / supply their drilling stations in Tunisia, Algeria and in Libya
- there are problems with the sediment of sand in the port reducing quay depth
- there is a free trade zone / zone of economic activities just aside the port.
- the port has 135 ha of reserved land available(possibilities for large increase of the activities inside the site or by extension)

Figure 6.1-18 shows the layout and features of Zarzis Port and Figure 6.1-19 shows the layout of Zarzis Free Trade Zone around the port. Zarzis free trade zone operated by the *Parc d'Activités*

¹⁰ - See OMMP Website: <u>http://www.ommp.nat.tn/page.php?code_menu=10&code_page=27</u>

Economiques de Zarzis accommodates 49 international trade companies under the lease agreement with Parc d'Activités Economiques de Zarzis. 25 out of the 49 companies in the free trade zone handle petrol and others handle sugar, salt and coffee. Taxes related to their activities are exempted and up to 20 % if the product can be transported for domestic use.

CALL AND AND MARKED AND A MARKED A		
Carle	Item	Number
Photos	Berths	5
	Draught (nominal)	10 to 12m
	Draught (indicated min)	7.5m
Free Trade Zone	Length of berths (total)	950m
	Warehouses	2
	Surface of warehouses (total)	9000 m ²
Port Facility	One for the ZEP	5000m ²
	One for goods in transit	4000m ²
	Freight 2013	793,012
	Boats berthing in 2013	576
A STATE AND A STATE OF STATE	Sealed platform	13ha
1 100 20000000	Dirt platform	15 ha (min).
	Total platform	28ha

Source: Google map, OMMP



Figure 6.1-18 Layout and features of Zarzis Port

Source: Parc d'Activités Economiques de Zarzis



(2) Statistics and key indicators

(a) Gabès Port

The total import volume in 2011 was 1,547,089 tons and the total export volume was 807,645 tons. Of the total import volume, oil and fuels represent 6.4% (99,660 tons), liquid bulk represent 15.8% (243,833 tons), cereals represent 11.8% (182,410 tons), dry bulk(minerals) represent 53.7% (831,353 tons) and others 12.3% (189,833 tons). Of the total export volume, oil and fuels represent 8.4% (68,237 tons), liquid bulk represent 7.8% (62,795 tons), dry bulk(minerals) represent 70.4% (568,499 tons) and others 13.4% (108,114 tons). This perfectly illustrates the industrial characteristic

of the harbour. Also when going on site the Gabès port appears as located in the heart of an industrial zone, which makes him a natural part of the export chain of the industrial goods elaborated in the neighbouring factories.



Source: Annual Report 2011, OMMP



Regarding the origin of import, the American countries represent highest share 31.2% of the whole trade, followed by EU countries (27.0%), other European countries (26.4%), Asia (13.4%) and Africa (1.9%). Regarding the destination of export, the EU countries represent highest share 53.1% of the whole trade, followed by other European countries (20.0%), Asia (11.7%), Africa (11.1%) and American countries (4.2%).According to OMMP annual report 2011, maritime transport to Europe is with: 1) Italy (5,457 tons), 2) Spain (1,596 tons) and 3) France (1,527 tons), representing together 72% of the trade with EU.





Figure 6.1-21 Distributions of origin of import and destination of export in Gabès Port (2011)

(b) Zarzis Port

The statistics related to the handling volume and the number of ships using the port is shown in Table 6.1-8, Table 6.1-9 and Table 6.1-10. The traffic has been reduced in almost half since 2010 and is now constituted mainly of solid bulk (salt). The total number of ships is quite stable since 2010, but in category one must note the sharp decrease of bulk carriers and general cargos. The number has been offset by special vessels but not the quantity of goods transported (solid bulk).

	2010	2011	2012	2013	Variation 2013/2012	Variation 2013/2010
Goods (Tons)	1,355,065	1,105,265	812,700	739,012	-9%	-45.5%
Import	158,526	363,040	171,893	182,984	6%	15.4%
Export	1,196,539	742,225	640,807	556,028	-13%	-53.5%

Table 6.1-8	Evolution	of	activity	in	the	Zarzis	Port
10000.10	Lyonanon	O1	activity	111	une	Laizis	IOIL

Source: Zarzis Port Office

Table 6.1-9 Components of traffic in Zarzis port (in thousand tons):

	2010	2011	2012	2013	Share in 2013	From 2010
Hydrocarbons	171	221	168	177	24%	+3.5%
Liquid bulk	5	18	9	0	0	-100%
Solid bulk	1,163	705	621	534	72%	-54%
Various	16	161	15	28	4%	x1.75
TOTAL	1,355	1,105	813	739	100%	-45.5%
Variation 2013/2010 total		-18.5%	-40%	-45%		

Source: Zarzis port

	2010	2011	2012	2013	Share in 2013	From 2010
Tankers	31	34	36	30	5%	-3%
Bulk carriers (L+S)	17	30	15	8	1%	-53%
General cargo	254	184	118	111	19%	-56%
RO-RO	1	31	3	2	0.3%	x2
Supplier/ special vessels	332	413	216	425	74%	+28%
Total	635	692	388	576	100%	-9%
Variation / 2010		+9%	-39%	-9%		

Table 6.1-10 Ships in Zarzis port (in thousand tons):

Source: Zarzis port

Regarding the origin of import, as shown in Figure 6.1-22, the EU countries represent highest share, 52.9.2% of the whole trade, followed by other European countries (41.1%), Africa (3.8%) and other countries (2.0%). Regarding the destination of export, the EU countries represent highest share 71.0% of the whole trade, followed by other countries (26.3%), Asia (11.7%) and other countries (2.1%).



Source: Annual Report 2011, OMMP



(3) Existing development plan

(a) Gabès Port

Even though OMMP and Gabès Port Office recognize the capacity of the port is adequate at present, the development strategy of the Gabès port indicated by OMMP recommends to build post n° 11 and to build an oil post in order to foster its development, as shown in Figure 6.1-23.

These developments are mostly located inside the port area, since the port of Gabès is already located inside an urban and industrial neighbourhood, which makes an extension difficult and costly.

(b) Zarzis Port

OMMP is preparing a comprehensive development plan for 2020. A study is being undertaken at present by OMMP for the opportunity to develop this activity also in Zarzis and in Sfax. The information from OMMP related to the development of the port is as follows;



Source :Gabes Port Office

The first and short term plan is sand dredging in order to increase the draught. The draught should

Figure 6.1-23 Development plan of the Gabès port

be deepened enough: 7.5m at present makes a possibility to host ships of up to 15,000t. With a draught of 11 meters the port could handle ships up to 30,000t (final draught to be checked after the works are complete);

- A study for the improvement of the port, financed by OMMP, has been undertaken in 4 phases by SENER, the Spanish consultant. The study should be terminated by the end of 2014, and should include:
- A diagnosis
- Development of alternative possibilities for the short, medium and long term
- Simulation of those options
- Recommendation
- The nearby industries/companies would like to have a regular (scheduled) maritime line from Zarzis port in order to support an export industry (Note: there is a national carrier company in Tunisia: National shipping Company in Tunisia: CTN *compagnie tunisienne de navigation*).
- In addition, there is a project of development of gypsum extractive industry (*plâtre*, plaster) in the governorate of Tataouine. The mine is said to be the second largest in the world (the largest being the one in Canada) with a rate of purity of gypsum of 98%. In order to permit the development of this facility on a large scale, some advocate the planning and construction of a railway link between the mine and the port of Zarzis.
- OMMP Website indicates that: "The port of Zarzis has a land reserve covering an area of 135 hectares in the port public domain, located on the West side of the harbour and

bordered on the north by the city and in the south by the sea, dedicated to the establishment of projects in conjunction with port activity."

Development strategy of port

The goal of the strategy planned for his port is to redevelop the activities, in the frame of looking for a possibility of a strategic partner who will operate in accordance with the new economic pole of Zarzis proposed for the trade Port, park of economic activities and the future logistic area.

(4) Major projects financed by the Government of Tunisia and by Donors in the study area

Most recent projects financed by the Government of Tunisia and by Donors in the study area:

Period	Title of Project	Financed by	Amount
Bot	th ports: O&M works	under Tunisian OMMP	financing.

6.1.5 Airports

(1) Airport facilities and network, and their organization

Figure 6.1-24 shows the 9 main airports in Tunisia, including those in the study area. Four of the 9 main airports of Tunisia are located in the study area (6 governorates from a total of 24), two of them (Tozeur-Nefta and Djerba) being international airports.

In addition there is one airport in close proximity to Sfax, one in El Borma for the petroleum industry and one in Remada (military use only at present, but 2 military airports of the study area have been converted from military only use to both of civil and military use. The network of airports is quite satisfactory in the study area. Tataouine and Kébili governorates do not have their own airport.



(2) Statistics and key indicators





(a) International airport of Tozeur-Nefta

The airport of Tozeur Nefta is located north-west of Tozeur. With a runway of 3,250m, it can accommodate planes of large sizes (8 positions are planned for plane parking) a terminal passenger and a freight terminal (15 tonnes capacity including a cold chamber of 8 tons capacity). There is a taxi station and a parking place for buses, in addition to the car parking place.

Flights are operated by Tunis Air (international, Paris and Lyon in France) and Tunis Air Express (from and to Tunis, Gabes, Djerba). The flights are scheduled on a weekly basis and airport announces them by facsimile to the transport operators (announcements are made on Fridays for the following week). They are also posted at the taxi station of the airport. Regarding the freight transport, there is almost no activity at present, although the exports from the airport were done until 1998 for the export

of cherry tomatoes to Brussels. The airport complies with all OACI regulations (in particular annex 14). Its administrative structure belongs to OACA, as follows (regulation ref. 57/2009):

For reference, in 2000, the airport accommodated around 113,000 PAX (see statistics), and the terminal can accommodate up to 400,000 PAX a year (terminal extended in 1999/2001 period). In 2010 (before the revolution), Tozeur accommodated 106,679 PAX. The growth of traffic, uninterrupted since 1991, had a peak in year 2000 (112,798 passengers) then a first slowdown after 2001, and resumed progressively until 2010 (106679 passengers) then decreased again sharply (48,024 passengers in 2013, 45% of the 2010 value). Concerning the seasonal variation, the peak season in the airport for passengers is winter, the season of pilgrimage.



Source: Tozeur Airport



The peak in the number of planes coming to Tozeur reached in 2002 (4278 airplanes), then decrease almost continuously, and the present value (2013) is 1634, or 38.2% of the peak value. Most of the passengers (80%) are using the Tozeur-Tunis link. There are also passengers from neighbouring cities in Algeria (region of El Oued - Touggourt) using the international flights and going by car from airport to final destination.

(b) International airport of Djerba-Zarzis

The history of passenger traffic dates back to 2002. However, as one can see the growth of the traffic gently increased until 2008 (2,625,159 passengers), then decreased, in line with the crisis in Europe. The lowest value was reached in 2011 (1,781,169 passengers) and the value for 2013 was 1,922,338, which was 73% of the 2008 value. The maximum of number of planes in the airport was 25,281 in 2008, since then there was a decrease and the 2013 value is 18,519 (73%), homothetic to the decrease in the number of passengers.



Source: Djerba Airport

Figure 6.1-26 Evolution of the number of passengers and planes in Djerba International Airport

Figure 6.1-27 shows the number of passengers by operating airline during 2003-2013. It is to be noted that Nouvel Air, ranked 3rd in 2013 - 2,923 vs. 3,058 flights for Tunis Air Express - is the first private airline company of Tunisia.







Even though most of the flights are regularly scheduled the information should be dispatched as early as possible to aid correct and efficient planning of touristic transport.

(3) Existing development plans

According to the interviews (Tozeur, Djerba), there are no development plans for the infrastructure at present, because the present traffic is far below the nominal capacity of the terminals. On the other hand, Tunisia is processing toward an "Open Sky" system, under negotiation at present with EU, the agreement could be obtained by end of first semester 2014. If this happens, Tunisia would be the second country after Morocco (2006) to have set up this policy with the EU.

For the Tozeur-Nefta Airport, there is a planned refection of the runway (upper layer, *couche superficielle*) and related lightning (*balisage*) in 2016. Also, there are 20 ha of land reserve (*réserve foncière*) nearby the Tozeur-Nefta Airport, which could constitute a logistical park on the long term (in line with the general development of the area).

(4) Major projects financed by the Government of Tunisia and by Donors

Major projects done in each airport is as follows;

- Gabès: the airport was formerly a military airport and has been converted to civil use in addition.
- Tozeur: there is a cooperation implemented with ENAC (Ecole nationale de l'aviation civile) in Toulouse, France, for the permanent training of the staff (training sessions both in France and in Tunisia)
- Gafsa: rehabilitation of airport: 10 million Euro for terminal, 10 million Euro for plane track (*piste aérodrome*).

6.1.6 Current Issues related to Transport Sector

(1) Roads

Several roads seem to suffer from the impact of overloaded trucks, which go above the 13 tons per axle load regulation in Tunisia. This issue tends to cause the early deterioration of the pavement. However, no fixed or mobile weigh station (poste de pesage) could be found during the mission, and it was not clear which ministry is responsible for the management of overloading. In the perspective of the development of the general economy and related increase of traffic, this point is of importance since the damage of pavement or roadbed will need heavy repair or even replacement and it has direct costs but also indirect costs in terms of delay and harsh driving conditions due to the remedial works.

(2) **Ports**

According to the master plan study (*plan de développement des transports*), transport by container has grown by 12% per year in Tunisia during these last five years. This figure is in line with the general figures of UNCTAD describing a sharp increase of the transport by container, both by sea or by road. Besides, according to OMMP's annual report 2011, the container traffic did not decrease, and instead gained by 2%.

However, most of the freight (71%) is transported by vehicles of small capacity (véhicules de faible tonnage - limited quantities of goods in each vehicle)¹¹. Therefore, the development of container transport and proper loading of vehicles (limitation of axle loads) might be an asset for development of the economy and in line with the evolution of trade. This is already the case of the ports of Radès and Sfax. But since the ports of Gabès and Zarzis do not yet have proper facilities to handle structured container transport, the transportation by container has to go to Sfax. For example, agricultural products go to Sousse and Sfax because they need to be grouped into large packages. If Zarzis Port implements its development project, it will enter into competition with other ports, not only in Libya but also in Tunisia.

(3) Railways

¹¹ - Small capacity vehicles: 71% traffic, 18% tons.km, heavy vehicles: 29% traffic, 82% kilometric. Tons.

There is a possibility of development of a new phosphate mine which could produce 1.5 to 2 million tons/year in Tozeur Governorate. If this project were undertaken, there would be three possible mode of transportation: trucks, trains or "mineroduc" (a kind of pipeline which can transport a mix of minerals) and water. For the mining and phosphates industries, the train is considered as the best transport mode by SNCFT: 1 train can transport 1700 tons of phosphates while a truck can transport only 30 to 32 tons (1 train = more than 50 trucks). In that case, enough transport capacity by railway would be necessary. Also the project of gypsum mine nearby Tataouine, previously mentioned, which could benefit from an access to port by rail.

6.1.7 Construction costs

(1) Roads

The Study Team obtained information related to the unit price of the construction and rehabilitation for the trunk road and highway during interviews to Ministry of Equipment, Housing and Spatial Planning and Tunisie Autoroutes as follows;

- Autoroute: 5.0 million TND/km (for example, Gabes-Médenine: 550 million TND for 84km.Médenine –Ras Jedir: 450 million TND for 104 km.)
- Rehabilitation (including sub-base and base course): 500,000-600,000 TND/km
- Rehabilitation (only surface replacement): 250,000 TND/km

(2) Railways

The Study Team obtained information related to the unit price of the construction of railway during an interview with SNCFT. The cost of railway projects can be approached based on a project of 48 km between Enfida and Menzel, estimated by SNCFT at 125 million TND (2-track metric line, including tracks, structural works, construction of a station in Kairouan, electrification costs not included). Therefore, the average cost is approximately 1 million EUR/km.

(3) **Ports and Airports**

No data available at this stage.

