MINISTRY OF PUBLIC WORKS
AND TRANSPORTS (MPWT)
REPUBLIC OF TOGO

The Project for The Study on Togo Logistics Corridor Development in The Republic of Togo

FINAL REPORT

OCTOBER 2013

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
CENTRAL CONSULTANT INC.
YACHIYO ENGINEERING CO., LTD.

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August 2013

PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the Project for the Study on Togo Logistics Corridor Development in the Republic of Togo and entrusted the study to Central Consultant Inc. and Yachiyo Engineering Co., Ltd.

The team held discussions with officials of the Government of the Republic of Togo and conducted a master plan study and feasibility study on the development of the Togo Logistics Corridor from August 2012 to August 2013. After returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will promote the project and enhance friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Togo for their tremendous cooperation with the study.

October 2013

Kazunori MIURA
Director General
Economic Infrastructure Department
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

October 2013

Mr. Kazunori MIURA
Director General
Economic Infrastructure Department
Japan International Cooperation Agency

Dear Sir,

We are pleased to submit herewith the final report on the Project for the Study on Togo Logistics Corridor Development in the Republic of Togo. This study was conducted by Central Consultant Inc. in association with Yachiyo Engineering Co. Ltd. between August 2012 and August 2013 in Togo.

During the course of the study, we examined the present conditions of the transport network in Togo, prepared the Togo Logistics Corridor Development Plan and conducted feasibility studies of higher priority projects. These are the construction of a bypass on the steep gradient section and two bridges on the Katchamba–Sadori road, which are both on RN17 as an alternative to the RN1 route.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of the Japan International Cooperation Agency and the Embassy of Japan in the Republic of Côte d'Ivoire. We would also like to thank the officials concerned of the Ministry of Public Works and Transports and other relevant authorities in the Government of the Republic of Togo.

We hope this study will assist the development of the Togo Logistics Corridor in the Republic of Togo.

Yours faithfully,

Hikaru NISHIMURA
Team Leader
Project for the Study on Togo Logistics Corridor Development in the Republic of Togo

ABSTRACT

1. Outline of the Study

The Togo Logistics Corridor (TLC) has significant potential for the economic and social development of Togo and the region. The 667-km corridor, stretching from Lomé Port, a gateway to Togo, to the one stop border post (OSBP) at Cinkassé, to the border with Burkina Faso, includes roads, bridges, and railway, and is a mainstay of the country.

The objectives of the study are: 1) to prepare the TLC Development Master Plan with a target year of 2030, 2) to carry out the Feasibility Study (F/S) for the selected priority project in order to confirm the viability of the projects, 3) to share the results of the Study with development partners, and 4) to develop the capacity of personnel in the Ministry of Transport (MT) and the Ministry of Public Works (MPW) of the Government of Togo (GoT).

2. Major Findings and Problems of the Transport Sector in Togo

The major findings and problems of the transport sectors are as follows:

- A number of challenges confront the road sub-sector: 1) inadequate funds for investment and maintenance, 2) the non-control of axle loads, 3) inadequate attention to road safety, and 4) the lack of viable alternative routes to the main north-south corridor.
- There are many problems concerning the railway development policy, regulations, facilities, train operation and maintenance.
- The major problems of the port and maritime sub-sector are: 1) shortage of capacity of the mineral quay, 2) insufficient capacity of on-land facilities, and 3) traffic congestion at Sahel Terminal.
- The major issues of transit transport on the TLC are: 1) the low level of maintenance at Lomé Port and deteriorated condition on RN1, 2) aged freight vehicles, and overloaded and oversized vehicles, 3) complicated and inefficient customs clearance processes, customs clearance document forms that are not interchangeable between Togo and Burkina Faso, and 4) requests for bribes at the port, border and checkpoints.

3. TLC Development Plan and Programme

The TLC Development Plan provides a comprehensive plan for the development of transport infrastructure including both hardware and software in order to achieve general economic growth. One aim is to cope with increasing traffic demand in the future, and another is to support development potential in developing local areas.

Based on the concepts for development of the TLC as well as directions to achieve the targets of the TLC development, various alternatives are prepared for the evaluation. These alternatives mainly consist of improvement of roads and rehabilitation/construction of the railway.

Based on the overview for the development of the TLC, alternative transport networks for

evaluation, including traffic assignment and the essential factors of the network, are proposed. The Economic Internal Rate of Return (EIRR) of respective projects suggested in the TLC Development Plan and those projects with an EIRR of more than 12% are considered to be economically feasible.

Based on the results of evaluating each item of the alternative transport networks, the alternative of "Combination of Intermodal and Multi Modal Development Plus Alternative Road Network" is selected as the most desirable transport network for the development of the TLC, and the projects included in this alternative are selected for the development of the TLC by 2030.

4. Results of Feasibility Studies

The Study Team selected two projects for the feasibility study: 1) construction of a bypass at the steep gradient section between Bouzalo and Binako (Malfakassa Bypass), and 2) construction of two bridges across the Kara and Koumongou Rivers on RN17, after consultations with the Steering Committee and JICA.

The Study Team conducted natural condition surveys, preliminary design, preliminary cost estimation, environmental and social study, and analyses of the feasibility of these two projects in terms of technical, economic, regional development, environmental, and social considerations.

- From the results of the economic analysis, construction of the Malfakassa Bypass project is recommended for implementation, together with upgrading of the Katchamba–Sadori road.
- Construction of the two bridges across the Kara and Koumongou Rivers is also recommended for implementation, together with upgrading of the Katchamba–Sadori road regardless of construction of the Malfakassa Bypass.
- As a result of overall evaluation, both projects are considered feasible for implementation at an early stage.

5. Recommendations

(1) Recommendations in the Master Plan

- The newly established Ministry of Public Works and Transports (MPWT) can inform the outcomes of the Study to development partners for possible assistance with project implementation, and coordinate with them for effective and efficient cooperation on the projects proposed in the TLC development programme.
- The GoT should start implementing controls on axle load and oversized vehicles, together with legal initiatives.
- The GoT should review the contents of the Master Plan in 2018.
- The GoT should prepare a F/S for construction of a new railway line between Lomé and the border of Burkina Faso by standard gauge as a long-term plan.
- The GoT should prepare a F/S for the expansion of the mineral berth at Lomé Port.
- The MPWT needs to secure sufficient budget for the operation and maintenance of the roads.
- The MPWT needs to strengthen its organisation and develop the capacity of personnel.

- The GoT should legislate the Railway Business Act.
- In order to strengthen the competitiveness of the TLC and to attract transit cargo, it is essential to shorten the transport time on the TLC and to reduce costs by efficiently operating OSBP, reducing check points, improving roads, enhancing port security, and improving the custom clearance procedures at Lomé Port.
- As other corridors are also making efforts to attract transit cargo, it is important to make the TLC more competitive than the other corridors.

(2) Recommendations in the F/S

- The DGPW should carry out the environmental impact assessment to start land acquisition to secure the right-of-way.

SUMMARY

SUMMARY

1. Introduction

The TLC has significant potential for the economic and social development of Togo and the region. The 667 km corridor, stretching from Lomé Port, an entrance to Togo to the OSBP at Cinkassé, to the border with Burkina Faso, includes roads, bridges, and railway, and is mainstay of the country.

The objectives of the study are as follows:

- To prepare the TLC Development Master Plan with a target year of 2030.
- To carry out the F/S for the selected priority project in order to confirm the viability of the projects.
- To share the results of the Study with development partners.
- To develop the capacity of personnel in the MT and MPW[1].

The Study Area is the whole country of Togo. In addition, Burkina Faso, Niger, Benin, Ghana, Mali and Côte d'Ivoire are considered to be a part of the Study Area from the viewpoint of developing sub-regional logistics corridors in West Africa.