6.2 Water Supply and Waste Water Treatment

6.2.1 Current situation

(1) Water supply

(a) Water balance (demand and supply)

(i) Water resources in Tunisia

Detailed information on water resources is reported in section 3.3.1.2. In this section, its usage and quality aspects are summarized. In Tunisia, more than 88% of water resources are already in service, which consists of 29 large-scale and 226 small dams, 827 mountain lakes, 95,000 shallow wells, and more than 5,000 deep wells. Most of water resources in Tunisia contain salt, especially in the southern region. Water resources and their salinity are as per Table 6.2-1. The salt content of water is more than 1.5g/l.

	Available	Usag	Total Water		
	Water (x10 ⁶ m ³ /year)	TDS<1.5 (x10 ⁶ m ³ /year)	1.5 <tds<3 (x10⁶ m³/year)</tds<3 	3 <tds (x10⁶ m³/year)</tds 	Usage (x10 ⁶ m ³ /year)
Surface Water	2,700	1,200	400	100	1,700
Underground Water	2,100	300	800	500	1,600
Total	4,800	1,500	1,200	600	3,300

Table 6.2-1 Water Resources and their Salinity in Tunisia

Source: the Ministry of Agriculture, Water Resources and Fisheries * Total Dissolved Solids (TDS) of salt shown in

(ii) Usage of water in Tunisia

g/l

In 2012, the usage of water in Tunisia was around 75-80% for the agricultural sector, 20% for the residential sector, and 5% for the commercial sector including the tourist industry. The total rainfall in southern Tunisia is approximately 100-200mm per year. There is no normal type of river in this region, and as a result, the agricultural industry cannot get enough water from rivers. Many farmers must collect water from underground sources, such as wells. In order to prevent a lowering of the water table level, the construction of new wells has been requested by the Government of Tunisia. The Ministry of Agriculture, Water Resources and Fisheries, which is the supervising ministry for all water-related issues in Tunisia, is responsible for the scheme.

With regard to water salinity, almost all of the water that has less than 3g/l is used for existing applications and if more water is needed, water that has more than 3g/l is used.

(iii) Reuse for other applications

Treated water from sewage water treatment plants can theoretically be used for irrigation or agriculture, but in Northern region in Tunisia, reuse of treated waste water is not observed because of enough fresh water. On the other hand, in southern region, this treated water is generally accepted because of the shortage of water.

As per above, water resources in the southern region is limited. There are countermeasures for this water shortage; for example, the diversion of water from northern regions, where more surface water

is available, or the construction of desalination plants, which can be used to reduce the salinity of water.

(b) Location and capacity of wells

A major water resource in the southern region is underground water, as reported in section (2) of 3.3.1. The region has 15,709 shallow wells and 1,200 deep wells, and their dispersion and production capacity as of 2010 is shown in Tables 6.2-2 and 6.2-3. The usage of the water from deep wells is summarized in Table 6.2-3. According to the summary, the potable water consumed by the residential sector is around 20%, by the agricultural sector is around 75%, and by the industrial sector, including tourism, is around 5%. This ratio is almost same for shallow wells.

Covernorate		Well		Salini	ty (g/l)	Resources	Exploitation	Balance	ratio
Governorate	Equipe	Non Equipe	Total	Min	Max	Mm3/year	Mm3/year	Mm3/year	%
Medenine	2,930	2,539	5,469	2.5	8.5	12.7	13.0	▲ 0.3	102%
Tataouine	1,961	449	2,410	1.5	13.0	15.1	9.4	5.8	62%
Gabes	2,773	572	3,345	1.0	12.0	23.7	25.1	▲ 1.4	106%
Kebili	229	104	333	0.5	18.8	5.5	0.3	5.2	5%
Tozeur	2,090	256	2,346	1.0	10.0	34.1	34.6	▲ 0.5	102%
Gafsa	5,726	2,299	8,025	0.8	14.0	33.3	35.8	▲ 2.5	108%
Total	15,709	6,219	21,928	0.8	14.0	124.4	118.2	6.2	95%

Table 6.2-2 Shallow Wells and their Salinity in the Southern Region

Source: Ministry of Agriculture, Water Resources and Fisheries

Table 6.2-3	The Location	of Deep	Wells a	and their	Usage
		r			

	NA DDE			REPARTIT	ION PAR TYPE	DE POINT	D'EAU									RE	PARTITION	PAR USAG	E						DT AL
	NAFFE	1	FORAGES POMP	PES	FORM	SES ARTES	IIENS	SOURCE	S ET EME	RGENCE	s	E	AU POTAB	LE	USA	GE AGRICO	DLE	USA	GE INDUS	FRIEL	,	IOTELLER	IE	1 ``	
CODE	NOM	Mm ³	%	N ^{BRE}	Mm ³	%	NBRE	Mm ³	%	NBRE		Mm ³	%	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	%	NBRE	Mm ³	N ^B
81211	ZEUSS-KOUTINE JURASSIQUE	19.76	100	28								19.23	97	19	0.39	2	5	0.14	1	4				19.76	28
82211	GRES TRIAS.SAHEL ELABABSA	7.66	100	43								5.87	77	17	1.79	24	26							7.66	43
82231	PLI-QUATERNAIRE HAMILA	0.41	100	15											0.41	100	15							0.41	15
82311	SABLE DJORF (MIOCENE)	0.25	16	2	1.59	86	3								1.84	100	5							1.84	5
83121	CT DE BENI KHEDACHE	0.22	100	7											0.22	100	7							0.22	7
83122	CI DE BENI KHEDACHE	0.40	100	7								0.29	71	3	0.11	28	4							0.40	7
83211	SABLE DE ZARZIS (MIOCE)	7.11	91	8	0.71	9	5					7.11	91	8	0.17	2	2				0.54	7	3	7.82	13
84111	SABLE DE DJERBA (MIOCE.)	8.64	83	9	1.77	17	8					8.64	83	9	0.44	4	1				1.33	13	7	10.41	17
86112	EL OUARA DE MEDENINE	0.09	66	5	0.05	34	1								0.14	100	6							0.14	6
99922	GRES TRI JEFARA MEDENINE				0.02	100	1								0.02	100	1							0.02	1
99924	CALCAIRES DU JURASS.SUPE	0.04	100	2								0.03	66	1	0.01	34	1							0.04	2
	TOTAL	44.59	91.5	126	4.13	8.5	18					41.17	84.5	57	5.54	11.4	73	0.14	0.3	4	1.87	3.8	10	48.72	14

2. Exploitation des napppes profondes du gouvernorat de Tataouine 2010

	NAPPE		R	EPARTITIO	N PAR TYP	PE DE PO	NNT D'E	AU								REPA	RTITION	PAR US	AGE					то	TA1
		1	FORAGES POM	PES	FORA	GES ARTES	IIENS	SOURCE	S ET EME	RGENCE	5	E	AU POTAB	LE	USA	GE AGRIC)LE	USA	GE INDUS	FRIEL	,	IOTELLER	IE	1	
CODE	NOM	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE		Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	NBRE
82212	GRES TRIAS DE TATAOUINE	2.95	100	13								2.46	84	9	0.49	16	4							2.95	13
83112	CALCAIRE JURASSIQUE	0.10	100	9								0.05	49	1	0.05	51	8							0.10	9
83113	CALCAIRE BATHONIEN	2.77	100	37								1.91	69	8	0.83	30	28	0.03	1	1				2.77	37
86111	MIO PLIO QUATER EL OUARA	0.15	100	6											0.15	100	6							0.15	6
86121	TRIAS DOLIMITI. TATAOUINE	0.67	100	25											0.67	100	25							0.67	25
86211	C I PIEDMONT ORIEN. DHAHER	2.87	100	47								0.75	26	11	2.12	74	36							2.87	47
94131	C I PIEDMONT OCCID.DHAHER	0.82	88	30	0.11	12	2					0.01	1	1	0.78	84	23	0.14	15	8				0.93	32
96111	C I ERG ORIENTAL				5.03	100	12								1.58	31	2	3.45	69	10				5.03	12
96112	C T BORJ EL KHADRA	0.02	1	3	1.51	99	2								1.53	100	5							1.53	5
	TOTAL	10.35	61	170	6.65	39	16					5.18	31	30	8.20	48	137	3.62	21	19				17.00	186

3. Exploitation des napppes profondes du gouvernorat de Gabes 2010

	NAPPE		F	REPARTITIO	N PAR TY	PE DE PO	DINT D'E	AU								REPA	RTITION	I PAR US	AGE					то	TAL
	MAPPE.		FORAGES POM	PES	FORA	GES ARTE	SIENS	SOURCE	ES ET EME	RGENCE	s	E	EAU POTAB	LE	US	AGE AGRIC	DLE	USA	IGE INDUS	TRIEL	1	HOTELLER	tie	1 10	
CODE	NOM	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE		Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	NBRE
55211	CALC.CRET.SKET MANSOUR	0.26	100	4											0.26	100	4							0.26	4
81111	OAS.GAB NORD SEN.MAR-GYP	5.52	94.60	6	0.32	5.4	2								5.84	100	8							5.84	8
81121	GABES NORD SENO.CALCAIRE	15.34	91.43	16	1.44	8.57	2					7.76	46.23	5	8.26	49.22	10	0.76	4.55	3				16.78	18
81131	C T S. MICCENE/CAL SENON	5.19	100	8								1.75	33.72	2	3.44	66.28	6							5.19	8
81141	GABES NORD SAB. MIO-PLIO	7.81	52.84	17	6.96	47.07	4	0.01	0.09	1		0.26	1.73	1	14.39	97.36	20	0.13	0.91	1				14.78	22
81221	TURO/CENOMAN GABES SUD	2.69	100	12								0.87	32.27	3	1.82	67.73	9							2.69	12
81231	SEN INF.(MAR-GYP)GAB SUD	6.26	99.25	16				0.05	0.75	1					6.31	100	17							6.31	17
81241	SENON INF. (CALCAIRE)	36.39	99.74	116	0.09	0.26	2					5.98	16.39	8	30.50	83.61	110							36.48	118
91111	C I CHOTT FEDJEJ	1.31	4.72	4	26.46	95.28	14					12.05	43.38	6	15.72	56.62	12							27.77	18
91221	C T BASSIN SUD TUR-SENON	0.92	100	5											0.92	100	5							0.92	5
91231	C T BAS. SUD SEN.INF.CAL	12.47	83.18	25	2.53	16.82	1					2.95	19.66	3	11.51	76.75	17	0.54	3.59	6				15.0	26
91411	SENO.C/OGL.MERT./O.CHIAH	0.22	100	6								0.11	50.56	3	0.11	49.44	3							0.22	6
92412	CENOMA.TURON/MATMATA	0.13	98.86	4				0.01	1.14	2		0.04	30.27	4	0.10	69.73	2							0.14	6
	TOTAL	94 51	71.40	230	37.80	28.60	25	0.07	0 10	4		31 77	24.00	35	00 18	74 92	223	1 43	1.08	10				132 38	268

4. Exploitation des napppes profondes du gouvernorat de Kebili 2010

	NADDE			REPARTIT	ION PAR TYP	E DE POINT	D'EAU									REF	ARTITION	PAR USAG	E .					100	TAL
		1	FORAGES POMP	PES	FORA	GES ARTES	IENS	SOURCE	S ET EME	RGENCES		E	AU POTABI	LE	USA	GE AGRICO	LE	USA	GE INDUST	RIEL		IOTELLERI	E	1	~
CODE	NOM	Mm ³	%	Nake	Mm ³	%	Nasa	Mm ³	%	Nawa		Mm ³	%	Naxe	Mm ³	%	Naxa	Mm ³	%	Nawa	Mm ³	%	Naxa	Mm ³	Nasa
92331	C T O HALOUF	0.07	100.00	2											0.07	100.00	2							0.07	2
93221	C T BAS EST CHOT DJERID	188.46	74.26	136	65.34	25.74	22					6.03	2.38	16	247.68	97.58	138	0.03	0.01	2	0.06	0.02	2	253.80	158
93321	C T SUD S-W CHOT DJERID	4.71	12.85	8	31.95	87.15	5					0.26	0.71	2	36.24	98.85	10	0.16	0.44	1				36.66	13
93331	CT REJIM MAATOUG	1.35	3.74	1	34.75	96.26	37					0.51	1.41	3	35.58	98.56	34	0.01	0.02	1				36.10	38
94111	CIGARAAT BOU FLIDJA				4.23	100.00	4								4.23	100.00	4							4.23	4
91311	CINEFZAOUA	4.22	10.15	6	37.35	89.85	18								40.94	98.48	23				0.63	1.52	1	41.57	24
93211	C I EL BHAÏER	17.70	63.71	9	9.74	35.06	8	0.34	1.22	13		0.07	0.25	1	27.35	98.45	28				0.36	1.30	1	27.78	30
	TOTAL	21.92	31.61	15	47.09	67.90	26	0.34	0.49	13		0.07	0.10	1	68.29	98.47	51	0.00	0.00	0	0.99	1.43	2	69.35	54

5. Exploitation des napppes profondes du gouvernorat de Tozeour 2010

	NAPPE		R	EPARTITIO	N PAR TYP	PEDEPC	NNT D'E	AU								REPA	RTITION	PAR US	AGE					то	ΓΔΙ
			ORAGES POM	PES	FORA	GES ARTES	IIENS	SOURCE	S ET EME	RGENCES	5	E	AU POTAB	LE	USA	GE AGRICO	LE	USA	GE INDUST	FRIEL		IOTELLER	IE	1	
CODE	NOM	Mm ³	%	N ^{BRE}	Mm ³	%	NBRE	Mm ³	%	NBRE		Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	NBRE
73314	MICCENE DE TAMEGHZA	0.37	12.9	7				2.49	87.1	3		0.16	94.3	5	2.70	5.7	5							2.86	10
73315	PLIO-QUATERNAIRE DE TAMEGH	0.020	100	1								0.02	100	1										0.020	1
74311	COMPLEXE TERMINAL JERID	119.11	100	172								3.13	2.6	7	109.01	91	145	6.13	5.7	5	0.84	0.7	15	119.11	172
74312	CONT.INTERCALAIRE JERID	3.44	33.6	6	6.78	66.4	12								10.22	100	18							10.22	18
74313	C T CHOTT EL GHARSA NORD	3.46	100	6											3.46	100	6							3.46	6
74315	PLIO - QUATERNAIRE	0.80	100	4								0.16	20	2	0.640	80	2							0.80	4
	TOTAL	127.20	93	196	6.78	5	12	2.49	2	3		3.47	3	15	126.03	92	176	6.13	4	5	0.84	1	15	136.47	211

6.	Exploitation	des	napppes	profondes	du	gouvernorat	de	Gafsa	2010	
_					_	DED & DTITION DA	TV		ALC: NO	

	NARRE		R	PARTITIO	N PAR TYP	PE DE PO	DINT D'E	AU								REPAR	RTITION	PAR US	AGE					TO	
	NORTE STREET	F	ORAGES POMP	ES	FORA	GES ARTE	SIENS	SOURCE	S ET EME	RGENCE	5	E	AU POTABL	LE	USA	GEAGRICO	ILE	USA	GE INDUST	RIEL		IOTELLER	IE		AL
CODE	NOM	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE		Mm ³	%	N ^{BRE}	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	%	NBRE	Mm ³	NBRE
71412	SIDI AICH2	0.16	50	2								0.05	50	1	0.11	50	1							0.16	2
71521	GAFSA NORD1	37.12	98.21	243				0.09	0.52	1		7.22	18.8	64	29.99	81.2	180							37.21	244
72211	CRETACE SIDI BOU DHA F	0.04	100	2								0.04	100	2										0.04	2
73111	EL GUETTAR	3.43	100	13								0.82	53.85	7	2.61	46.15	6							3.43	13
73211	AHMED ZAROUK	1.36	100	4											0.02	25	1	1.34	75	3				1.36	4
73221	GAFSA SUD1	3.09	100	14											2.30	57.14	8	0.79	42.86	6				3.09	14
73311	PLIO-QUATERNAIRE REDEVEF	3.68	100	10								2.31	30	3	1.37	70	7							3.68	10
73312	MICCENE REDEYEF	11.94	100	29								1.35	11.36	12	2.59	21.68	7	8.00	66.96	10				11.94	29
73521	DJEBEL BELKHIR	0.08	100	3								0.01	33.33	1	0.07	66.66	2							0.08	3
74314	CH. EL GHARSA NORD GAFSA	3.20	100	11											3.20	100	11							3.20	11
75111	MICCENE SEBKHET NA OUEL	0.12	100	3								0.12	100	3										0.12	3
75112	EOCENE B. OMRANE B. SAAD	0.02	100	1								0.02	100	1										0.02	1
75113	ZABBAG SUP.SABKET NAOUEL	0.09	100	1											0.09	100	1							0.09	1
	TOTAL	64.33	99.9	336				0.09	0.1	1		11.94	18.6	94	42.35	65.7	224	10.13	15.7	19				64.42	337

Sout	thern area Grand 1	otal																									
	NARRE		R	EPARTITION	N PAR TYP	PE DE PO	NNT D'E	AU			T	DTAI						USA	GE						TO.		
	INTE	F	FORAGES POM	PES	FORA	GES ARTES	IENS	SOURCE	S ET EME	RGENCE	s	JIAL	Lit	fe wat	ter	Ag	ricultu	ire		Indutr	у	ŀ	IOTEI	L		AL	
		Mm ³	%	N ^{BRE}	Mm ³	%	NBRE	Mm ³	%	N ^{BRE}	Mm ³	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	%	N ^{BRE}	Mm ³	NBRE	
	TOTAL			4 000	100.15						400	4.00															
	IOTAL	362.90		1,082	102.45		97	2.99		21	408	1,200	93.60		232	349.59		884	21.45		57	3.70		27	408	1,200	
							Ratio	o, by	prod	uctio	n que	ntity	20.0%			74.6%			4.6%			0.8%			100%		
		Ratio, by production Ratio, by numb													19.3%			73.7%			4.8%			2.3%	L	100%	

Source: Ministry of Agriculture, Water Resources and Fisheries

(c) Major desalination plants in Tunisia operated by the Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE)

The SONEDE has many desalination facilities and their major brackish water desalination plants are in Gabès, Djerba, Zarzis and Ben Guerdane. The intake water salinity is: 3,000mg/l; 5,500mg/l; 6,000mg/l; and 14,400 mg/l respectively. All of these salinity levels do not meet the drinking water standard, which is less than 2,500mg/l (due to be revised to 2,000mg/l in 2014, see section 6.2.4.2).

Location	Processing Capacity (m ³ /day)	Process Method	Intake Water Type	In Operation Since
Gabès	34,000	RO	Brackish	1995
Djerba	20,000	RO	Brackish	1999
Zarzis	15,000	RO	Brackish	1999
Ben Guerdane	1,800	RO	Brackish	2013

 Table 6.2-4
 Existing major Desalination Plants

Source: JICA Expert Team RO=reverse osmosis

(i) Gabès desalination plant

The plant is located in the western part of Gabès city, and has been in operation since 1995. The maximum processing capacity is $34,000m^3/day$, which consists of 4 trains that each process $8,500m^3/day$. The current processing capacity is only $8,500m^3/day$ due to a shortage of available water. The salinity at the intake is 3,000mg/l in TDS and the treated water is 100-500mg/l in TDS. The overall recovery rate of the RO units is 75%.

The processed water is mixed with the same amount of intake water. A total of 17,000m³/day of mixed water is pumped to several reservoirs near Gabès. This mixing procedure is to improving water salinity is carried out at other desalination plant.

(ii) Djerba desalination plant

The plant is located in the south of Djerba island and has been in operation since 1999, with a maximum processing capacity of $15,000m^3/day$. In 2007, the capacity was increased by $5,000m^3/day$, so the current total processing capacity is $20,000m^3/day$. The salinity at the intake is 5,500mg/l in TDS, and the treated water is 320mg/l in TDS. The overall recovery rate of the RO units is 75%.

(iii) Zarzis desalination plant

The plant is located in the north-west of Zarzis city and has been in operation since 1999, with a maximum processing capacity of 15,000m³/day. The salinity at the intake is 6,000mg/l in TDS, and the treated water is 320mg/l in TDS. The overall recovery rate of the RO units is 75%.

(iv) Ben Guerdane desalination plant (Japanese government grant project)

The plant is located in the north of Ben Guerdane city and has been in operation since 2013, with a maximum processing capacity of 1,800m³/day. The salinity at the intake is 14,400mg/l in TDS, and the treated water is 130mg/l in TDS. The overall recovery rate of the RO units is 70%.

(v) Other desalination facilities

The construction of the plants in Table 6.2-5 and Table 6.2-6 are supported by KfW, a German banking group. In phase one, ten plants were constructed and began operating in April, 2013. In phase two, a survey was undertaken in 2011 and EIA is now under evaluation. The construction of six more plants are expected to start in 2014.

Governorate	Site	Capacity	Intake Salinity (mg/l)
	Tozeur	6,000	
Tozeur	Nefta	4,000	
	Hazoua	800	2,824
	Kébili	6,000	1,500 - 2,300
Kébili	Souk Lahad	4,000	2,070 - 2,190
	Douz	4,000	1,600 - 2,300
Cabàc	Matmata	4,000	
Gabes	Mareth	5,000	
Médenine	Beni Khedache	800	
Gafsa	Belkhir	1,600	2,332
Total		6,200	

Table 6.2-5 Desalination Plants in the Southern Region (Supported by KfW), Phase 1

Source: SONEDE

Table 6.2-6 Desalination Plants in the Southern Region (Supported by KfW), Phase 2

Governorate	Region	Predicted Population by 2035	Capacity (m³/day)	Intake Salinity (mg/l)
Médenine	Ben Guerdane	88,077	9,000	2,000
Gafsa	Gafsa Nord, Gafsa Sud, Ksar, Mdhila, Gtar, Ayeycha	237,611	9,000	1,800
	Metlaoui, Moulares, Redayef	97,000	6,000	1,800
Tozeur	Degeche	32,950	2,000	1,700
Kébili	Bechli, Beni Mohamed, Janaaoura, Blidet, Jerssine, Nouel	22,507	2,000	1,900
Sidi Bouzid	El Meknassi, Mazouna, Bouzian	106,098	3,000	1,900
Total	6 Projects	526,158	31,000	

Source: SONEDE

(2) Wastewater Treatment

(a) Network

In Tunisia, connection rate of households to the sewerage network in 2010 was 84.2%, but the southern region had less than the average connection rate. The northern region had more than 92% connected and the central region had around 80% connected. In the south-east, however, the average was 51.5% and Médenine had an exceptionally low connection rate of 26.4%. The south-west had 69.2% connected, with Tozeur having a connection rate of 86.7% and higher than average.

REGION	GOUVERNORAT	NOMBRE DE COMMUNES	2004	2007	2010	2011	2012"	2013***
GRAND TUNIS	TUNIS	8	93.5%	94.2%	96.0%	96.8%	96.9%	97.0%
	ARIANA	6	87.3%	87.6%	90.6%	91.0%	91.4%	91.8%
	BEN AROUS	11	92.8%	93.7%	95.1%	95.4%	95.7%	96.0%
	MANOUBA	9	89.2%	91.7%	92.4%	92.7%	93.7%	93.9%
Total GRAND TUN	5	34	91.7%	92.5%	94.3%	94.8%	94.8%	95.1%
NORD EST	NABEUL	24	80.8%	85.9%	89.4%	89.6%	90.0%	90.3%
	ZAGHOUAN	6	84.9%	90.9%	92.5%	92.8%	93.1%	93.5%
	BIZERTE	13	91.2%	95.0%	97.5%	97.6%	97.8%	97.9%
Total NORD EST		43	85.0%	89.7%	92.7%	92.8%	93.2%	93.3%
NORD OUEST	BEJA	8	96.4%	97.8%	98.9%	98.9%	98.9%	99.0%
	JENDOUBA	8	84.7%	86.1%	87.4%	87.5%	87.9%	88.2%
	LE KEF	12	85.1%	87.2%	90.5%	90.6%	90.9%	91.9%
	SILIANA	10	88.0%	91.6%	93.3%	93.5%	94.0%	94.8%
Total NORD OUEST		38	88,6%	90.6%	92:5%	92.6%	92.9%	93.4%
CENTRE EST	SOUSSE	16	91.4%	92.7%	95.9%	96.3%	96.7%	97.1%
	MONASTIR	31	77,4%	81.2%	83.3%	83.7%	84.5%	84.9%
	MAHDIA	14	53.7%	59.9%	68.2%	68.4%	69.0%	70.9%
	SFAX	16	60.4%	66.9%	69.2%	70.8%	71.6%	72.1%
Total CENTRE EST		77	72.7%	77.2%	80.3%	81.2%	81.9%	82.6%
CENTRE OUEST	KAIROUAN	12	85.1%	87.1%	89.4%	89.5%	89.6%	89.7%
	KASSERINE	10	68.0%	74.9%	77.0%	77.5%	77.8%	80.5%
	SIDI BOUZID	10	50.7%	53.4%	59.2%	59.4%	63.7%	65.9%
Totol CENTRE OUE	ir 🔤	32	71.3%	75.1%	78.1%	78.4%	78.4%	79.5%
SUD EST	GABES	10	74.2%	82.0%	85.2%	85.6%	86.0%	86.7%
	MEDENINE	7	19.7%	24.5%	26.4%	27.1%	29.8%	30.7%
	TATAOUINE	5	43.3%	54.0%	60.2%	61.5%	64.6%	66.0%
Total SUD EST		22	41.9%	48.6%	51.5%	\$2.1%	53,9%	54,8%
SUD OUEST	GAFSA	8	57.9%	63.0%	66.9%	67.0%	70.1%	72.2%
	TOZEUR	5	82.0%	84.4%	86.7%	87.1%	87.9%	89.7%
	KEBILLI	5	39.7%	54.6%	58.7%	59.4%	60.5%	60.7%
Total SUD OUEST		18	59.1%	65.5%	69.2%	59.4%	71.8%	73.4%
Total général		264	78.3%	81.6%	84.7%	84.7%	85.4%	86.0%

Table 6.2-7	Connection	ratio to	ONAS	network
10010 0.2 /	connection	iuno n		network

Source: ONAS

(b) Wastewater treatment plants

Current Waste water treatment plants (STEP) in the southern region is as per Table 6.2-8. The Gafsa plant, which has been in operation since 1985, is currently operating beyond its design capacity, at 183% (see Table 6.2-8), and the Biological Oxygen Demand (BOD) of the overflow is 452% (see Table 6.2-9). ONAS currently conducting a new wastewater treatment plant in the city of Gafsa capacity 13,928 m³/d and 8,278 kg DBO₅/d.

No of	Plant Name	In Operation Since	Design Treatment Capacity	Current Average Processing Rate	Loading Ratio
Plant			(m³/day)	(m³/day)	(%)
	Gafsa	1985	3,500	6,388	183%
	Metlaoui	2006	4,078	1,064	26%
2	Gafsa		7,578	7,453	98%
	Nefta	1992	1,335	1,447	108%
	Tozeur	2000	6,654	4,658	70%
2	Tozeur		7,989	6,105	76%
	Kébili	2002	3,130	2,120	68%
	Douz	2004	564	1,687	31%
2	KÉBILI		8,494	3,806	45%
	Jerba Houmt Essouk	1991	3,500	2,295	66%
	Jerba Sidi Mehrez	1981	3,000	2,642	88%
	Zarzis Souihel	1980	1,108	403	6%
	Zarzis Lella Mériam	1982	1,726	1,285	74%
	Zarzis Ville	1992	1,335	1,234	92%
	Médenine	2000	8,870	3, 787	43%
	Jerba Aghir	2001	15,750	9,127	58%
7	Médenine		35,289	20,773	59%
	Tataouine	1999	5,430	4,640	85%
1	Tataouine		5,430	4,640	85%
	Gabès	1995	17,300	13,466	78%
	El Hamma	2004	4,061	4,210	104%
	Metouia-Ouidhref*	2007	2,700	1,446	54%
	Mareth-Zarrat	2007	2,860	617	22%
4	GABÈS		26,921	19,739	73%

Table 6.2-8 STEP Operation Status in 2012

Source: ONAS

Table 6.2-9 BOD Levels in 2012

	Plant Name	In Operation Since	Specification of Maximum BOD ₅ loading	Actual loading	Loading Ratio
			kg/d	kg/d	(%)
	Gafsa	1985	1,250	5,656	452%
	Metlaoui	2006	2,030	830	41%
2	Gafsa		3,280	6,486	198%
	Nefta	1992	600	1,069	178%
	Tozeur	2000	2,845	2,421	85%
2	Tozeur		3445	3,490	101%
	Kébili	2002	1,338	1,243	93%
	Douz	2004	2,200	516	23%
2	KÉBILI		3,538	1,759	50%

	Plant Name	In Operation Since	Specification of Maximum BOD ₅ loading kg/d	Actual loading	Loading Ratio
	Jerba Houmt Essouk	1991	1.500	751	50%
	Jerba Sidi Mehrez	1981	900	684	76%
	Zarzis Souihel	1980	380	115	30%
	Zarzis Lella Mériam	1982	540	430	80%
	Zarzis Ville	1992	600	107	18%
	Médenine	2000	3,500	1,863	53%
	Jerba Aghir	2001	3,325	2,374	71%
7	Médenine		10,745	6,324	59%
	Tataouine	1999	2,225	2,738	123%
1	Tataouine		2,225	2,738	123%
	Gabès	1995	9,050	4,267	47%
	El Hamma	2004	2,030	1,554	77%
	Metouia-Ouidhref*	2007	1,375	598	43%
	Mareth-Zarrat	2007	1,510	253	17%
4	GABÈS		13,965	6,672	48%

Source: ONAS

6.2.2 Political framework

(1) Improvements to the water supply and wastewater treatment

(a) 12th 5 year social economy development master plan (2010-2014)

As part of a 5-year plan, The Ministry of Agriculture, Water Resources and Fisheries established several policies between 2010 and 2014 to improve food safety, to strengthen economic competitiveness, to promote export trade and to develop natural resources. In particular, they have stressed that the water sector policy is an important part of developing their natural resources. The following is a list of items that are related to this study:

- Tunisia is located where water resources are limited by the geography and so these resources are scarce. In addition to the problem of unequal distribution of water resources and irregular rainfall, there is also the issue of water salinity and pollution.
- The 5-year plan includes strategic planning for the use, development and conservation of the water resources sector; for the regeneration of existing public irrigation areas; and for the strengthening of the management of domestic and agricultural water networks in all sectors.
- In order to improve the water quality in some deteriorated areas, the SONEDE will build desalination plants.
- The Ministry of Agriculture, Water Resources and Fisheries plans to expand the public irrigation area to 200,000 hectares by 2016, from the current 120,000 hectares, by applying water-saving technology to distribution networks and public irrigation areas.

(b) Policy changes and future planning relating to water for irrigation

The Ministry of Agriculture, Water Resources and Fisheries has the following policies for effective use of limited water resources:

- Establish a large supply network linked to the construction of a dam in order to deliver water to regions with shortages
- Introduce the latest technology in the field of irrigation that takes into account water collection, water management and water conservation
- Use recycled water for irrigation
- Increase the price of water

(c) Related studies undertaken by the SONEDE

(i) Feasibility study for water supply project in central and southern Tunisia (March 2005)

L'étude de faisabilité du projet d'alimentation en eau potable jusqu'à l'horizon 2030 du Cap Bon, Sahel, Sfax, Gabès, Médenine et Tataouine is a report that was compiled by a consulting team consisting of Sogreah, a French consultancy, and Studi and Ideaconsult, two Tunisian consultancies. The study was supported by World Bank funding.

The outline of the survey was to establish the most suitable water supply system for the Cape Bon area (which includes Nabeul) and the Sahel area (which includes Sousse, Monastir and Mahdia), and Sfax, Gabès, Médenine and Tataouine. The survey was concerning the next three stages from 2003 onwards. This report recommends several options. The most viable of which are as follows:

- Cap Bon and Sahel are to be supplied by the northern area and the construction of a desalination plant is recommended for Sfax
- Improve and increase the water supply in Gabès by constructing new brackish water and seawater desalination plants
- Improve and increase the water supply in Médenine and Tataouine by constructing new brackish water desalination plants in those areas and by constructing a new seawater desalination plant in Djerba

(ii) Policy and future planning for water use by industries

Small to medium-sized factories get water from the SONEDE and large factories get water from their own wells. Recycled water from sewage water treatment plants is not a viable solution for this demand due to its quality and cost. Improved management of water consumption is arguably a more realistic solution than finding new water resources in Tunisia.