2 Outline of the Study Area

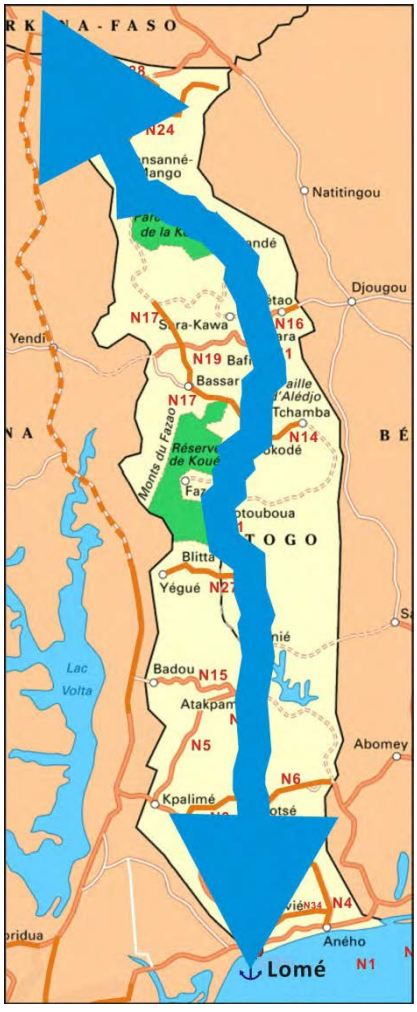
(1) Definition of the TLC

The TLC is defined as the transport network between Lomé Port and Cinkassé OSBP, connecting to Burkina Faso, passing through most of the major cities. National Road RN1 is the sole transport network functioning as the TLC with the total length of 667 km.

(2) Regional Coordination Programme

The West African Economic and Monetary Union (WAEMU) is an organisation of eight West African states. The Program of Communal Actions of the Infrastructures and Road Transportation of the WAEMU (PACITR) determined a communal network with three priorities; 1) the trunk roads joining the capitals cities, 2) the alternative links between the capital cities and interconnection roads, and 3) the roads heading toward the neighbouring counties.

The Economic Community of West African States (ECOWAS) treaty defines the coordination programme for the



Source: Study Team

Figure 1 Location of the TLC

[1] The Ministry of Transport and the Ministry of Public Works merged on 18th September, 2013 after the National Assembly election on 25th July, 2013, to become the Ministry of Public Works and Transport. This report, however, refers to the previous government organizational structure, except Sections 10 and 11.

transport, communications and tourism sectors.

(3) Social Conditions in Togo

- About 42% of the population is concentrated in the Maritime Region where the capital city Lomé and major industrial and mining activities are located. The population concentration in Lomé is about 13.5%. The average annual population growth rate in the whole country between 1981 and 2010 was 2.9%.
- Land use in Togo is mainly agricultural, consisting of 44.2% arable land (2005). Mainly food crops are cultivated throughout the country.
- Even though the poverty headcount ratio for the whole country fell 3% from 2006 to 2011, the poverty headcount ratios increased in the Plateux, Centrale and Savanes Regions. The poverty headcount ratio of the Savanes Region in particular was quite high at 90.8% in 2011.

(4) Economic Conditions in Togo and Neighbouring Countries

The agricultural sector had a share of 43.2% in 2011, followed by the service sector (40.9%) and industry sector (15.9%). The share of the agriculture sector has gradually increased, while both the industry and service sectors have slightly lost share.

(5) Existing Development Programmes

The Second Poverty Reduction Strategy Paper (PRSP-II) is the prior national development plan and it would be appropriate to understand the contents of the plan for analysing the current and the future development direction of Togo.

3. Current Transport System in Togo

(1) Transport Policy, Planning and Coordination

The transport development policy falls within the country's broader economic strategic objectives in support of the Government's Vision 2030 and the current PRSP-II. The development strategy for the sector therefore demonstrates the Government's recognition of its importance.

(2) Major Findings and Problems of the Road Sub-Sector

A number of observations have been made on the road sub-sector. Despite some strides made in recent years a number of challenges confront the sub-sector. The challenges include: 1) inadequate funds for investment and maintenance, 2) the lack of a Road Management System, 3) the non-control of axle loads, 4) inadequate attention given to road safety, and 5) the lack of viable alternative routes to the main north- south corridor.

(3) Major Findings and Problems of the Railway Sub-Sector

There are many problems on the railway development policy, regulations, facilities, train operation and maintenance; 1) non-materialised railway development policy, 2) non-established railway acts and regulations, 3) supervision of the railway concessioners by the MT is not functioning, 4) Improper maintenance of railway facilities and tracks, 5) no signaling and telecommunication system, 6) many level crossings, and 7) deteriorated rolling stock.

(4) Major Findings and Problems of the Port and Maritime Sub-sector

The major problems of the port and maritime sub-sector are: 1) shortage of the quay capacity accompanied with increasing volume of trade, particularly the mineral berth, 2) insufficient capacity of on land facility in the port, and 3) traffic congestion in and around Sahel Terminal.

(5) Major Findings and Problems of Transit Transport on the TLC

The major issues of transit transport on the TLC are: 1) the low level of maintenance at Lomé Port and deteriorated condition on RN1, 2) aged freight vehicles, many broken-down, overloaded and oversized vehicles, and 3) complicated and inefficient customs clearance processes, inappropriate and inexperienced customs brokerages, customs clearance document forms and data that are not interchangeable between Togo and Burkina Faso, and requests to pay bribes at the port, border and checkpoints.

Therefore, the transit cargo transport systems in Togo and Burkina Faso are still not efficient and must be improved to the standard of international logistics.

4. Outline of Existing Development Projects/Plan

(1) Road Rehabilitation and Transport Facilitation on the TLC

A list of the TLC (RN1 and RN17) which are currently undergoing rehabilitation or reconstruction, or currently receiving attention for rehabilitation is shown in Table 1.

Table 1 Ongoing Projects and Sections on the Lomé – Cinkanssé Road

Section	Route No.	Length (km)	Financier(s)	Remarks
1. Lomé (Golf Club) – Togblékopé	RN1	5.0	BOAD, GoT	Works in progress
2. Togblékopé – Davié	RN1	13.5	EXIM Bank	In preparation
3. Atakpamé – Blitta	RN1	102	AfDB, GoT	In preparation
4. Blitta – Aouda	RN1	48	BOAD, BIDC, GoT	Works in progress
5. Alédjo Bypass 1 & 2	RN1	17.81	EXIM Bank, BOAD	Works in progress
6. Defalé Bypass	RN1	12.19	EXIM Bank, BOAD	Works in progress
7. Tandjouaré – Cinkanssé	RN1	65.5	GoT	Works in progress
8. Lomé – Cinkassé	RN1	689	WAEMU	Study for dualisation in progress
9. Sokodé – Bassar	RN17	57	-	Study completed (BOAD)
10. Bassar – Kabou	RN17	23	GoT	Completed (2012)
11. Kabou – Guerin Kouka	RN17	26	Kuwait Fund	Works in progress
12. Guerin Kouka – Katchamba	RN17	26	IDB, GoT	Works in progress
13. Katchamba – Sadori	RN17	58	-	Study in progress (GoT)

Source: Study Team

(2) Lomé Port Projects

The Lomé Port projects include the following four components.

- New Quay-3 Project (BOT project by Bollore African Logistics Company, establish Quay No. 3: L = 450 m, dredging work: -15 m, 1.9 million m^3, extension quay of wharf No. 2: L = 120 m, construction period: 18 months from May 2012, the project is funded by a group of financial institutions with the African Development Bank (AfDB) as one of the co-financiers.

- Lomé Container Terminal Project (Private project by Lomé Container Terminal with a 35-year concession agreement, with initial capacity is 0.9 million Twenty-foot Equivalent Unit (TEU) and final capacity of 1.5 million TEU, length of north quay: 750 m, length of south quay:1,015 m, basin area: (750 + 1,015) × 250 / 2＝220,625 m^2, depth: -16.6 m, -16.6 m over-Panamax size container cargo ships will be able to moor at this terminal; main co-financiers: IFC, AfDB, CDB, FMO and DGE).
- Extension of Ore Berth (Extend the existing mineral berth to a handling capacity of about 3.5 million tonnes per year to the north side, however, even under this plan, the total capacity of the mineral berths will be insufficient after 2015, yet the Port Master Plan contains no countermeasure).
- Introduction of "The Single Window System" to speed up the work flow of port and customs procedures

5. Future Traffic Demand Forecast

(1) Analysis of Present Traffic Condition

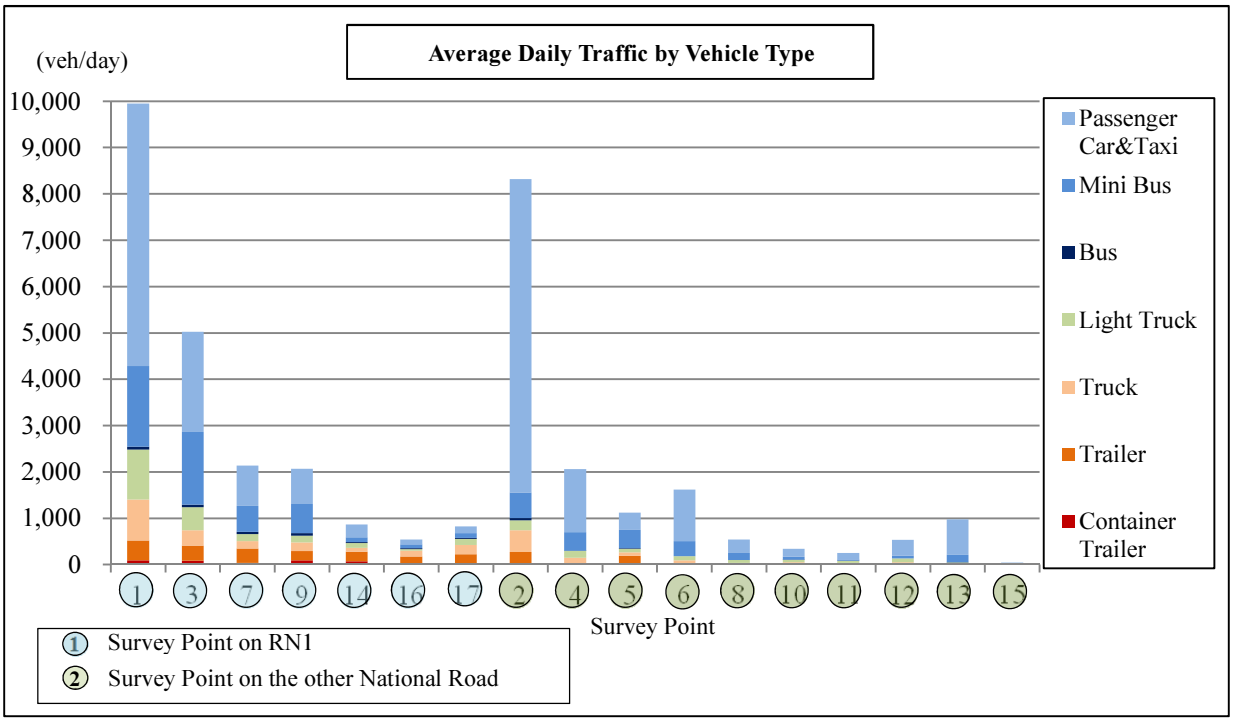
a) Traffic Survey

The Study Team carried out the following traffic surveys:

- Traffic volume count survey: 17 points
- Roadside Origin-Destination (O/D) survey: 16 points
- Broken-down freight vehicle survey: RN1 between Tsévié and Kara

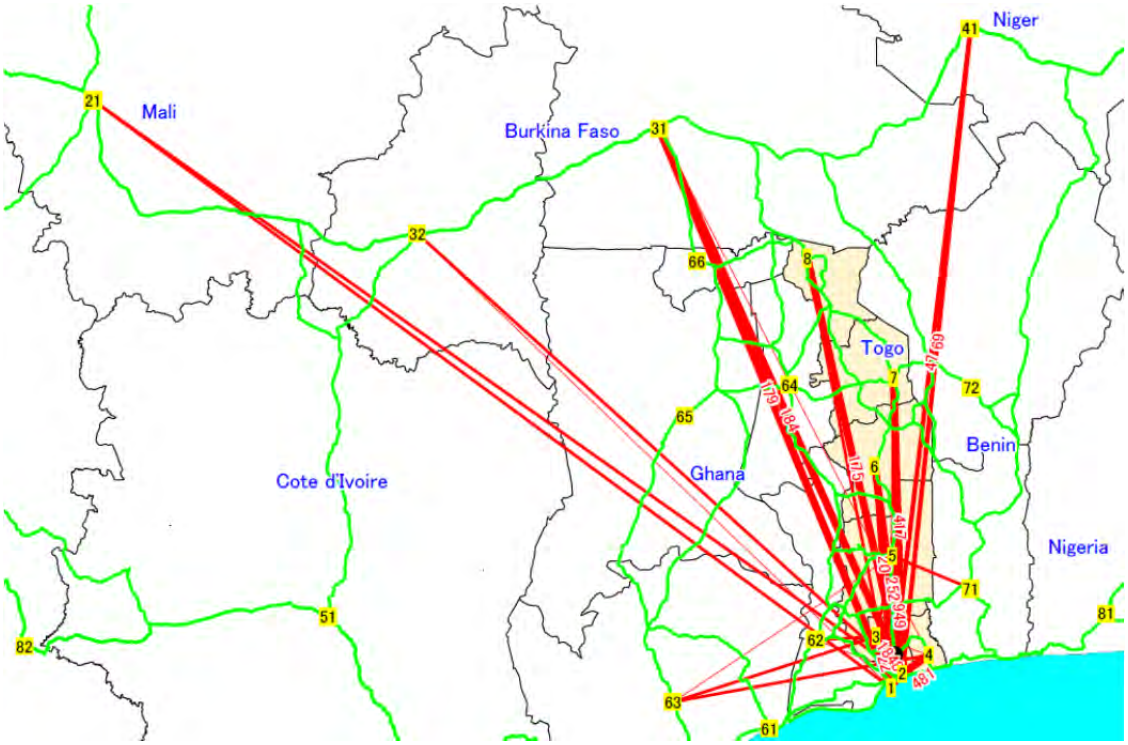
b) Results of Traffic Survey

Figures 2 and 3 shows the vehicle composition at each survey station and the O/D distribution at Tsévié survey station on RN1,



Source: Study Team

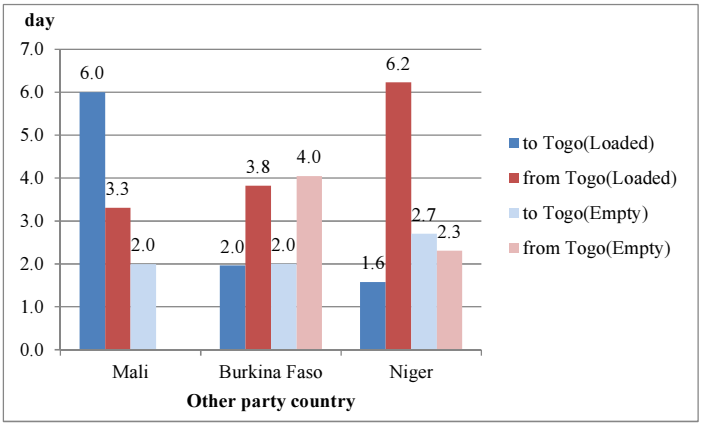
Figure 2　Vehicle Composition at each Survey Point



Source: Study Team

Figure 3 O/D Distribution at Tévié Survey Point

Figure 4 shows the average duration of trip between origin and destination of freight vehicles.