(d) Policy for southern Tunisia by the SONEDE

The SONEDE's Sfax office, which is responsible for the southern region of Tunisia, announced their basic policy, as follows, on 18 December, 2013, in Tataouine:

- 1) Doubling of water resources by 2030 using desalination processing
- 2) Expand the Djerba and Ben Guerdane network by constructing a desalination plant in Djerba with a 50,000 m³/day capacity (expected to be commissioned by summer 2016) and by constructing a desalination plant in Ben Guerdane with a 9,000 m³/day capacity (expected to be commissioned by summer 2018)
- Expand the Gabès network and Médenine and Tataouine Ghomrassen braches by constructing a desalination plant in Zarrat plant with a 50,000 m³/day capacity (expected to be commissioned by summer 2018)

4) Creation new wells and connection with them as much as possible, before starting the above desalination plants

(2) Major projects financed by donors

(a) JICA, Japan

The SONEDE is implementing the Jendouba Water Supply Project and the Distribution Pipeline Improvement Project for Rural Areas with the help of Japanese funding. In addition to these 2 projects, the SONEDE is carrying out the below projects with other donors' assistance.

(b) KfW, Germany

KfW is supporting the construction of several desalination plants in southern Tunisia (see section (a), (1) of 6.2.1).

Djerba seawater desalination plant, Médenine

A feasibility study for a 50,000m³/day seawater desalination plant in Djerba was undertaken with EU funding. Since then, the SONEDE has decided to expand its capacity up to 75,000m³/day and it is in the process of selecting a contractor. The project is supported by KfW and AFD.

Zarrat seawater desalination plant, Gabès

A feasibility study for a $50,000 \text{ m}^3/\text{day}$ seawater desalination project in Zarrat began in September 2012 with AfDB funding. Tunisia aims to start its construction by the end of 2014.

Kerkennah seawater desalination plant, Sfax

A feasibility study for a 6,000 m^3 /day seawater desalination project in Kerlennah is expected to be supported by KfW.

(c) AFD, France

AFD is carrying out a program in 13 places for the improvement of production capacity of the SONEDE's facilities and the training of employees from 2011 to 2016. Connection from Djerba's existing seawater treatment and distribution network is included. In addition, AFD supported improvement of rural water supply in 2013

(d) World Bank

The SONEDE is planning to request World Bank support for improvement and rehabilitation of water facilities and pipeline networks.

(e) FADES, Islamic countries

The SONEDE is planning to request FADES support for constructing the Saida reservoir and the Kalaa Kebirare reservoir.

6.2.3 Institutional framework

(1) **Overall**

In Tunisia, the Ministry of Agriculture, Water Resources and Fisheries manages and decides the water related policy in accordance with the *Code des Eaux* ('water regulations'). The Ministry of Agriculture, Water Resources and Fisheries is in charge of planning the national policies and the construction of large-scale water facilities. The SONEDE is under the Ministry of Agriculture, Water
Resources and Fisheries' administration and, in accordance with the ministry's policies, manages water supply to urban areas and large-scale rural villages. Table 6.2-10 shows major water-related authorities under the Ministry of Agriculture, Water Resources and Fisheries.

(note) ONAS is under the Ministry of Public Works, Territorial Planning and Sustainable Development.

Table 6.2-10 Water-related Authorities under the Ministry of Agriculture, Water Resources and Fisheries

	Authority	Outline		
Internal Organizations	DGRE : Direction Générale de Ressources en Eau	 Manages national water resources and policies. Major roles are as follows: Development of management and policies for water resources Development of basic plans for the distribution of water resources Basic and applied research into the evaluation of water resources Promotion of research and testing activities to ensure the continued development of water resources 		
	DGGREE: Direction Générale du Génie Rurale et de l'Exploitation des Eaux	Manages agricultural water (see section 3.1.3)		
	DGBGTH : Direction Générale des Barrages et des Grands Travaux Hydrauliques	Plans and manages large-scale water resource facilities, including dam construction.		
Affiliated Organizations	SONEDE: Société Nationale d'Exploitation et de Distribution des Eaux	is an independent corporation that supplies water to residences and industries on a national scale, and conducts research into water intake, water treatment, networks, and distribution Supplies water to urban areas and large-scale towns.		
	CRDA: Commisariats Régionaux du Développement Agricole	is located in 24 governorates as an independent organization, but under the administration of the Ministry of Agriculture, Water Resources and Fisheries. Supplies water to rural areas where SONEDE does not supply water.		
	GDA : Groupments de Développement Agricole	manages agriculture water supply facilities under the administration of CRDA.		
	ONAS: Office National de Assainessement	is the independent corporation that manages sewage water treatment plants and their collection networks from households and industries, and conducts research into waste water treatment.		

Source: JICA Expert Team

(2) Société Nationale d'Exploitation et de Distribution des Eaux (SONEDE)

The SONEDE was established in 1968 as an organization to distribute water to residences, including urban and large-scale rural areas, and industries. An outline of the business of SONEDE is shown in Table 6.2-11. Four desalination plants (Djerba, Gabès, Zarzis and Ben Guerdane) are managed by the south-east branch, and Kerkennah is managed by the central Sfax branch. The responsibilities of these branches are limited to daily operation and maintenance, and large-scale maintenance is managed by the headquarters in Tunis.

Items	Data	Reference
Population supplied with water	10,833,000	
Water intake per annum	601.3 x 10 ⁶ m ³	
Quantity of water processed per annum	579.2 x 10 ⁶ m ³	Surface water: 332.5 x 10 ⁶ m ³ Groundwater: 220.7 x 10 ⁶ m ³ Desalinised water: 19.7 x 10 ⁶ m ³ De-ferrized water: 6.2 x 10 ⁶ m ³
Quantity of water distributed per annum	$532.0 \times 10^6 \mathrm{m}^3$	
Quantity of water generating revenue per annum	426.4 x 10 ⁶ m ³	
Cumulative network length	48,459km	Intake: 8,864km Distribution: 39,596 km
Staff	Full-time employees: 6,116 Part-time employees: 900 Total : 7,016	

Table 6.2-11 Outli	ne of SONEDE	(2012)
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Source: SONEDE

(3) Office National de Assainessement (ONAS)

The ONAS was created in 1974, and is administered by the Ministry of Public Works, Territorial Planning and Sustainable Development. It was established in 1974 as a public establishment of industrial and commercial (EPIC). The organization and outline of business of the ONAS is as per Figure 6.2-1 and Table 6.2-12.



source: ONAS

Figure 6.2-1 ONAS Organization

Items	2011	2012
Number of municipalities in ONAS's jurisdiction	165	165
Number of clients	1,601,000	1,655,000
Number of inhabitants in municipalities in ONAS's jurisdiction	6.4 x 10 ⁶	$6.5 \ge 10^6$
Number of inhabitants connected to the public sewerage network in municipalities in ONAS's jurisdiction	5.7 x 10 ⁶	5.9 x 10 ⁶
Connection rate in the cities in ONAS's jurisdiction	89.5%	90.0%
Number of waste water treatment plants (WWTP)	109	110
Number of pumping stations	706	721
Quantity of waste water collected	$242 \text{ x } 10^6 \text{ m}^3$	$239 \text{ x } 10^6 \text{ m}^3$
Quantity of water treated in WWTPs	$236 \text{ x } 10^6 \text{ m}^3$	$232 \times 10^6 \text{ m}^3$
Cumulative Length of operated network	15,122km	15,364km

Table 6.2-12 Ou	utline of	business	of ONAS
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Source: ONAS annual report 2012

6.2.4 Legal framework

(1) **Related regulation**

Code des Eaux contains the laws and regulations for the water sector in Tunisia and has been in effect since March 1975. The outline of parts relating to this survey is shown in Table 6.2-13 and it can be seen that the Ministry of Agriculture, Water Resources and Fisheries is the designated management authority for water.

Chapter	Field	Major content					
1	Public water	Managed by the Ministry of Agriculture, Water Resources and Fisheries					
2	Maintenance and Monitoring						
3	Rights regarding water usage	The ownership of water in previous regulations will be converted to "Right of usage of the water"					
4	Limitations of water usage rights	3m from the boundary line of public water area should be free zone					
5	Authorization of water usage rights	Special regulations regarding surface water Special regulations regarding groundwater Conditions for concession					
6	Usage of water	Special regulations on the usage of domestic water Special regulations on the usage of irrigation water Special regulations on resources, such as the reuse of wastewater and the recovery of brackish and seawater via desalination					

Table 6.2-13 Structure of Code des Eaux

Source: JICA Expert Team

(2) Standards for drinking water

The standards for drinking water, known as $NT \ 09.14(1983)$, were authorized in 1983 and they have been in force for more than 30 years. However, in these period situation on drinking water has been changed; therefore water related authorities established a committee and it has been revising the

standard since 2013. The final, approved version is expected to be issued in the second half of 2014 and the new standard will be issued as *NT 09.14(2013)*. The new standard stipulates that the TDS should contain no more than 2,000mg/l of salt, 500mg/l of chloride and 2.4mg/l of boron, and several trihalomethanes (THM) are also listed with regulation values. Table 6.2-14 is a comparison of key TDS values stipulated by Tunisian and Japanese standards, and World Health Organisation (WHO) and European guidelines.

 Table 6.2-14 Major items for Drinking Water standards in Different Standards and Guidelines

NT09.14(1983)						
komo	mit	Tunisia		WHO	EllStandard	Japan
items	unit	Recommend	Acceptable	(2004)	LO Stanuaru	Standard
рН	-	7.0-8.0	6.5-8.5	-	6.5-9.5	5.8-8.6
Total Dissolved Solid (TDS)	mg/l	500	2,000-2500	1,000	- (EC: 2,500µS/cm)	500
Turbidity	NTU	5	-	1	Consumer accept	2
Chloride (Cl ⁻)	mg/l	200	600	250	250	200
Boron (B)	mg/l		-	2.4	1	1

NT09.14(2014)

Itoms	unit	Tunisia		WHO	EllStandard	Japan
items	um		Limited	(2004)	LO Stanuaru	Standard
рН	-		6.5-8.5	-	6.5-9.5	5.8-8.6
Total Dissolved Solid (TDS)	mg/l		200-2,000	1,000	- (EC: 2,500µS/cm)	500
Turbidity	NTU		3	1	Consumer accept	2
Chloride (Cl ⁻)	mg/l		500	250	250	200
Boron (B)	mg/l		2.4	2.4	1	1

Source: SONEDE and JICA Expert Team

(3) Wastewater discharge standard

Treated water quality is regulated by *NT 106.02(1989)*. Refer to Table 6.2-15 for accepted discharge values.

	Units	Discharged to the Sea	Discharged to Rivers	Discharged to ONAS pipeline	Relevant Standard
рН		6.5 <ph<8.5< td=""><td>6.5<ph<8.5< td=""><td>6.5<ph<9.0< td=""><td>NT09.05 NT09.06</td></ph<9.0<></td></ph<8.5<></td></ph<8.5<>	6.5 <ph<8.5< td=""><td>6.5<ph<9.0< td=""><td>NT09.05 NT09.06</td></ph<9.0<></td></ph<8.5<>	6.5 <ph<9.0< td=""><td>NT09.05 NT09.06</td></ph<9.0<>	NT09.05 NT09.06
BOD	mg/l	30	30	400	NT09.20
COD	mg/l	90	90	1000	NT09.23
Other items	Detail. not mentioned				

Table 6.2-15 Regulation of Discharged Water Quality in NT 106.02 (1989)

Source: ONAS

6.2.5 Tariff structure

(1) Drinking water

In Tunisia, a suitable tariff structure is decided by related divisions, including the financial division of the SONEDE, and the tariffs are then reviewed by the Government before they are approved. The SONEDE are unable to decide the tariffs by themselves, which means that the tariffs might not reflected their financial situation.

Water consumption is measured by household and the tariff is calculated in two parts: a fixed rate, which is decided by the size of the connecting water pipe; and a proportionate rate, which is decided by consumption. These are charged quarterly; in other words, bills are issued every 3 months. The tariffs in 2013 is as per Table 6.2-16. These tariffs are differentiated by the category of user (see Table 6.2-17).

Fixed Rate per Quarter				
Diameter(mm)	Tariff (TND)			
15	4.100			
20	7.600			
30	14.050			
40	25.800			
60 - 80	65.600			
100	105.500			
150	275.000			

Table 6.2-16Water Tariffs in 2013

Proportionate Rate per Quarter					
Consumption (m ³)	Tariff (TND/m ³)				
0 - 20	0.145				
21 - 40	0.250				
41 - 70	0.340				
71 - 100	0.620				
101 - 150	0.760				
151 - 500	1.060				
501+	1.110				

Source: SONEDE

Category		Connection ratio (%)	Consumption ratio (%)	Average consumption (m ³ /quarter)	Tariff (TND)
	$0 - 20m^3 / quarter$	37.3%	8.0%	9	7.5
	$21 - 40 \text{m}^3 / \text{quarter}$	29.9%	21.0%	30	16.9
	41 - $70m^3$ / quarter	20.0%	23.6%	50	38.4
Domestic	71 - 100m^3 / quarter	5.2%	10.1%	82	91.9
	101 - 150m ³ / quarter	1.9%	5.3%	119	153.4
	151 - 500m ³ / quarter	0.8%	4.1%	222	374.8
	$501 + m^3 / quarter$	0.1%	2.3%	1264	2,244.2
Central govern	nment	1.3%	6.2%	207	407.4
Commercial/Local government /Others		2.9%	5.3%	78	119.0
Industries		0.58%	7.6%	4995	9,841.3
Tourism		0.06%	3.8%	2749	6,174.5
Non connected	d home	0.04%	2.7%	3154	555.0

Table 6.2-17Tariffs by Category

Source : Rapport des Statistiques Annee 2012

The tariffs were increased in 2010, 2011 and 2013. The Consumer Price Index (CPI) in Tunisia increased from around 21% to around 25% between 2009 and 2013. This tariff increase considers the impact to the lowest category group, 0-20m³; in other words, the change would affect low-income earners more than other categories.

However, the SONEDE recognizes that this category's tariff should also be increased in the future and that the tariff structure should be reviewed. According to the SONEDE, a tariff increase of 7% per annum between 2014 and 2017 has already been authorized and, due to the importance of setting suitable tariffs, the SONEDE has requested that the World Bank make an assessment for Tunisia.

(2) Wastewater

Royalties are charged by sanitation SONEDE simultaneously charges of drinking water and cover about 56% of total expenses.

Fees for wastewater handling are collected by the SONEDE along with the potable water payments and constitute around 33% of the total charges in Invoice by SONEDE. The wastewater handling fees are paid to ONAS by the SONEDE. This is about 56% of ONAS' total expense. The wastewater tariffs for 2013 were as per Table 6.2-18 and a sample invoice can be seen in Figure 6.2-2.