Source: Study Team

Figure 4 Average Duration of Trip between Origin and Destination

(2) Freight Demand

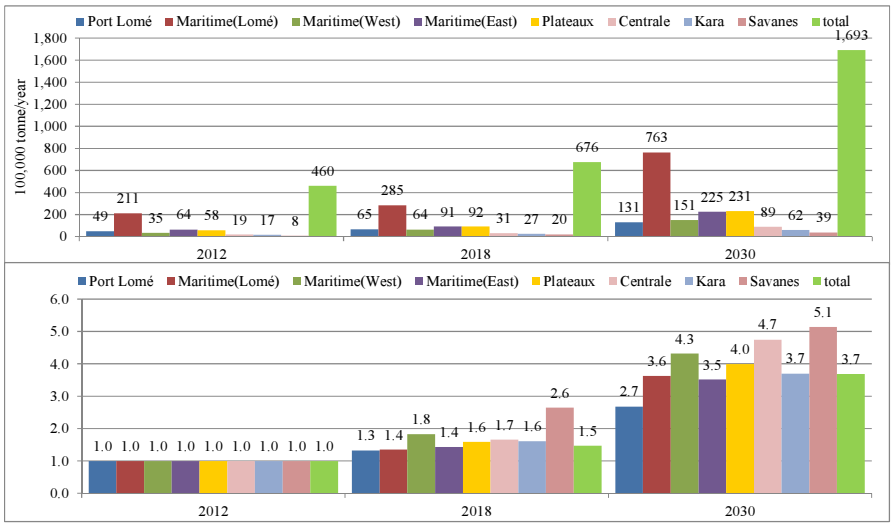
The generation/attraction amounts of freight demand for each fiscal year were calculated according to the concepts. The results are shown in Figure 5.

(3) Traffic Demand (All vehicle type)

The number of passengers and the amount of freight weight were converted to the Generation/Attraction amount by a conversion coefficient, and the result are shown in Figures 6.

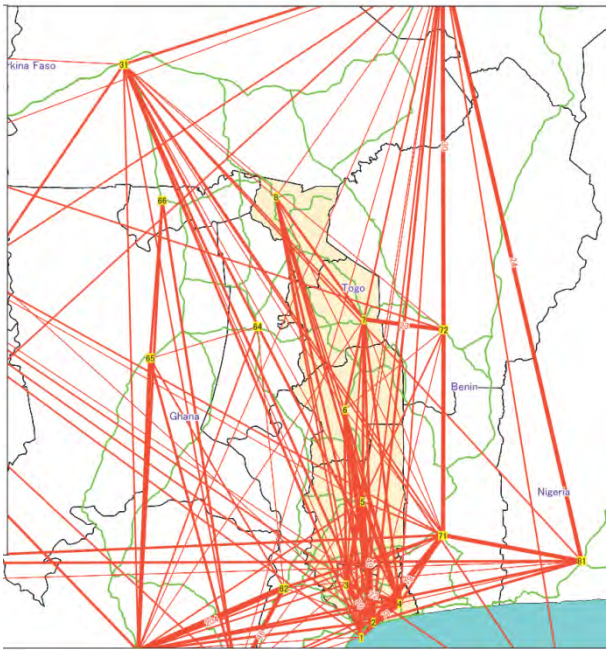
(4) Results of Future Traffic Demand Forecast

The results of future traffic forecast are shown in the Figure 7.



Source: Study Team based on customs data

Figure 5 Freight Demand



Source: Study Team (Unit: 100 veh./day)

Figure 6 Traffic Demand 2030

(Unit: 100 veh./day)

Source: Study Team

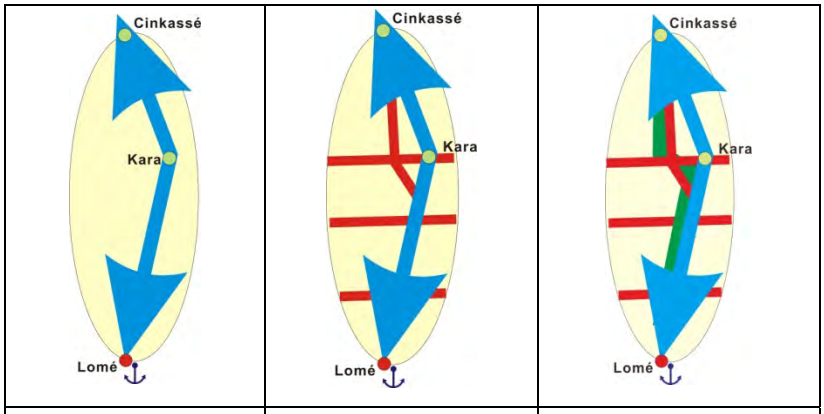
Figure 7 Result of Future Traffic Forecast in 2030 with All Road Project

6. Basic Policy for Development of the TLC

(1) Definition of the TLC

The TLC is defined as the corridor connecting Lomé Port and the border with Burkina Faso, mainly at the Cinkassé OSBP. There is only one national road RN1 connecting these two areas, and the surrounding area is considered to be a part of the TLC, but it is not necessary to limit the consideration to only RN1 as the TLC: other transport

modes or roads connecting north-south, can also be considered as a part of the TLC.



Only RN1	RN1 + Other roads	RN1 + Railway +Other roads

Source: Study Team

Figure 8 Definition of TLC

(2) Components of TLC

The TLC consists of the following components/elements.

- Hard components: Roads, Port, Railway, Airport, Various related Facilities for Transport:
- Soft components: Legal system for transport, government administration, international treaty (WAEMU, ECOWAS), bi-lateral agreement
- Regions coordination along the TLC
- Industries

(3) Comparison of TLC with Competing Corridors

Total transport costs to/from various ports in the sub-region vary between CFA franc (FCFA) 1.4 million and FCFA 2.0 million for travel to/from Ouagadougou in Burkina Faso and Niamey in Niger. The cheapest is to/from Lomé Port, where both port charges and transport costs are relatively low.

Table 2 Transportation Cost (Import to Niger and Burkina Faso)

(Unit: FCFA thousand)

Structure		Abidjan Port	Tema Port	TLC	Cotonou Port
Port Authority		21	9	24	4
Handling charges		186	77	75	84
Consignees		94	50	46	55
Shippers council		16	2	70	65
Transport (Including forwarding fee)	Niamey	1,650	1,650	1,300	1,350
	Ouagadougou	1,600	1,600	1,200	1,300
Total	Niamey	1,967	1,788	**1,515**	1,558
	Ouagadougou	1,917	1,738	**1,415**	1,508