Table 6.2-18 Wastewater Tariffs in 2013 Showing the Tariff Increase

Code Tariff	Ancienne Tarification de l'ONAS (Former tariffe)			Nouvelle Tarification de l'ONAS (New tariffe)			IAS	
	Consommation (consumption)	Tranche (detail)	Tarif fixe (fixed tariff)	Tarif variable (variiable tarrif)	Consommation (consumption)	Tranche (detail)	Tarif fixe (fixed tariff)	Tarif variable (variiable tarrif)
	0 - 20	0 - 20	1310	17	0 - 20	0 - 20	1310	17
	21 40	0 - 20	1210	28	21 40	0 - 20	1210	28
	21-40	21 - 40	1310	170	21-40	21 - 40	1310	170
	41 70	0 - 20	2960	170	41 - 70	0 - 20	4005	180
1	41-70	21 - 70	3000	269	41-70	21 - 70	4035	285
	71 100	0 - 70	7600	269	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0 - 70	9055	285
	71-100	71 - 100	7000	445		472		
	101 - 150	0 - 70	7980	282	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0 - 70	8460	300
	101 - 150	71 - 150	7300	467		490		
	> 150	0 - 70	8211	282	> 150	0 - 70	8705	300
	> 150	71 et+	0211	572		71 et+		606
2	-	-	8274	588	-	-	8688	617
3	-		8274	756	-		8688	845
4	-	-	8274	1028	-	-	8688	1080
5	-		8274	756 + (Q*373)	-		8688	845 + (Q*410)
6	-		8274	588	-		8688	617
8	-	-	4137	378	-	-	4344	423
9	-	-	4137	294	-	-	4344	309
A			8274	756			8688	845
C	< = 10		8274	547			8688	574
C	> 10		8274	683			8688	717

TARIFICATION DE L'ONAS a partir du 15/8/2013 (facturation Trimestrielle) (PRICING ONAS from 15.08.2013 (Quarterly Billing))

Code Tariff:

1: usage domestique (domestri use)

2: usage industriel conforme aux normes de rejet dans le milieu naturel (indutry, discharge to environment)

3: usage industriel conforme aux normes de rejet dans le réseau public d'assainissement (industry, discharge to the public sewerage network)

4: usage touristique (tourism industry)

5: usage industriel et activités polluantes dépassant les normes de rejet dans le réseau public d'assainissement

(industrial and polluting activities exceeding the standards for discharge into public sewer network)

6: usage industriel et activités polluantes non branché (industrial, and polluting activities not connected)

8: usage industriel conforme aux normes de rejet dans le réseau public d'assainissement bénéficiant d'une réduction de 50% des redevances (industrial-standard discharge into the public sewer system with a discount of 50% tariff)

9: usage industriel conforme aux normes de rejet dans le milieu naturel bénéficiant d'une réduction de 50% des redevances (industrial-standard discharge into the natural environment with a discount of 50% tariff)

A: usage Administratif (administrative use)

C: usage commercial, professionnel ou autres (commercial, professional or other)

Source: ONAS



Source: CRDA

Figure 6.2-2 Sample Invoice

6.2.6 Water treatment process

(1) Standard water treatment process

The standard water treatment process consists of sand filtration and sterilization. If the removal of iron from well water is necessary, an aeration system is adopted. Most of the sand filters are horizontal types. Suspended solids, including iron, are collected by the sand filters. The sand filters are back washed periodically and regenerated. The next stage is sterilization by chlorine dosing, after which it enters the distribution network.

(2) Desalination process

In desalination plants, raw water from wells, surface water and seawater are pre-treated by microfiltration or ultrafiltration, to remove suspended solids, and by chemical coagulants, which are added to improve the destabilization of fine particles. Membrane modules require correct arrangement in order to protect them from precipitation of hardness and silica (see Figure 6.2-3).



Figure 6.2-3 Typical Flow Diagram of a RO Plant

(3) Current wastewater treatment process

Conventional wastewater treatment processes consist of

- removing suspended solids under gravity (physical treatment by a sedimentation process, which is the primary treatment);
- removing organic matter by a biological treatment process (aeration or activated sludge processes, which is the secondary treatment); and if necessary
- further removal of fine suspended matter, including nitrates, phosphates and organic matters via tertiary treatment.

In southern Tunisia, most wastewater treatment plants (WWTP) use the conventional method, above. Usually only primary and secondary treatments are applied. Old WWTPs adopted only lagoon systems. Table 6.2-19 shows the major process at each WWTP.

Governorate	WWTP	Major Process		
	Jerba Houmt Souk	Natural Lagoon Process		
	Jerba Sidi Mehrez	Natural Lagoon Process		
	Zarzis Souihel	Sedimentation Activated Sludge		
Médenine	Zarzis Lella Meriem	Natural Lagoon Process		
	Zarzis Ville	Sedimentation Activated Sludge		
	Médenine	Sedimentation Activated Sludge		
	Jerba Aghir	Sedimentation Activated Sludge		
Tataouine	Tataouine	Sedimentation Activated Sludge		
	Gabès	Sedimentation Activated Sludge		
Cable	El Hamma	Sedimentation Activated Sludge		
Gabes	Metlaoui Ouedhref	Sedimentation Activated Sludge		
	Mareth Zarrat	Sedimentation Activated Sludge		
K (1.1)	Kébili	Sedimentation Activated Sludge		
Kebin	Douz	Sedimentation Activated Sludge		
Тодоця	Tozeur	Sedimentation Activated Sludge		
Tozeur	Nefta	Sedimentation Activated Sludge		
Cafaa	Gafsa	Natural Lagoon Process		
Gafsa	Metalaou	Sedimentation Activated Sludge		

Table 6.2-19 Major process in each STEP

Source: ONAS

(4) Advanced wastewater treatment process

Recently, more advanced treatments have been developed for the purpose of increasing the re-use of treated wastewater. In Tunisia, treated water from wastewater treatment plant is not widely accepted. The reasons are explained by:

- Quality of treated water is not satisfying the certain standards for re-use.
- Restriction in cultures
- Competition from conventional water especially in northern Tunisia
- Seasonality of demand, and lack of inter seasonal storage

but in the future if water shortages occur or supply does not meet demand, then the use of recycled water may increase. In some irrigation and agricultural fields, recycled water is used (see section 6.2.6.5 and Table 6.2-20).

Globally, an advanced treatment method that is often applied is a membrane bio reactor (MBR) system. In Singapore, where water shortages are common, they are promoting wastewater recycling by adopting MBR technology.

(5) Reuse of wastewater

Treated wastewater is used for irrigation and on grassland, like in golf courses and gardens, but the quantity used is generally small. Grassland, which is not directly related to food, is the major application (see Table 6.2-20).

				Units: million m ³ /yea
Governorate	Irrigation	Golf Courses and Grasslands	Other Usages	Total Reused Water
Sfax	2.64	0.68	0.13	3.45
Gabès	0.51	0.26	0.13	0.90
Médenine	0.47	1.74	0	2.21
Tataouine	0	0.68	0	0.68
Gafsa	1.38	0.26	0	1.64
Tozeur	0	1.26	0	1.26
Kébili	0	0.17	0.73	0.90
Total (excluding Sfax)	2.36 (31%)	4.37 (58%)	0.86 (11%)	7.59 (100%)

Table 6.2-20 Wastewater Re-use in the Southern Region

Source: ONAS

6.2.7 Construction costs

(1) Water treatment plants

(a) Standard well

According to CEDA Médenine, the construction costs for one well is around 2,000TND per unit, which includes the well, suction pump and chlorination equipment for sterilization.

(b) **Desalination costs**

The construction costs for desalination plants are much bigger than for a simple well. The cost depends on the salinity of the feed water. There are several desalination methods, such as reverse osmosis (RO), flushing process (Thermal), ion exchange and electric dialysis (ED), but in Tunisia, due to the energy costs, the RO method is adopted. The salinity affects the operation pressure of the feed pump. Brackish water desalination and seawater desalination is considerable for increasing the production capacity in this region.

Figure 6.2-4 shows the relationship between plant production capacity (m^3/day) and construction costs (plant costs in USD/m³/day). In cases with processing capacity above 40,000m³/day, the plant construction costs are less than USD1,000, which means that total cost is approximately USD40,000,000. This is only magnitude of the cost.



Source: Global Water Intelligence (2005-2015)

Figure 6.2-4 Construction Cost of Seawater Desalination Plant

(2) Wastewater treatment plant

According to ONAS's Médenine branch, the construction costs for a conventional WWTP is $4TND/m^3/day$. Table 6.2-21 shows the actual project costs for the Médenine governorate.

WWTP	Construction Cost (thousand / TND)	Treatment Capacity (m ³ /day)	Unit Cost (TND/m3/d)
Médenine	10,173	8,870	1.2
Zarzis	7,546	1,335	5.6
Djerba Houmt Souk	16,798	3,500	4.8

 Table 6.2-21
 Construction Cost of WWTP in Médenine

Source: ONAS Médenine

The ONAS's Gabès branch reported that WWTP construction cost, as per Table 6.2-22, is cheaper than in Médenine.

WWTP	Year	Construction Cost (thousand TND)	Treatment Capacity (m ³ /day)	Unit Cost (TND/m ³ /day)
Gabès	1995	6,500	17,270	0.4
El Hamma	2004	600	4,060	0.9
Zarrat	2007	3,800	2,860	1.3
Matmata	2007	3,700	2,700	1.4

Table 6.2-22 Construction Cost of WWTP in Médenine

Source: ONAS Gabès

The above data is an approximation of the actual project costs in the past. The information indicates that the cost of WWTPs depends on several factors including the type of the treatment process, the addition of cogeneration facilities, the nature of the land, the flow of byproducts (transfer of treated wastewater and sludge), the scope of the project, etc.

(3) Pipeline networks

(a) Potable water distribution network

The SONEDE reported that the construction costs for potable water pipework as per Table 6.2-23.

Diameter (mm)	TND/km
500	275
800	545
1000	755
1400	1380
1600	1730

Table 6.2-23 Construction Cost for Ductile Pipework in Tunisia

Source: the SONEDE

In addition, CRDA Médenine reported that the approximate cost for pipework is USD350/m (= TND560/m, with the exchange rate of 1.6TND=1USD) for 8-12 inch (200-300mm) diameters. This is more expensive than the above Table 6.2-23. The reason seems to be short distance costs in rural areas.

(b) Sewerage collection pipes

According to ONAS, current pipeline and pomp station construction cost are introduced as per Table 6.2-24, Table 6.2-25 and Table 6.2-26.

Estimation des coûts unitaires du linéaire (TND/m) de conduite gravitaire installée en tranchée

Salinite des sols Soil Solinity	Conduite Type of Pipe		Diametre DN Diameter	Avec decapage et retablissement de la chaussee routiere		Sur terrain naturel sans chaussee routiere				
Son Saminy			Diantete	Sur terrain normal Normal field	Sur terrain rocheux Rocky field	Sur terrain normal Normal field	Sur terrain rocheux Rocky field			
			250	120	170	85	135			
	Conduite		315	130	180	95	145			
	gravitaire en PVC (SN8)		400	160	210	125	175			
	PVC pipe		500	205	255	165	naturel sans e routiere Sur terrain rocheux Rocky field 135 145 145 215 320 460 565 455 705 980			
Normal			630	310	360	270	chaussee routiere ain Sur terrain al rocheux field Rocky field 135 145 175 215 215 320 460 565 455 705 980 980			
	Beton revetu en		800	450	500	410	460			
	PVC/PEHD Concrete with PVC/HDPE		1000	560	610	515	565			
Salinite elevee High salinity			600	445	495	405	455			
	PEHD (PN10) HDPE (PN10)		800	695	745	655	705			
			1000	975	1025	930	980			

Table 6.2-24 Estimated unit costs of linear (TND/m) gravity pipe installed in trenches

Source: ONAS

Estimation des Coûts unitaires du linéaire (TND/m) de conduite de refoulement installée en tranchée

Type de conduite Type of Pipe	Diametre	Avec decapaqe de la chau	e et retablissement Issee routiere	Sur terrain naturel	
	DN	Sur terrain normal	Sur terrain rocheux	Sur terrain normal	Sur terrain rocheux
	125	110	160	75	125
	160	120	170	85	135
Conduites refoulement en	200	130	180	95	145
PEHD (PN10)	250	150	200	115	165
HDPE pressure pipe	315	180	230	145	195
	400	230	280	195	245
	1000	975	1025	930	980

Table 6.2-25 Estimated unit costs of the linear (TND/m) pressure pipe installed in trenches

Source: ONAS

Formules pour estimation des coûts d'investissement des stations de pompage

		• • •	
Туре	Description	Plage de capacités de la station (L/s) Capacity range of the station (L/s)	Coût Total de construction (en DT)
SP1A	Compacte avec les vannes à l'intérieur du puits	<10L/s	80000
SP1B	Compacte avec chambre de vannes	<10L/s	100000
SP2A	Béton avec panier vertical	10 à 150 L/s	16500*Q ⁰⁶⁵
SP2B	Béton avec dégrilleur mécanique vertical	10 à 150 L/s	23500*Q ^{0.65}
SP3A	Béton avec panier en canal	>150 L/s	16500*Q ⁰⁶⁵
SP3B	Béton avec dégrilleur mécanique en canal	>150 L/s	23500*Q ⁰⁶⁵

Table 6.2-26 Formulas for estimating capital costs of pumping stations

Note : Q = capacité de la station de pompage

Source: ONAS

6.3 Power Supply

6.3.1 Current situation of power supply network

A national electricity transmission network is shown in Figure 6.3-1, and specifications of power plants installed at the moment are shown in a Table 6.3-1.



Source: elaborated from data of STEG, Rapport Annuel 2012

Figure 6.3-1 National transmission network

Site	Number	Year	Capacity (MW)	Constructor
				Thermal power plant
Radès A	2	1985	2x 170	Mitsubishi
Radès B	2	1998	2x 180	Ansanldo
	cycle (TV) power plan			
Sousse B CC	2x TG + 1x TV	1995	364	ALSTOM
Ghannouch CC	1x TG + 1x TV	2011	425	ALSTOM
				/SNC Lavalin
Sousse C	1x TG + 1x TV	2013 Fin	425	Ansaldo
IPP Radès II	2x TG + 1x TV	2002	471	ALSTOM
				Gas turbine plan
Bir M'cherga	4	2013-1997	2x 118-2X120	General Electrric
Bouchemma 3	1	1998	118	General Electric
Thyna	3	2010-2007-2004	126-122-118	General Electric
Goulette	1	2005	118	General Electric
Feriana	2	2009 - 2005	126-118	General Electric
TG 20/30**	17	1984-1973	10x 22 + 7x 34	Fiat / Alstom

Table 6.3-1 Specifications of	Power Plans
-------------------------------	-------------

C *-		**	Puissance	a					
Site	Number	Year	(MW)	Constructor					
	Wind power Plant								
				MADE					
Daoud Sidi	70	2000	53.6	(ex Gamesa)					
Metline	71	2012	100	Gamesa					
El Kchabta	71	2012	190	Gamesa					
			Hydra	ulic power Plant					
Sidi Salem	1	1983	36	Charmilles					
Nebeur	1	1956	13	Neyrpic					
Aroussia El	1	1956	4.8	Franco Tosi					
	x amont1	1958	8.5						
Fenana	2x aval	1962	1.2	Neyrpic					
Kessab	1	1969	0.66	Russie					
Bouhertma	1	2003	0.62+1.2	Alstom					

(Note)*The power stations marked yellow are located in the Southern Region.

** Out of 17 small power stations, Jerba (30MW), Zarzis (30MW) and Central Bibane (28MW), Ghannouche ()are located in the Southern Region.

Source: elaborated from data of STEG, Rapport Annuel 2012

6.3.2 Existing load demand

(1) Annual energy production

Evolution of volume of electric power generation and composition of energy source for the power generation are shown in Figure 6.3-2. The generation of electricity has been steeply increasing from 1980, and reached to 16,144GWh in 2011. Although power generation with oil was predominant until the 1980s, from the 1990s, the power generation with natural gas has been developed, which takes the lead of increase in power generation. In 2011, 98.8% of electricity was generated with natural gas.



Source: IEA, Statistics of Energy Balances of non-OECD countries 2012



(2) Energy consumed according to section

Change in energy consumption, converted into oil consumption, by consumption sector is shown in Figure 6.3-3. The figure also includes energy consumption other than electric power. Despite the steep increase from 1980's, same as electricity generation, the consumption has stopped about 7Mtoe in recent years. The energy consumption by industrial and transportation sector has increased six times or more compared to the consumption in 1971, while the consumption in other sectors have grown at the level about 4.6 times of the consumption in 1971.



Source: IEA, Statistics of Energy Balances of non-OECD countries 2012

Figure 6.3-3 Change in annual energy consumed by section of consumer

(3) Electrification ratio and demand curve

The electrification ratio in 2012 in the whole Tunisia is 99.6%. The electrification ratios by governorate in the Southern Region are shown in Table 6.3-2. All ratios are close to 100% and are maintained at the high level. The load demand curve of Tunisia is shown in Figure 6.3-4. The peak demand was recorded at 12:00 on July 11, 2012 with the load of 3,233 MW. The total capacity of the power plants installed in the whole country as of 2013 is 4,482.58 MW. The load factor is about 0.72.