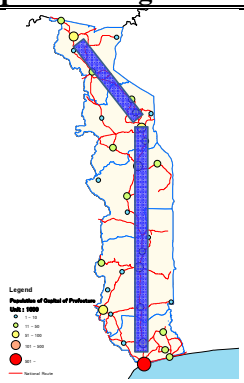
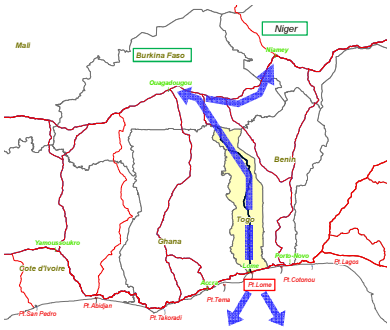
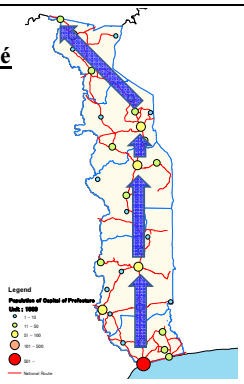
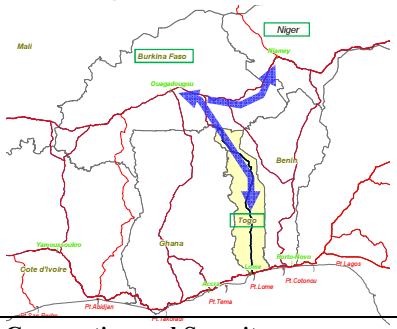
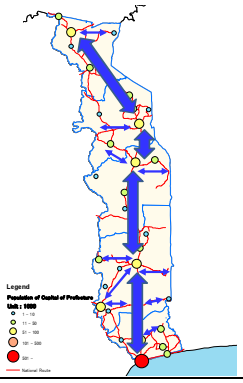
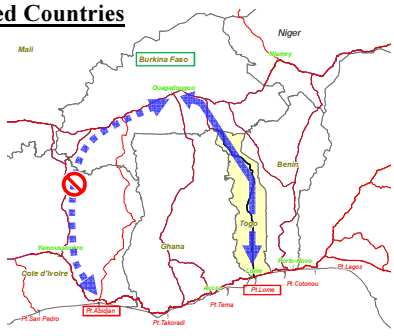
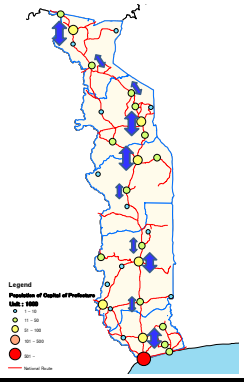
Notes: *1 Excluding fee at final destination (e.g. Ouagarinter) in the landlocked country
*2 This cost is the average value for a 20 ft. container or 30 tonnes of bulk freight

Source: JICA Western Africa Transport Survey, 2012.

(4) Role and Function of RN1

RN1 is the most important transport infrastructure of the TLC for spatial development, exchanges and distribution in Togo. In fact, RN1 supports the economy and life of Togo and the landlocked countries (see Table 3).

Table 3 Summary of Role and Function of RN1

International Aspects	National Viewpoint of Togo
Promotion of Larger-Regional Integration 	**National Axis of Transport (Back-bone)** 
Gateway toward overseas to/from Landlocked Countries 	**Fundamental route of cargo flow to/from Port Lomé** 
The Artery for Import & Export and Interchange of Culture between Togo and Landlocked Countries 	**Key route for regional exchanges in Togo** 
Securing Cooperation and Security among Landlocked Countries 	**Foundation for daily traffic of the people** 

Source: Study Team

(5) Concepts for Development of the TLC

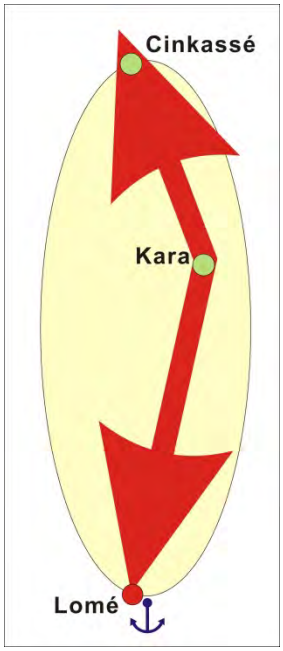
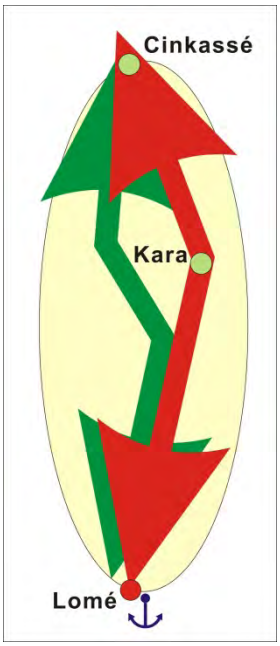
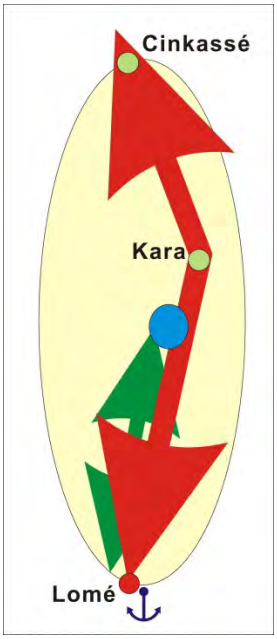
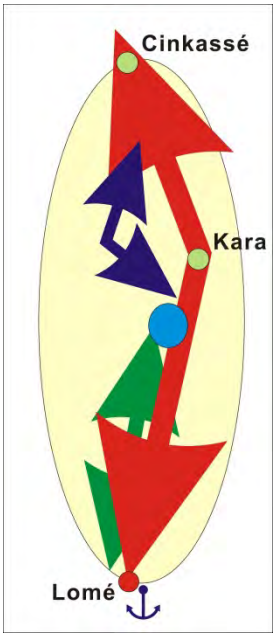
a) Concepts for Hardware Development

The following concepts for the hardware development of the TLC have been prepared in order to address the present and future issues of the TLC, and to contribute to regional development in Togo as

well as sub-regional development in West African countries. These hardware concepts are considered mainly for increasing traffic capacity to accommodate future cargo demand on the TLC. Table 4 shows an outline of the prepared concepts.

- Concept 1: Single Mode with Single Route Improvement
- Concept 2: Multi Modal Improvement
- Concept 3: Combination of Intermodal and Multimodal Improvements
- Concept 4: Combination of Intermodal and Multimodal Improvements plus Alternative Road Network

Table 4 Outline of Prepared Concepts

Concept 1 **Single Mode with Single Route Improvement**	**Concept 2** **Multi Modal Improvement**	**Concept 3** **Combination of Intermodal and Multimodal Improvements**	**Concept 4** **Combination of Intermodal and Multimodal Improvements plus Alternative Road Network**
			
1. RN1 improvement	1. RN1 improvement 2. Railway rehabilitation (Lomé – Blitta) 3. Railway construction (Blitta – Burkina border)	1. RN1 improvement 2. Railway rehabilitation (Lomé – Blitta) 3. ICD/dry port construction at Blitta	1. RN1 improvement 2. Railway rehabilitation (Lomé – Blitta) 3. ICD/dry port construction at Blitta 4. RN17 improvement

Source: Study Team

b) Concepts of Software to Supplement the Effects of Hardware Development

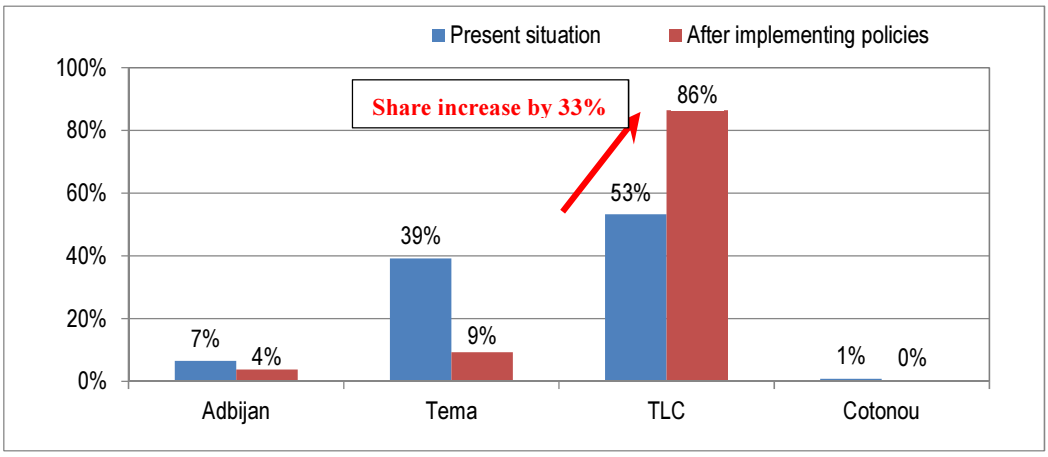
The concepts of software development to supplement the effects of hardware development are as follows:

- Single Window System at Lomé Port by introducing on-line data processing

- Improvement of Sahel Terminal for 1) expansion of area for the short term, and 2) conversion of area into an inland container depot (ICD) for domestic freight for the medium term by completion of a dry port at Blitta.
- Installation of weigh bridges and enacting regulations to control overloading.
- Modification of traffic law to restrict oversized vehicles.
- Prohibition on majority of freight vehicles registered other than Togo operating south-bound from Blitta, after completion of the dry port.
- Provision of appropriate and cheaper rest stops for freight vehicles. This measure will also create more job opportunities in areas where rest stops will be constructed.
- Development of the capacity of personnel related to documentation at the port, OSBP, a dry port and an ICD.
- Development of the capacity of personnel for operating weigh bridges.
- Development of the capacity of personnel in the MT and MPW.

(6) Corridor Choice Model for Transit Cargo

The corridor choice model was developed by the Study Team in order to compare the import transit cargo volume in four different corridors (Abidjan, Tema, TLC and Cotonou) between their ports and Burkina Faso in the Study. The analysis results clarified how the shippers' corridor choice changes with differences in the value of time, and it was pointed out that the policy differs depending upon the item being imported/exported by Burkina Faso and the demand level. In addition, it was suggested that the share of corridor cargo volume could change dramatically due to a reduction in transport time and cost to acceptable levels, as shown in Figure 9.



Source: Study Team

Figure 9 Change in Cargo Share in Each Corridor due to Package of Policies

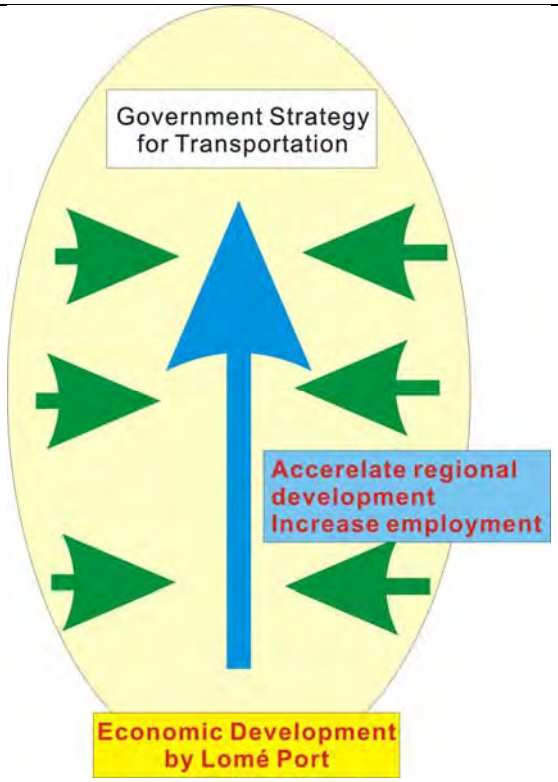
7. TLC Development Plan and Programme

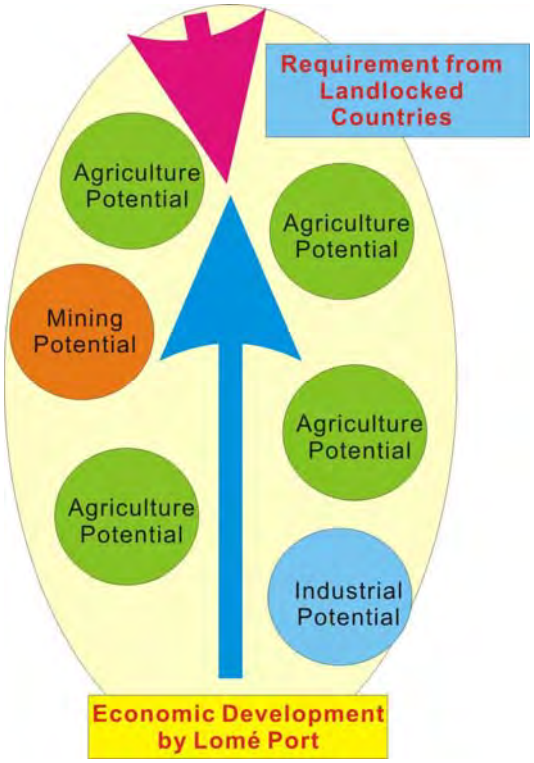
(1) Basic Directions of TLC Development Plan/Programme

The TLC Development Plan provides a comprehensive plan for the development of transport infrastructure including both hardware and software in order to achieve general economic growth. One

approach is to cope with increasing traffic demand in the future, and another is to support development potential in developing local areas.

To achieve this, the top priority for development is to strengthen the RN1 corridor, which is the national south-north axis extending from Lomé Port, to boost economic activity.





Preparation of the TLC Development Programme

Examination of technical and economic viability, and environmental and social consideration to attract development partners for financial assistance.

Development Programme only up to 2030

Recommend viable projects, not dreams.

Source: Study Team

Figure 10 Relation between the TLC Development and Government Development Goal

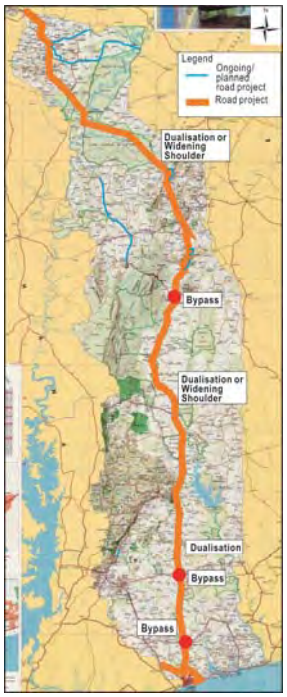
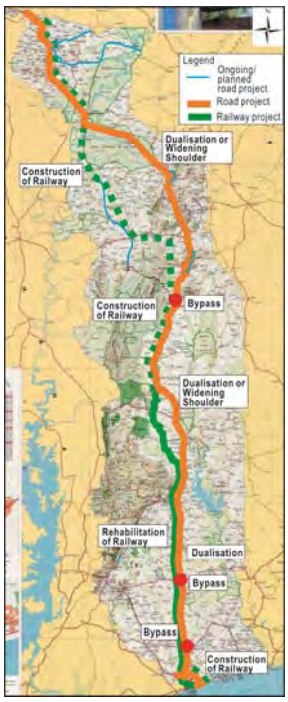
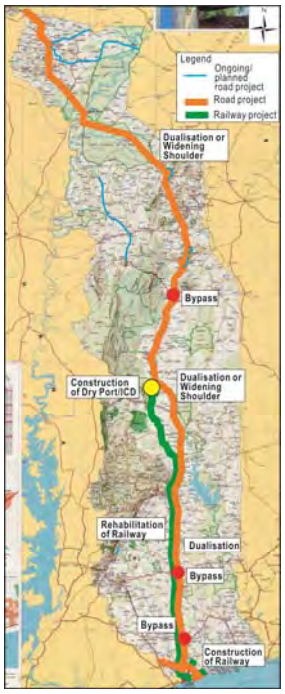
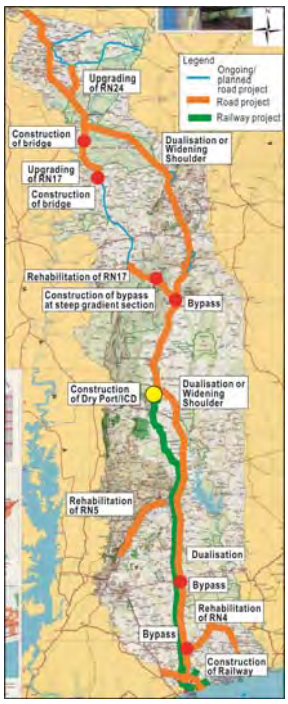
(2) Menu for the TLC Development

Based on the concepts for development of the TLC as well as directions to achieve the targets of the TLC development, the following menus of alternatives (see Table 5) are prepared for the evaluation. These alternatives mainly consist of improvement of roads and rehabilitation/construction of the railway.

(3) Economic Cost of the Project

To assess the effects of projects on the national and regional economy, the project costs at market prices should be converted to those at economic prices. The main conversion processes are elimination of transfer costs and correction of market prices which are not determined through a reasonable market mechanism. For example, taxes including custom duties should be eliminated to derive the economic costs because they are a transfer cost and do not bring any value to the project.

Table 5 Menu of Alternatives for the TLC Development

Alternative 1 Single Mode with Single Route Improvement	Alternative 2 Multi Modal Improvement	Alternative 3 Combination of Intermodal and Multi Modal Improvement	Alternative 4 Combination of Intermodal and Multi Modal Improvement plus Alternative Road Network
			

Source: Study Team

(4) Evaluation of Proposed Projects for Development of the TLC

Based on the overview for the development of the TLC, alternative transport networks for evaluation, including traffic assignment and the essential factors of the network, are proposed.

a) Results of Economic Evaluation

The EIRR of respective projects suggested in the TLC Development Plan is used as the evaluation index in determining priority projects and those projects with an EIRR of more than 12% are considered to be economically feasible.

For the estimation in the railway projects, the new construction project of the Blitta – Sokodé line was assumed to start in 2025, and the Sokodé – Cinkassé line was assumed to start in 2030. As a result, the Lomé – Blitta line could be feasible but the lines beyond Blitta do not seem to bring reasonable economic benefits compared to the construction costs.

b) Results of Overall Evaluation

Based on the results of evaluating each item of the alternative transport networks, the overall results are shown in Table 6.

Table 6 Overall Evaluation Results

Item		Alt.1	Alt. 2	Alt. 3	Alt. 4
Economic Evaluation	EIRR	B	D	A	A
Environmental Impact*	Local Economic Impact	B	B	B	A
	Social Impact	D	D	D	D
	Environmental Impact	D	D	D	D
Risk Management	Alternative Route	D	A	B	A
Overall Evaluation		**C**	**C**	**B**	A

Notes: A = Has a relatively high effect, B = Has a high effect, C = Has a relatively minor effect, D = No effect
Source: Study Team

"Alternative 4" is selected as the most desirable transport network alternative for the development of the TLC, with the highest score of "A". Therefore, the projects included in Alternative 4 are selected for the development of the TLC by 2030. Table 7 lists the development projects of the TLC and Figure 11 shows their locations.

Table 7 List of Projects for the Development of the TLC

Project			Type	EIRR	Financial Source
Road	RN1	Lomé – Tsévié	Dualisation	25%	BOAD EXIM Bank
	RN1	Tsévie – Atakpamé	Dualisation	25%	None
	RN1	Atakpamé – Blitta	Rehablitation	-	AfDB, GoT
			Dualisation	12%	None
	RN1	Blitta – Aouda	Rehablitation	-	BOAD, BIDC, GoT
	RN1	Blitta – Sokodé	Dualisation	15%	None
	RN1	Sokodé – Kara	Widening of Shoulder	20%	None
	RN1	Kara – Kandé	Widening of Shoulder	19%	None
	RN1	Kandé – Mango	Widening of Shoulder	18%	None
	RN1	Mango – Dapaong	Widening of Shoulder	14%	None
	RN4	Aného – Tabligbo	Rehabilitation	23%	GoT
	RN4	Tabligbo – Tsévié	Rehabilitation	45%	GoT
	RN17	Bouzalo – Binako	Bypass to ease steep gradient section	16%	None
	RN17	Sokodé – Bassar	Rehabilitation	14%	None
	RN17	Guérin-Kouka – Katchamba	Improvement	22%	IDB, GoT
	RN17	Katchamba – Sadori	Improvement	22%	GoT (Study)
Railway	Lomé – Blitta		Rehabilitation	12%	AfDB (Railway study)
Axle Load Control (Weighbridges)			Installation	-	None
Others	Dry port at Blitta		Construction	12%	None

Source: Study Team

(5) Implementation Schedule

The schedule for implementing existing and proposed projects is prepared for the medium term (2018) and long term (2030), considering the level of needs for each project, engineering judgment as well as investment environment for each transport sector (road and railway) by development partners, as shown in Table 8

Table 8 Implementation Schedule of Projects

Project	Project Cost) (EUR million)	2018	2030
1. Road Project			
1) RN1 Dualisation: Lomé – Tsévié	26		
2) RN1 Dualisation: Tsévié – Atakpamé	130		
3) RN1 Rehabilitation: Akatpamé – Blitta	-		
4) RN1 Dualisation: Atakpamé – Blitta	103		
5) RN1 Rehabilitation: Blitta – Aouda	-		
6) RN1 Dualisation: Blitta – Sokodé	81		
7) RN1 Rehabilitation: Sokodé – Kara	-		
8) RN1 Shoulder widening: Sokodé – Kara	28		
9) RN1 Should widening: Kara – Kandé	21		
10) RN1 Shoulder widening: Kandé – Mango	30		
11) RN1 Shoulder widening: Mango – Dapaong	24		
12) RN4 Rehabilitation: Aného – Tabligbo	15		
13) RN4 Rehabilitation: Tabligbo –Tsévié	15		
14) RN17 Bypass to ease steep section: Bouzalo – Binako	9		
15) RN17 Rehabilitation: Sokodé – Bassar	16		
16) RN17 Improvement: Guérin-Kouka – Katchamba	15		
17) RN17 Improvement: Katchamba – Sadori	34		
2. Railway Project			
1) Rehabilitation: Lomé – Blitta	393		
3. Axle Load Control (Weighbridge)	6		
4. Dry port at Blitta	15		

Note: Shaded projects are on-going/committed/planned projects by the GoT and other financial sources.
Source: Study Team

(6) Selection of Projects for the F/S

The Study Team and the Steering Committee members have discussed the final selection of projects for the F/S. As a result, the five road projects are selected as candidate projects for the F/S.

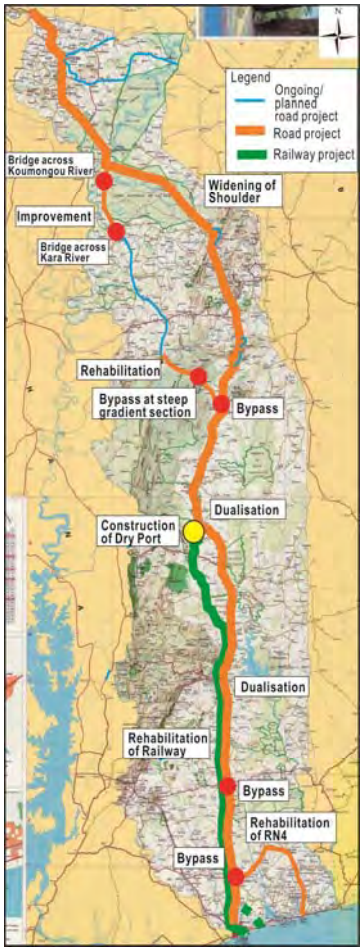
Then, after consultation with JICA, the Study Team selected two projects: 1) construction of a bypass at the steep gradient section between Bouzalo and Binako, and 2) construction of two bridges across the Kara and Koumongou Rivers on RN17.