Southern Region						
	Ratio of electrification (%)	Total users				
Kébili	99.7	40,828				
Gafsa	99.5	96,977				
Gabès	99.3	109,253				
Tozeur	99.6	466,849				
Médenine	99.5	170,078				
Tataouine	99.4	47,911				







Figure 6.3-4 Daily load demand curve

Source : STEG, Rapport Annuel 2012

6.3.3 Policy framework

The Ministry of Industry, Energy and Mining is in charge of energy administration, and the General Direction for Energy (DGE) in MIT is responsible for the national energy policy and the planning of energy infrastructure. Tunisian Company of Electricity and Gas (STEG: *Societe Tunisienne del' Electricite et du Gaz*), which was established in 1962, is undertaking the generation, transmission and distribution of the electric power.

Liberalization of the energy market has been performed since 1996. The IPP law opened the electricity market. However, STEG is still the largest player in the market.

The government has left exploration, development, and production of the petroleum to *Enterprises Tunisienne d' Activites Petrolierres* (ETAP), which is a national oil company. The government has continued production of the natural gas corresponding to a domestic demand. However, based on the natural gas promotion-of-utilization, incentive measure in 2006, use of the natural gas has been managed by STEG.

6.3.4 Institutional framework

The organisation structure of STEG is shown in Figure 6.3-3. The organisation is divided according to the functions at the central level and the aerial offices take charge for distribution of electric power and gas. The Southern Region is divided into two areas, namely south west and south east areas. The south west area has jurisdiction of Gafsa and Tozeur and the south east area has jurisdiction of Gabès, Médenine, Tataouine and Kébili.

6.3.5 Legal framework

The unified law which defines a framework of the power sector does not exist in Tunisia. Many different statutes and laws have been released during the past 20 years, and these have formed the mechanism of the electricity market. Under supervision of DGE, CSPIE (*Commission Supérieure de la Production Indépendante d'Electricité*) was establied separately from STEG as the basis of the IPP scheme enacted in 1996, and as the higher



Source : STEG, Rapport Annuel 2012

Figure 6.3-5 Organisation chart of STEG

regulatory commision on electric power generation. CIPIE (*Commission Interdépartementale de la Production Indépendante d'Electricité*) is a commission in charge of coordination among the power producers, including STEG. CSPIE determines and implement a major process and concludes contracts with IPPs, while CIPIE works under CSPIE, takes charge of selection of a project, the contract negotiation between IPPs and CSPIE, and reservation of the public subsidy.

In 1985, the government established organizations for renewable energy -- ANER (*Agence Nationale des Energies Renouvelables*) -- being inherited by ANME (*Agence Nationale pour la Maitrise del'Energie*) based on 2004 "Law No. 2004-72." This ANME serves as an organization that mainly takes charge of renewable energy administration.

6.3.6 Tariff structure

Electric power tariff set by STEG are shown below.

- 1) For the business-use (in the case of the business-use high-voltage)
 - Basic charge: 7,500 millime/kW•month
 - Usage fee: [Day] 148millime/kWh, [Peak in summer] 233millime/kWh,

[Evening Peak]212 millime/kWh, [Night]111millime/kWh

*September-May: Day=7:00-18:00, Evening Peak=18:00-21:00, Night=21:00-7:00

*June-August: Day=6:30-8:30 13:30-19:00, Peak in summer =8:30-13:30, Evening Peak=19:00-22:00, Night=22:00-6:30

- 2) For the general-use (in the case of amount-of-used-electricity 1~200 kWh/month)
 - Basic charge: 500 millime/kVA•month
 - Usage fee: 140 millime /kWh

(1) Value Added Tax (VAT) is to be applied to rate:

+ 18% of all charges and the energy prices (excluding taxes) for uses other than the irrigation

+12% on the price of energy (excluding taxes) Use irrigation

(2) increase the surcharge Municipal: 5 mill / kWh

Source: STEG (1st May 2014)

6.3.7 Renewable energy

The statistical information of renewable energy is shown in Table 6.3-3. Biofuel and use of wastes are progressing from the 1970s. Photo-voltaics were introduced from 2000 and are growing up in recent years.

							(Ont: F	whole on con	version)
category	1971	1973	1980	1990	2000	2005	2009	2010	2011
solar, wind, tide, etc.					0.002	0.004	0.003	0.008	0.012
biofuels and waste	0.42	0.43	0.5	0.64	0.93	1.12	1.25	1.17	1.35
total	0.42	0.43	0.5	0.64	0.932	1.124	1.253	1.178	1.362

Table 6.3-3 Quantity of renewable energy by category

Source: IEA, Statistics of Energy Balances of non-OECD countries 2012

In order to support ANME in November, 2003, a programme of ER2E (Promotion of Renewable Energy and Energy Efficiency) was started by cooperation of Tunisia and Germany. As a law for promoting renewable energy, there are "Law No. 2004-72" of rational use of energy and "Law No. 2009-7 (revised)". The latter sets up the following three targets.

- 1) Energy saving
- 2) Promotion of renewable energy, and substitution of fossil fuel
- 3) Coexistence of economy and environment

Furthermore, four fields of the renewable energy which advance preponderantly are shown.

- 1) Expansion of wind power generation
- 2) Introduction of advantage of solar heat utilization
- 3) Introduction of Photo-voltaic generation or the improvement in an electrification rate of rural areas, irrigation, and desalinization of sea water
- 4) Introductory promotion of waste use, geothermal energy, and small scale hydropower

The power producer can consume the generated electric power by himself, or can do consignment supply using the electricity grid of STEG. Or they can also sell the surplus of the generated electric power.

6.3.8 Current Issues related to power supply

Major issues on the electricity supply in Tunisia are as follows:

- ✓ The pace of expansion of energy demand is continuing to growth at 4% every year, and depends mostly on fossil fuels, such as natural gas.
- ✓ Power generation with fossil fuels discharges greenhouse gas, and cause impacts on environment.
- ✓ However, since the energy is closely related to the economy of Tunisia, restriction of the power demand is difficult.
- ✓ Therefore, introduction of renewable energy and raising of energy efficiency are major challenge for the future.

Major issues on the power supply in the Southern Region are as follows:

- ✓ Electrification ratio recorded in the Southern Governorates of Kébili, Gafsa, Gabès, Tozeur, Médenine, and Tataouine, as given in Table 6.3-2 shows that the power grid is well developed and meets the need of load.
- \checkmark The connection of new plants in the distribution network will made in response to requests.

6.3.9 Construction cost

The costs for construction of one new kilometre of electric distribution lines are estimated as follows based on information provided by STEG:

- Construction cost of underground distribution line: 1,000,000 DT/km
- Construction cost of overhead distribution line: 500,000 DT/km

6.4 Telecommunications

6.4.1 Current situation of telecommunications network

(1) Diffusion rate of the telephone service

The diffusion rate of telecommunications is shown in Figure 6.4-1. The diffusion rate went over 100% during the period from 2004 to 2010, and is still continuing growing. There was no conspicuous difference between the whole country, the south west area, and the south east area in 2004. However, afterwards, the telecommunication service or the percentage of household owing a telephone was extended greatly in south east area and the percentage falled in 2012.



Source : Statistiques Tunisie, Rapport Annuel sur les Indicateurs d'Infrastructure 2012

Figure 6.4-1 Diffusion rate of telecommunications

(2) Subscribers

The evolution of number of subscribers for fixed and mobile phone in the Southern Region and the whole Tunisia is shown in Figure 6.4-2 and Table 6.4-1. Although reduction in the number of subscribers was seen in the Southern Region in 2012, the figure is stable in the whole Tunisia and is constantly growing. Although the number of subscribers of a fixed line is changing to the fixed level nationally, the number of subscribers of the mobile phone shows big growth.



Source: Statistiques Tunisie, Rapport Annuel sur les Indicateurs d'Infrastructure 2012

Figure 6.4-2 Number of subscribers in the whole Tunisia and the Southern Region

			1994			2004			2010			2011			2012	
		total	Fix	Mobile	total	Fix	Mobile	total	Fix	Mobile	total	Fix	Mobile	total	Fix	Mobile
	GABES	14.9	14.9	0	142.6	35.7	106.9	501.6	35.8	465.8	515.9	35.8	480.1	400.3	33.1	367.2
	MEDENINE	16	16.0	0	249.1	60.9	188.2	748.3	61.8	686.5	953.7	61.8	891.9	555.8	52.6	503.2
	TATAOUINE	5.6	5.6	0	60.4	15.3	45.1	150.4	14.4	136	166.6	14.4	152.2	144.9	13.1	131.8
South Region	GAFSA	8.7	8.7	0	124	31	93	309.6	28.6	281	402.3	28.6	373.7	428.8	24.9	403.9
	TOZEUR	3.9	3.9	0	55.3	11.1	44.2	197.1	11.4	185.7	207.4	11.4	196	119.9	9.2	110.7
	KEBILI	4.1	4.1	0	63.8	13.8	50	188.8	14.9	173.9	218.8	14.9	203.9	278.2	13.7	264.5
	total	53.2	53.2	0	695.2	167.8	527.4	2095.8	166.9	1928.9	2464.7	166.9	2297.8	1927.9	146.6	1781.3
Tunisia	totel	502 5	475.5	27	49392	1203 5	3735.7	12331.8	1217.6	111142	134727	12176	122551	13946.9	1105.6	128413

 Table 6.4-1
 Change in the number of subscribers by type of network

Source: Statistiques Tunisie, Rapport Annuel sur les Indicateurs d'Infrastructure 2012

(3) Internet

Evolution in the connection speed to the international network of the Internet is shown in Figure 6.4-3. The speed is increasing every year and has become 82.5 Gbps, about 7 times compared to 2008, in the recent years (2012 and 2013). The international network around Tunisia is shown in Figure 6.4-4. There are connections with "Sea Me We 4" that has 1,331 Gbps, and a "Didon project" that has 16,000 Gbps with Orange and Tunisiana. Domestic fibre optics cable of 32Gbps has been constructed.



Source: Statistiques Tunisie, Rapport Annuel sur les Indicateurs d'Infrastructure 2012

Figure 6.4-3 Evolution of international network speed



Source: Ministry of Communication Technologies and Digital Economy

Figure 6.4-4 International network environment

The backbone in Tunisia is as shown in Figure 6.4-5. Each city is connected by the high-speed network of 32-Gbps class within the city, and by the sub-network of 10-Gbps class between other cities.



Source: JICA Expert Team, elaborated based on a variety of information

Figure 6.4-5 Domestic backbone

(4) Coverage of mobile phone services

The area covered by the mobile phone services by Tunisia Telecom and Orange is illustrated in Figure 6.4-6. The figure shows the area of Orange (marked with red and orange) and the area of Tunisia Telecom (marked with blue). In almost all areas covered by Orange, the service by Tunisia Telecom

is also available. A mobile phone can be used in almost all the areas except some area, where people very sparsely dwell in the Southern Region.

6.4.2 Political framework

Tunisia signed with WTO the agreement, which will impose mitigation of the duty on telecommunications businesses in 1997, and has advanced liberalization in telecommunication services. In order to establish the advanced system, the telecommunication procedure is defined in the regulation of 2001.

The regulation provided the procedure regarding the followings:

- Introduction and management of telecommunications communication network
- Supply of telecommunications service
- Supply of broadcast service
- Management of the resources about telecommunications

Then, the regulation was revised in 2008 and the provisions were modified to be suitable for more liberalized management and some provisions were added for interconnection, sharing of the infrastructure, etc.



Source: homepage of Tunisia Telecom and Orange

Figure 6.4-6 Coverage of mobile phone

6.4.3 Institutional framework

The organization structure of the Ministry of Information and Communication Technology as of September 2014 is shown in Figure 6.4-7. The organization of Department of Telecommunications is divided into five directorates, which superintend information and communication technology. Moreover, a business organization has established aside from the Ministry (refer to Figure 6.4-8). An entrepreneur like Tunisia Telecom and regulatory authority like *Agence Nationale des Frequences* (ANF) coexist in the organization. The Ministry of Information and Communication Technology was reorganized into the Ministry of Communication Technologies and Digital Economy in February 2015.



Source: Ministry of Communication Technologies and Digital Economy

Figure 6.4-7 The organizational chart of Ministère des Technologies de l'Information et de la Communications



Source: Ministry of Communication Technologies and Digital Economy

Figure 6.4-8 Organization concerning information and telecommunications

6.4.4 Current Issues on Telecommunications

The world ranking on Internet usage is described in "The Global Information Technology Report 2012" of World Economic Forum. In the report, Tunisia is ranked as 35th regarding "Impact of ICT on access to basic services". Moreover, on "ICT use and the government efficiency", Tunisia is placed in the position of the 36th. Due to these high ranks on practical use of ICT, improvement in social and economic environment can be highly expected.

However, the rank of Tunisia on "individuals using Internet" is in the position of the 71^{st} . On "Households with personal computers", the position is in the 92^{nd} . For "Mobile broadband subscriptions", the position is in the 112^{nd} . On "Accessibility of digital content", Tunisia is ranked as low as 79^{th} , and as 78^{th} on "Secure Internet servers"

6.4.5 Other data

The top 20 place popular media and the top 20 brand names of Internet in Tunisia are shown in Table 6.4-1, according to the information of "socialbakers", which is a site that measures popularity of the media and brand name of the Internet, In recent years, SNS is widely utilized for marketing or social activities. Although television or radio stands the 1^{st} to 5^{th} place for popular media, Facebook takes the position of 6^{th} . The number of Facebook users of Tunisia is ranked as the 39^{th} in the world, despite the rank of 76^{th} on the population in the world (http://ecodb.net/ranking/imf_lp.html), and the 3^{rd} in an African area.

#	Media	(Tunisia) Local	Global	(Tunisia / Global) rate	#	Brand	(Tunisia) Local	Global	(Tunisia /Globa)I rate
1	Mosaïque FM	980,036	1,168,636	83.90%	1	Orange	929663	6690640	13.90%
2	Nessma	781,878	1,818,492	43.00%	2	2 Orange	928570	929079	99.90%
3	National Geographic Abu Dhabi	757,214	6,864,234	11.00%	3	B Tunisiana	779078	851714	91.50%
4	Jawhara FM	728,912	875,862	83.20%	4	ZARA	554847	20782391	2.70%
5	Shems FM (page officielle)	710,487	871,782	81.50%		Carrefour Tunisie (Page	444528	479162	92 80%
6	Facebook	573,696	144,547,004	0.40%		officielle)			
7	MBC4	567,129	6,233,344	9.10%	-	Nokia Tunisie	411703	444489	92.60%
8	Al-3arabi.com	541,594	7,320,714	7.40%	7	Dior	364747	13223309	2.80%
	قــنــا ة – Al Jazeera Channel				8	SAYFCO HOLDING	352971	3259151	10.80%
9	۰۰۰ الـجزيـرة	534,737	6,754,072	7.90%	ę	Tunisie Télécom	345731	383768	90.10%
10	MBC2	498,063	7,075,771	7.00%	10	ZEN	342163	679421	50.40%
11	FRANCE 24	489,653	2,031,452	24.10%	11	Coca-Cola	330549	81047435	0.40%
12	tunisien.tn	404,100	483,064	83.70%	12	Shana Shops	314684	1410602	22.30%
13	www.mayfootekchay.com	399,061	527,671	75.60%	13	Sony Africa	305813	2096888	14.60%
14	tuniscope	386,705	479,699	80.60%	1	Denun Tunicia	305606	255624	95.00%
15	الحرة قـناة Alhurra	370,927	3,737,572	9.90%			303000	305034	85.90%
16	Ounousa.com	358,116	4.393.835	8.20%	18	Danette Tunisie	300662	340426	88.30%
17	Al Arabiva قناة العربية	357 829	6 4 3 8 8 2 4	5.60%	16	NESCAFÉ	299309	16915179	1.80%
18	MBC Action	354 908	4 946 371	7 20%	17	NESCAFÉ	296982	297059	100.00%
19	نت سيدتي savidaty.net	349.683	4.093.087	8.50%	18	B Olfa Turki	296716	1057081	28.10%
20	YouTube	349,154	78.972.347	0.40%	19	Tunisie Travail	292088	321792	90.80%
		010,101		5.10%	20	KAYRA	243557	1849618	13.20%

Table 6.4-2 Popular media and brand

Source: http://www.socialbakers.com/

CHAPTER 7 EXISTING DEVELOPMENT STRATEGIES OF THE SIX GOVERNORATES

7.1 Common Features of the existing development strategies of the governorates

The existing development strategies were formulated in February 2012, around one year and two months after the Jasmin Revolution, with collaboration of MRDP, ODS and advisory committees for development of respective governorates.

The development strategies are composed of the following three chapters, except the strategy of Tozeur, though analyses of opportunities are not strictly or properly those of external conditions but sometimes mixed with those of internal conditions.

- 1) Resources
- 2) Opportunities
- 3) Strategic Economic Sector/Activities

7.2 Development strategies of the governorates

Development strategies of the Governorates of Tataouine, Médenine, Gabès, Kébili, Tozeur, and Gafsa are summarised in Table 7.2-1 to Table 7.2-6.

I. Resources	II. Opportunity	III. Strategic Econon Sector/Activities	nic
1. Human Resources	1. Location	Project	Cost (DT)
- Population: 148,000 inhabitants (September 2011)	Governorate of Tataouine enjoys a privileged	Agricultural Sector	r
 Rate of urbanization: 62% (2010) Occupied active population: 41,882 persons (2008) 	geographical position, opening to neighbouring Libya and Algeria.	Integrated agricultural projects	200
2. Agricultural Natural Resources	2. Adequate Infrastructure	Cows breeding	500
a. Water Resources	Comprised primarily of roads (1,200 km), an industrial zone (10 ha) and another developed	Poultry breeding (meat)	150
- Potential: 117.2 million m ³ /year, (mobilisable-95.7 million m ³ /year, rate of mobilization-74%, exploitation rate-not more than 35%)	zone (14.7 ha) and a modern telecommunications network	Poultry breeding (egg)	350
- Groundwater: 68.7 million m ³ /year, (Deep aquifers-53.6 million m ³ /year, Shallow	3. Institutional Aspect	Rabbit rearing	200
aquifers-15.1 m ³ /year)	Development institutions, associations,	Poultry unit	400
- Runoff water (surface water): 27 million m ³	professional chambers, a higher institute of	Camel breeding (milk)	350
 b. Land/Soil Surface area: 38,889 km² (25% of national total and 43% of the Southern Region) Total agricultural lands: 1.7 million ba (rangelands 88% areas of 	technological studies, a higher institute of art and crafts, a research institute in arid region play important roles in the economic	Planting and distillation of aromatic and medicinal essence	500
arborculture-11%, cultivable lands-1%)	development of the region. 4. Economic Aspect	Plantation of industrial plants	5,000
c. Livestock	a. Agriculture	Well drilling for agriculture	400
- Total herd: 307,270 heads (Goat-113,690, Sheep-184,380, Camel-9,000, Cattle-200)	- Advantages of early production of several tree species and off-season vegetables	Maintenance and repair of agricultural machinery	200
5. Industrial natural resources Governorate of Tataouine is favoured with very rich mineral resources as follows:	especially potatoes offered by the climate	Industrial Sector	1
<i>Gypsum</i> : Reserve in a wide plain of 10-15 km with a thickness of 600 m. ranked at	- Vast rangelands for raising of livestock,	Cement factory	300,000
the second largest in the world. Promising formations are located at Bhir, Mestaoua and Oued Elghar, etc. Three industrial units have already been established. <i>Marble rocks</i> : Large reserves with significant quality and multiple colours are found	 Irrigated perimeters of 7,882 ha (public; 29 zones of 3882 ha, and private; 4,000 	Extraction and manufacturing marble products	3,500
at Ksar Elmorabtine, Oued Elkhil, Elmezar, Béni Ahmed, Oued Yahia Dakianous,	III III IIII IIII IIII IIII IIII IIIII IIII	Brickyard	12,000
Rhach, Dhehibat, etc. Some sites have easy access, and some developers have	as ostrich raising, planting tolerant trees	Manufacturing ceramics	2,500
acquired the neenses.	(olive, palm, etc.) and industrial trees (cactus, jojoba, etc.)	Extraction and manufacturing plaster	4,000

 Table 7.2-1
 Summary of development strategy of Tataouine

I. Resources	II. Opportunity	III. Strategic Econon Sector/Activities	nic
<i>Clay</i> : The formation is spread over large distances at Kerchaou, Beni Mhira, Ksour	- Introduction of organic agriculture and	Project	Cost (DT)
jlidette, Oued Fessi, and all the mountainous part and especially at Douiret Chenini and Guermessa. Various colours (red. vellow, or green) of clay offers different	medicinal, aromatic and ornamental plants	Production of gypsum	500
types of use, red and yellow-ceramics and brick making, and green-potentials for absorption of dyes, metal or oils and cosmetic masks for thalassotherapy	b. Industry	Manufacturing cosmetic products	200
<i>Dolomites</i> : The formations are found at Rehach, Tlelet and Kirchaou to be used for stone wall covering, construction, decoration, sculpture.	- Natural resources, raw materials, mineral water and salts	Manufacturing industrial ceramics	2,000
<i>Silica-rich sands</i> : The layers are located at Ksar ouled Debbab of Bir Amir, Oum Edhiab and the Uni (Delegation of Dhehibat) with high contents of 97% to 98%	- Petroleum sector includes more than 6 major exploitation and transportation	Purification of sand and glass manufacturing	2,000
silica for new uses for silica gel, glassware and microelectronics.	companies and more than 100 other subcontracts of services	Stone crushing	1,500
Brines: They are found Sebkhat Oum Elkhialette (12 km south east of Ksar Aoun of	- Availability of alternative energy sources,	Packing mineral water	6,000
Smar delegation) with reserves 12 million tons (8 million tons of sodium sulphate (Na ₂ SO ₄) with concentration of 99.5% by sulphate. This can be used for	especially solar energy (288 days of	Wool spinning	1,500
manufacturing detergent, paper, soaps, paint, leather, glass, ceramic and acid compounds as well as in the chemical industry and medicine.	sunshine per year) c. Tourism and Handcraft	Modern slaughterhouse for red meat	1,200
<i>Oil fields</i> : Famous fields are El borma and currently Oued Zar, Makhrouga, Arrayech Jnein, etc. The region contributes to 65% of the petroleum production of Tunisia.	- Privileged location between the two tourist centres (Djerba-Zarzis and Tozeur-Kébili)	Maintenance of equipment of petroleum companies	4,000
Mineral waters: Office of balneology showed that the Tataouine Governorate has	- Diversified and rich regional heritage	Tourism Sector	
three layers of mineral waters, Sangho, Elferech and Tataouine where bottling unit is	- Important archaeological and geological	Tourist hotel	2,500
4 Landscapes and monuments	- Specific cultural events (International	Tourist animation unit	500
Governorate of Tataouine is characterized by a heritage sites: Saharan Ksours (Ksar Hdada, Ksar Wled Dabbeb, Ksar Wled Sultan, etc.) Berber villages (Chenini	Festival of Saharan Ksours, Festival of Popular Games, etc.)	Creating camps in desert and oases	500 (unit cost)
Douiret, Guermessa, etc), Saharan circuits, natural parks and archaeological and	- Diversified handcraft activities with more	Rest station for tourist	700
geological sites (Beni Ghdir), sand dunes where people can practice adventure sports,	than 11,000 artisans	Multidisciplinary clinic	3,500
important elements of international tourism (park-Oued Dkouk, oases-Achouch,		Rent-a-car company	700
Tlelet, Elferech, etc.)		Multidisciplinary company in the desert	45,000
		Travel agency	1,000

Source: Development strategy of the Governorate of Tataouine

I. Resour	rces	II. Opportunity	III. Strategic Economic Sector/Activities
 Human Resources Population: 460,300 inhabitants (29.2% of the South, 4 Rate of urbanisation: 78% Labour force: 118,000 persons (25.7% of the populatio) Research potential: Institute of Arid Region and a busine enterprises Institutes of higher education specialized in biology, testudents Diversified natural resources More than 300 days of sunshine per year Water Resources: 107 million m³/year (surface water; 2 m³/year), 9.6 million m³/year – treated water 600,000 ha of rangelands (65% of total area of the gov/400 km of coastline (30% of the total of the country) 80,000 ha for aquaculture such as Lake Boughrara and Useful substances: Clay, Stones, Brine, etc., for industrindustrial salt (sulphate and potassium) Natural, historical and cultural reserves: Privileged geot traditional hospitality, cultural heritage, archaeological Economic Resources 201,300 ha arboriculture, 95.5% of which are olives (4 tons/year of olive and 15,000 tons/yea of oil, almost en 330,000 heads of sheep, 19,000 heads of camels, and 1 production of 7,000 ton/year Annual fishing production of 17,000 tons (15% of the result of 113 industrial companies (employing 10 or more), of w construction materials, ceramics and glass 	 4.4% of Tunisia), n) ness incubator that shelter about ten innovative chnology, information/multimedia with 1,400 20 million m³/year, groundwater; 87 million ernorate, 72% of agricultural lands) Lake Bibène ry of construction material, ceramics, food salt and ographic position, such as coastline, landscape, sites million trees with average production of 50,000 turrely organic one of good quality) ,300 heads of cattle with average red meat national production) with 2,309 inshore boats which 60 are for agro-food processing, 16 are for 	 Médenine Governorate offers many investment opportunities of which the most important are: Organic agriculture (early production of fruits, olive and some vegetables) Medicinal and aromatic plants (crops and extraction of essential oils) Food processing (extraction and packaging of olive oil, fish products, etc.) Ceramic industry Chemical industry (salts) Electrical, mechanical and electronic industries (electrical and electronic components, automotive components) Tourism, especially cultural tourism, conference tourism, rural tourism, desert tourism, sports tourism, tourist entertainment and recreation, spa tourism, ecotourism, etc. Marketing for integrated tourist resort to be performed by private Lella Hadria Jerba with an area of 370 ha and creating hotels and resorts para hotel for a capacity of 6,500 beds, a golf 	 Olive oil production Fishing and aquaculture Production of ceramics Salt products Production of red and white meat Animal products (hair, wool and leather) Handcrafts Alternative tourism International trade Information technology and communication Mechanical and electrical industries
- Dairy products, almost all of the production in the Sour	ui	course and a marina	

 Table 7.2-2
 Summary of the development strategy of Médenine

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities
 Internationally renowned tourist attraction with 166 hotel units offering 49,000 beds (20.5% of the country) A marina, a golf course, a casino, 96 travel agencies, 24 animation centres, 16 thalassotherapy centres for 1,245,000 tourists with more than 8.7 million nights in 2010) More than 1,500 units of production and sales of handcrafts with 12 recommended stores and 30 exporting companies A Archaeological Resources Jiktus is an ancient site located in Djerba Island on Gulf of Boughrara on the ancient road form Cartage to Leptis Magna. Of Punic origin in 6th century B.C., the city was belong to Cartage, and Githis was already an urban city in 1st century AD. In 2nd century it was a municipality under Antonius Pius, and continued to grow as the most beautiful city and a centre among the neighbouring cities. Meninx is an archaeological site in Djerba near El Kantara, was a trading centre founded by Phoenicians, and peaked in the Roman era. Henchir Bourgou is an archaeological site located in the western part of Guella known as antiquity of pottery manufacturing and ancient kilns were discovered there. Ghizen is on the coast of Bourgou and was probably Numidian city, and also known as Ghirba, with which the name Djerba come from. Zita (Hncher Zayen) is a ruin of Cartage era, evidenced by the name of Zita come from "oil" and is located in Zarzis. Palaces are important monuments as archaeological sites, including Hallouf, Ouled Mahdi, Omm Ettar, Médenine, Ben Guerdane, and Zarzis and palaces of mosques, for tourist bases after maintenance. Jewish Temples, "synagogue", were founded upon the arrival of Jews at Djerba Island and are attended by them every year from all over the world today. 	 Activities related to the knowledge economy Handcrafts of all kinds Business park Zarzis is an ideal site for development of foreign trade in particular to Europe, Maghreb countries in the Middle East and Sub-Saharan Africa through development of products in the governorate and the Southern Region (agricultural and fishery products, foods, valorisation of useful substances, other industrial products, activities and services trade, etc.) The park also provides a basis for the supply of operating oil companies operating in multiple oil and gas fields in North Africa and provide services related to their activities 	
Other important sites are Hinchir el Gnoula, and Hiaz.		

Source: Development strategy of the Governorate of Médenine

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities
1. Human Resources TT Population: 366,232 inhabitants oppoint the second se	 The governorate has several investment opportunities in the following areas: 1. Heavy Industries 2. Agriculture and Agro-food processing Ability to produce more fruits, vegetables and flowers in European off-season Development of activities of processing and packaging (including drying, dehydration and freeze-drying, and preserves and semi-preserves) Possibility of production of essential oils, flavours and fragrances 	 Agriculture and fisheries Cropping with geothermal water for export Organic agriculture (pomegranates, dates, olives, vegetables) Extensive breeding of sheep, goats, camels and beekeeping Agro-PPI business with domestic partners with traditional and sustainable foundation in mountainous/oasis area Intensive cattle breeding, secondary processing and introduction of new species (goose, ostrich, turkey, quail, rabbit etc.) Aquaculture of high demand fine fishes for local/international markets Culture of aromatic and medicinal plants in mountainous areas Floriculture Industry and Services Installation of heavy industries utilising valuable substances (sand, clay, bentonite, pink stone, etc.) Processing of agricultural and fishery products (processing, packaging and cold storage) Products of plastics and cardboard (boxes, packaging materials, etc.) Investment in chemical industries

 Table 7.2-3
 Summary of the development strategy of Gabès

Source: Development strategy of the Governorate of Gabès

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I. Resources	П. Орр	ortunity			III. Strategic Economic Sector/Activities
Human Resources	1. Existing Enterprises				- Valorisation of palm products
Population: 154,300 inhabitants (2011), Urbanisation rate: 68,8 %	Sector	Number	Jobs	Exporters	(manufacturing: jam, forage from date wastes, woods and
Labour force: 39,107 persons in (2010)	Agro-food processing	210) 1,213	11	furniture of palm trees, pulp and
Kébili Governorate is located in the heart of the South and has the second largest area after Tataouine	Construction materials, ceramics and glass	22	2 343	1	paper, dates pastry for delicacies, compost from palm
It has a long border with Algeria and is located between the two	Mechanical and electric industries	12	102	0	 Diversification of agricultural
and Tozeur and the port of Gabes.	Chemical industry		3 17	0	agriculture (dates, fruit,
This region is endowed with various natural resources, mainly land to plant, natural rangelands, water resources, useful substances,	Textile, clothing and leather industries	25	5 165	0	livestock, etc.) and medicinal, aromatic and ornamental plants
climate, landscapes, and desert mountains	Various industries	4	189	0	- Use of geo-thermal water for spa
Soil resources: agricultural lands of more than 621,000 ha, of which	Total	322	2 2,029	12	tourism and production of
favourable for various forms of agriculture	2. Enterprises to be created				for aquaculture
Natural rangelands occupy 25.3% of the total area of the governorate and represent 91.4% of the agriculture lands.	Project		Investment (million dinars)	Permanent Jobs	- Valorisation of useful substances (rose of sand, gypsum, red clay,
Water resources per year: traditional water resources; about 268 million m ³ (rainwater; 27 million m ³ , the surface water; 5.49 million	Export of electric energy to Exmarkets	uropean	6,000	2,000	crystal sand, etc.)Renewable energy (solar) for
m ³ and deep groundwater; 236.7 million m ³)	Cold storage		0.142	1	production and export of
Non-conventional water resources mainly from sewage plants around 10.7 million m^3 undeveloped	Expansion of cold storage		1.172	30	- Saharan tourism (adventure.
Exploitation of non-conventional resources is expected for irrigation	Cold storage		1.200	10	camel race, hunting, etc.)
and the livestock development.	Cold storage		0.207	2	
Useful substances: Red clay, stones, sand and salt, etc., are available	Agricultural project		0.254	4	
as raw material in manufacturing industries with industrial investment to diversify the economy and to create jobs.	3-star hotel		4	60	
	Tourist animation centre		2	40	
	Brick factory		15	77	

 Table 7.2-4
 Summary of the development strategy of Kébilli

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities		
3. Natural and cultural heritage Kéhili governorate is rich in natural landscapes/scenes and historical	Project	Investment (million dinars)	Permanent Jobs	
and cultural monuments of Sahara, which may contribute to	Processing of dates	0.475	53	
development of international tourism products such as the Saharan	Processing of dates	0.700	22	
- Oases, water from natural sources and the lifestyle of the population	Cool storage and export of dates	2.500	20	
- Sand dunes to provide visitors spaces of beauty and tranquillity	Cool storage and export of dates	2.370	22	
Zoos related to wildlife of the National Nature Reserve in Jbiil	Production of vegetables and fruits	0.219	10	
- Islamic and Roman monuments scattered across different locations	Production and sales of camel milk	0.075	4	
Festivals and cultural events that contribute to attraction of touristsInfrastructure and collective facilities	Collection of palm waste and production of composts	0.140	18	
Facilities of education, training, and higher education: 78 primary schools, 37 secondary schools/colleges, a higher institute of	Manufacturing furniture of palm woods	0.100	6	
technological studies with 1,400 students and 10 vocational training centres, 2 public centres with a total capacity of 1,380 trainees	Production of traditional handcrafts from camel hair	0.090	8	
- A regional hospital, 3 local hospitals and 56 health centres with 125 doctors including 52 doctors in the private sector with a	Production of animal foods from palm waste	1.200	10	
coverage rate of a doctor for 1,682 inhabitants	Production of fodder from date waste	1.800	10	
An integrated centre available for children and youth in Douz,	Total	6,033.644	2,407	
10 youth centres and a summer centre in Douz				
• A road network of 1,641 km of which 761 km are paved, a network of 322 km paved agricultural roads connecting the villages as well as production sites and agricultural centres to main roads of the governorate				

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities
 Human Resources Population: 103,300 inhabitants (14.7% of the South and 0.9% of the country) Rate of urbanization: 62% (2010) Occupied active population: 29,800 persons (28.9% of the population) Agricultural Resources Date production is averaging 37,000 tons/year (26,000 tons – deglat and 11,000 tons-other species of dates) with an average annual export of 8,000 tons or Dinar 17,000,000 million (30% of the national export), and 15 refrigerating warehouses of capacity with 7,500 tons and conditioning of 18,5000 tons/year Total area of the governorate is estimated at 559,287 ha, including 233,226 ha of Chott (El Gharsa and El Jerid, 42% of the total land), 326,061 ha of useful agricultural land (S.A.U.) (83,603 ha irrigated oasis, 2.6% of the S.A.U.). S.A.U. is divided; 14,330 ha of arable land, 310,000 ha of rangeland and 1,731 ha of forest. 14,150 ha of arable land are divided; 756 ha for market gardening, 31 ha for greenhouse crops, 650 ha for fodder plantation, 8,363 ha of arboriculture/date palms plantation, 6,400 ha for others. S.A.U. is divided: National Lands-352,893 ha (97%), Collective Lands- 9,258 ha, 3,930 ha- Private Land. Total no. of date palm trees: 1,600,000 (950,000-deglat). Average production: 37,000 ton/ year, (26,000 ton/year-deglat). Average of exports: 11,000 ton/year (32 % of national exports) Number of pack-factory dates: 15, Storage capacity: 30,000 tons, Packaging capacity: 18,500 ton/year Average production of gardening products: 8,000 ton/year in 830 ha, Average forage production: 24,000 ton/year. Production of vegetables in greenhouses: 2,500 tons/year Herd of Livestock: Cattle-1,100 heads (850 female), Sheep-65,000 heads (52,000 female), Goats-31,000 heads (26,000 female), Camels-4,500 heads (4,000 female), Chicken-32,000 hens (16,000 laying hens) 	 Oasis agriculture Development of organic agriculture Preservation of native species and development of their products Diversification of agricultural production Integration of livestock into oasis agriculture Development of rain-fed agriculture Development of geothermal agriculture Exploitation of mineral and energy resources Exploitation of phosphate reserves Utilisation of variety of salts (sodium chloride, potassium, palite, sylvite, magnesium, bromide and sulfate salts, etc.). Exploitation of carbonates and sands Alternative energy of solar and wind, particularly solar energy with power plants Diversification of Industrial Base Creating Zones and industrial buildings Development of an industry based on products related to exploitation of solar energy Development of a marketing strategy for products of the region Development of research and development on phosphates and other useful substances with a view to upgrading and creation of SMEs Development of textile, clothing and leather sector with opportunities to develop processing 	 Extraction, exploitation and processing of materials such as clay, sand and gypsum Exploitation of carbonates represented by limestone extraction and exploitation of mineral substances and conversion of phosphate reserves Extraction and exploitation of minerals (sodium chloride, potassium, palite, sylvite, magnesium, bromide and sulfate salts, etc.) Exploitation of geo-thermal water in tourism sector Utilisation of solar energy where the temperature reaches to 42 degrees Celsius in summer Utilisation of wind energy where wind speed reaches up to 100
	activities of wool and hides and national and international sub-contracting	km per hour

 Table 7.2-5
 Summary of the development strategy of Tozeur

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities
 Farmers' organisation: Number of farmers; 8,300, Number of breeders; 2,700, (800 landless), Number of farmers' groups; 81 with 62 groups of agricultural development (Service cooperatives; 4, Sociétés de mise en valeur et de développement agricole (SMVDA); 4, and Sociétés civile de mise en valeur (SCMV); 8 Geo-thermal Resources: Hot springs are used for greenhouse cropping and for therapeutic 	 4. Promotion of Information and Communication Technology Design and development of software, telecommunication services, games, video , e-commerce 	
 and healing purposes since ancient times, especially in El Hamma Djerid. 3. Mineral Resources (Useful Substances) Phosphates: localized mainly in Tozeur-Nafta and in Midés, estimated at 37 million ton reserves for annual extraction of 1.5 million tons over 25 years 	- Development of services of tele-marketing, tele-secretary, consulting, website design, blog creation, translation, design and illustration, accounting, internet sales, support and training	
 Salts: contained in Chott Jerid, namely sodium, chloride, potash, sylvinites, magnesium, sulphates, bromides, etc. Potassium and magnesium reserves are estimated at over 300 million tons. Operation is limited to small scales by artisanal methods intended for tanneries. Carbonates: represented mainly by limestones in Mahassen and Tebaga Kébili, for construction materials and road gravelling. 	 Development of call centres in orders, and service support before and after sale 5. Enhancing Saharan and oasis tourism Restoration of old medinas in Tozeur/Nafta Development of tourist accommodation for 	
 Sands: located in of Sdada in the bottom of the chain of Gafsa 4. Energy Resources Alternative energy sources: solar and wind energy 	 cultural, spa, sports, and ecotourism Preservation of the archaeological heritage Conservation of nomadic and oasis heritage 	
5. Cultural Heritage Unique tourism products of Sahara oasis landscape, archaeological heritage, culture and traditions. A rich handcrafts based on local materials (by-products of palm, wool, camel hair, leather, etc.). Nomadic and sedentary intangible heritage of great wealth and diversity. In mountain oases, tourist circuits for a greater variety of nature with themes of fauna and flora, geographical and geological aspects combined cultural, historical and traditional aspects of	 Offering specific tourism products targeting national and international markets Promotion of various sports tourism Development of agro-tourism in oases through model farms of traditional agriculture 	
 life (Tamaghza, Chbika and Mides) 6. Saharan Oases and Landscapes Saharan oases and scenery, with archaeological heritage, cultures and unique traditions. Tourism industry is very old since the first hotel units back to the early 20th century. Saharan tourism received multiple incentives and public subsidies. Development of tourist zones has led to establishment of new hotel units and increased capacity. Tourism has become an important economic activity and effected in multiple terms of employment and urbanisation. 	 Development of local handcrafts Improving Saharan tours in Tamaghza/Nafta Development of high-end tourisms Improvement of accommodation in harmony with the surrounding landscapes Improving flight operation from Europe, Tunis and Djerba 	

Source: Development strategy of the Governorate of Tozeur
Table 7.2-6
 Summary of the development strategy of Gafsa

I. Resources	II. Opportunity	III. Strategic Economic Sector/Activities
 [Feldspathic Sand] <sidi aich=""> (Stoneware, Ceramic Biscuits and enamels, Porcelain, Glassware)</sidi> [White Dolomite] <moularès and="" mzinda=""> (Ceramic, Glassware, Stationery)</moularès> [Brick Clay] <m'dhilla> (Solid brick, Hollow bricks, Brickworks)</m'dhilla> [Clay for Pottery] <sidi aich=""> (Ceramics)</sidi> [Marble stones] <sidi aich="" and="" guetar=""> (Construction materials, Aggregates for roads, Ornamental)</sidi> [Calcium Carbonate] <m'dhilla> (Building materials, Filler (products), Detergents, Paint, PVC, Glassware, Animal nutrition)</m'dhilla> [Chert] <redeyef> (Filtration of sulphur, Filtration of vegetable oils, Filtration of wine and beer)</redeyef> [Bentonite Clays] <elguetar> (Drilling mud, Discoloration of oils, Adjuvant)</elguetar> Archaeological Sites Roman Pools: Two basins surrounded by high stone walls. They date back from the Roman period (early 2nd century). They are filled with natural sources, and the water is used for irrigation of the oasis. El Borj (La Kasba): It was built in 1434 by the Abu Abdallah Mohamed Hafside. In 1663 the monument was heavily modified and restored during 19th century and partially demolished in 1943. Today it houses an outdoor theatre, where the national festival of Borj takes place in every summer. Archaeological Museum: It consists of two parts: One part "pre-history", which provides tools and weapons made by Capsian 8000 years ago and "Roman" part, which essentially beautiful mosaics in Talh area (Delegation of Belkir). Escargotière (Ramadya or Koudia Souda): Small hill where burnt stones, ash of snail shells and cut stone (flint) remains. It is the place where the Capsian lived there 8000 years ago. Jebel Mida: Located west of the city (on the road to Tozeur). It is a hill with a panoramic view of the oasis and the city. Orbata Park: Its area is 260 ha. It consists of two parts. A zoo that has birds and animals of the desert. A reserve of 220 ha, including 90 ha of forests and a range for gazelles and o	 ZIs (Industrial Zones) are extended. Investment intentions observed. Entrepreneurial culture is clearly improving. Confidence in the future: Actors in Gafsa are confident in the future of their region. High degrees of motivation, commitment and ideas of support structures for investment that is clearly favourable to the development of the region. Industrial development: Diversification of industrial structure Expected more industry units in Gafsa In addition to Compagnie des Phosphates de Gafsa (CPG), Several active businesses by Yazaki, Benetton, ICT companies, chemical group 	Agro-business - Developing value chain of fruits and vegetables - Rear season gardening - Mastery of new farming techniques and introduction of more efficient seeds - Development of storage, processing and packaging of olive oil and medicinal plants, figs, apricots and pomegranates Handcraft - Weaving with local materials for various products - Carpet and wall tapestry with a higher value added - Labelling of local handcrafts Cultural and ecological tourism - Tourism of natural and authentic cultural heritage to introduce customs and traditions of the South, in particular Berber (varied landscapes, picturesque villages, traditions and ancestral customs)

Source: Development strategy of the Governorate of Gafsa

7.3 Distribution of strategic economic activities/sectors

Strategic economic activities/sectors (filières économiques) listed in the existing development strategies of the six governorates are summarised in Table 7.3-1, some strategic economic activities/sectors listed in the development strategies of some governorates are very specific like projects. Besides, strategic economic activities/sectors designated in development strategies of other governorates cover very wide range of economic activities/sectors, such as 'fishery and aquaculture'. Strategic economic activities/sectors, while Strategic economic activities/sectors for other governorates cover almost all sectors of the economy of the regions.

Strategic economic activities/sectors listed in the existing development strategies are not necessarily such activities/sectors that have already been well developed, but those that are new and expected to be developed in the future, being designated according to analyses of existing resources and opportunities of respective governorates.

Strategic economic activities/sectors	Tat.	Méd.	Gab.	Kéb.	Toz.	Gaf.
<agriculture, -processing="" agro="" breeding,="" fishery="" fishery,="" livestock=""></agriculture,>						
* Integrated agricultural development	0					
* Domestic PPI for agricultural development in mountainous and oasis area			0			
* Organic agriculture			0	0		
* Planting and processing aromatic and medicinal plants	0		0	0		
* Planting industrial plants	0					
* Geothermal agriculture (for production off-season vegetables/fruits in greenhouses)			0	0		
* Floriculture			0			
* Cattle breeding	0		0			
* (Intensive) Breeding of sheep and goat			0			
* Poultry breeding (meats, eggs)	0					
* Introducing of new species for livestock breeding	0		0			
* Camel breeding (milk)	0		0			
* Well drilling for agriculture	0					
* Livestock [red meat] and meat processing	0					
* Fishing		\bigcirc				
* Aquaculture (incl. freshwater and geothermal aquaculture)		0	0	0		
* Production of olive oil		0				
 * Industrialization of dates (packaging, cold storage and conditioning/processing dates) 				0		
* Dairy products			0			

Table 7.3-1Strategic economic activities/sectors listedin the existing development strategies of the six governorate

Strategic economic activities/sectors	Tat.	Méd.	Gab.	Kéb.	Toz.	Gaf.
* Fish processing			0			
* Meat processing	0	0	0			
* Other food processing (honey, figs, etc.)			0			
* Maintenance and repair of agricultural machinery	\bigcirc					
<mining industry=""></mining>						
* Industry of palm by-products (production of paper pulp, medical alcohol, biomass, wood processing, furniture)				0		
* Mechanical, electrical and electronic industry		0	0			0
* Development of chemical industry			0			
* Maintenance of equipment for petroleum companies	0					
* Production of cement	0					
* Extraction of marvel stones and production of building materials	0				0	
* Production of brick	\bigcirc			0	0	
* Extraction and production of gypsum/plaster	\bigcirc			\bigcirc	\bigcirc	
* Manufacturing pottery/industrial ceramics	\bigcirc	\bigcirc		0	0	
* Manufacturing glass/glassware	\bigcirc			0		
* Packaging/bottling mineral water	0					
* Installing heavy industries utilising valuable substances (clay, bentonite, pink stone, tec.)			0			
* Developing conversion of phosphate reserve					0	
* Extraction and exploitation of salts (sodium chloride, potassium, palite, sylvite, magnesium, bromide and sulfate salts, etc.)		0			0	
* Processing by-products of livestock breeding (wool, hair, leather, etc.)	0	0	0			
* Production of plastic and cardboard packaging materials			0			
<tourism></tourism>						
* Tourist hotels	0					
* Tourist animation stations	0					
* Rest stations	0					
* Rent-a-car-company	\bigcirc					
* Multidisciplinary clinic	\bigcirc					
* Travel agencies	0					
* (Upgrading) Beach tourism			0			
* Alternative tourism, diversification of tourism, integration of tourist circuits		0	0			
* Geothermal tourism (Rehabilitation and heath tourism)			0	0	0	
* Promotion of transit tourism by creation of cruise docks			0			

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Strategic economic activities/sectors	Tat.	Méd.	Gab.	Kéb.	Toz.	Gaf.
* Saharan tourism. (A natural environment that marriage between oasis and desert; excursions, camel racing, motorcycle rally, balloon rides, film activities)	0			0		
<others></others>						
* Renewable energy (power generation and merchandising by the wind and photovoltaic energy, for domestic use, for STEG, for international scale and for other use - the desalination of water)				0	0	
* Manufacturing and marketing photovoltaic or solar panels						0
* Development of energy audit services						\bigcirc
* Creation of a centre of study on renewable energy						0
* Handcraft		0				
* International trade (zone of logistic activities)		0				
* Developing ITC services		0				\bigcirc
* Development of services to enterprises (consulting, financial security services, etc.)			0			0
* Upgrading environmental management and pollution control			0			

(Source: JICA Expert Team according to the strategies of the six governorates