8. Results of Feasibility Studies

(1) F/S of Construction of Bypass of Bouzalo–Binako Section of RN17

a) Justification for Construction of Bypass

The 8.3-km bypass on the Bouzolo–Binako road section (Malfakassa Bypass) would form part of RN17, which links Sokodé to Sadori on RN1. Currently, traffic on RN17 is hindered by the mountainous section between Bouzolo and Binako, where there are some steep gradients of around 10% with very sharp reverse curves. Construction of the Malfakassa Bypass at this section would reduce accidents on the road and



Source: Study Team

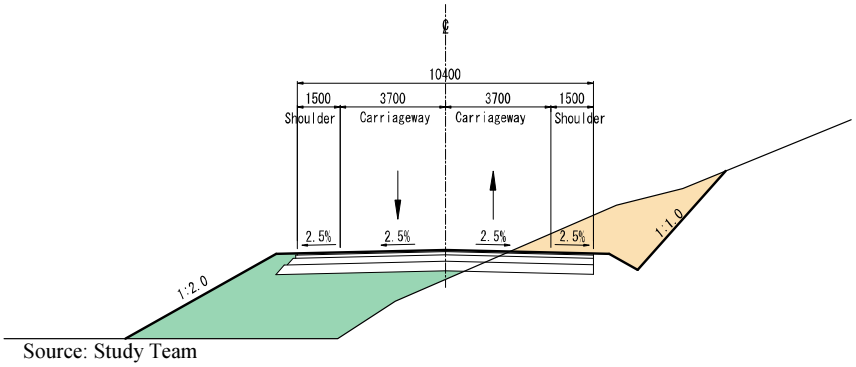
Figure 10 Location of Projects for the TLC Development Plan

reduce travel time.

Construction of the Malfakassa Bypass and the Katchamba–Sadori road would have the synergistic effect of reducing the distance between Lomé and Cincassé by approximately 15 km, thus improving the efficiency of the TLC with remarkable knock-on effects on national and regional trade, socio-economic development and poverty alleviation in Togo.

b) Preliminary Design

A preliminary geometric design for the bypass has been carried out in conformity with WAEMU Standards. The road would be a two-way single carriageway with a width of 7.4 m. The carriageway would have two shoulders, one on each side, each being 1.5 m wide. The road has been designed with a maximum vertical gradient of 4.63% and a speed of 50 km/h. A typical cross-section of the road is shown in Figure 11.



Source: Study Team

Figure 11 Typical Cross-Section of the Malfakassa Bypass

The pavement structure is based on a current (2012) AADT of around 600 veh./day, growing to approximately 970 veh./day without improvement of the Katchamba–Sadori road and 3,400 veh./day with improvement of the Katchamba–Sadori road in 2030. The proposed pavement structure comprises:

- 300 mm of improved subgrade
- 200 mm of natural gravel sub-base
- 100 mm thick asphalt concrete base
- 50 mm thick asphalt concrete wearing course

c) Preliminary Cost Estimation

1) Project cost

The cost of the works has been estimated based on data and information collected on the construction market in Togo. This includes the cost of labour, materials and equipment hire rates. The unit rates for items of work for similar recent projects carried out in Togo have also been considered. Other considerations were the planned method of construction and the quantities of each work item. The most efficient combination of equipment was assumed for the construction method. Cement and aggregates are domestically produced, but equipment necessary to produce these materials, plant, and vehicles for transportation are all imported.

The estimated preliminary project cost of construction of the Malfakassa Bypass is summarised in

Table 9, while the road maintenance plan and necessary cost is summarised in Table 10.

Table 9 Project Cost of the Malfakassa Bypass

(Unit: FCFA million)

Item	Financial Price	Economic Price
Construction cost	5,710	5,543
Consultancy and engineering fees (18%)	1,279	1,280
Physical contingency (15%)	1,841	960
Tax (VAT) (18%)	1,337	-
Land acquisition and compensation	3,024	836
Project cost	13,192	8,619

Source: Study Team

Table 10 Summary of Road Maintenance Plan and Necessary Cost

No.	Description	Cost/km (FCFA)		
		Frequency	Financial	Economic
I	Routine maintenance			
I-1	Grass cutting	Once a year	127,000	87,000
I-2	Patrol and cleaning	Daily	230,000	165,000
1-3	Traffic sign repair	Once every 10years	447,000	368,000
II	Periodic maintenance			
II-1	Resurfacing	Once every 13 years	172,997,000	141,782,000
II-2	Pavement marking	Once every 8 years	2,924,000	2,447,000

Source: Study Team

d) Economic Analysis of Construction of the Malfakassa Bypass

The Study Team used the "Highway Development and Management model (HDM-4)" developed by the WB, which is commonly used in Togo for economic analyses of road projects, to evaluate the economic viability of the projects.

In the F/S, the Study Team must decide the provisional cases in consideration of the conditions of the road links because future traffic demands on RN17 will vary depending on completion of the two major projects. There are two target projects in this F/S, the Malfakassa Bpass project and improvement of Katchamba–Sadori road, including construction of two bridges. Each project should be evaluated under two assumptions: with or without the other project. As for the Malfakassa Bypass project, two cases (with or without project to improve the Katchamba–Sadori road) were used for the evaluation.

- Case I-1: Without improvement of the Katchamba–Sadori road
- Case I-2: With improving the Katchamba–Sadori road

The results of the economic analysis are shown in Table 11.

Table 11 Results of Economic Evaluation

Case	EIRR	ENPV (FCFA million)
Case I-1	7.1%	-1,790
Case I-2	30.1%	27,711

Source: Study Team

To simulate variations of preconditions, sensitivity analysis was carried out for Case I-2 using the following assumptions.

Table 12 Results of Sensitivity Analysis: Case I-2

Traffic Volume Decrease / Construction Cost Increase	0%	-20%
0%	30.1%	20.6%
+20%	21.0%	14.8%

Source: Study Team

Based on the above analysis, Case I-1, only construction of only the Malfakassa Bypass without improvement of the missing link (Katchamba–Sadori road), is economically not viable. Meanwhile, Case I-2, the construction of the Malfakassa Bypass with improvement of the Katchamba–Sadori road, including construction of two bridges, is technically and economically viable, with an EIRR of 30.1%, because implementation of both projects will attract many transit cargo vehicles to be diverted from RN1, since thedistance is about a 15 km shorter.

(2) Feasibility Study of Construction of Two Bridges of the Katchamba–Sadori Road

a) Justification for Construction of Two Bridges

The Katchamba–Sadori road, which has a length of 58 km, is a section of RN17 which links Sokodé to Sadori on RN1. It is currently virtually a track and passable only by 4x4 vehicles and only during part of the year due to its very poor condition. The road becomes totally impassable during the rainy season due to the flooding of the Kara River and the Koumongou River; when approximately 22 km (37%) of the road becomes inundated.

The road connects 13 settlements and development of the road including the bridges across the Kara and Koumongou Rivers would facilitate access to socio-economic centres beyond the road catchment area and help to alleviate poverty.

The net effect would be a reduction in freight rates and the cost of passenger travel, leading to reductions in the prices of goods to and from the Savanne Region and landlocked countries. The road would not only improve the economic conditions of its catchment area but would also act as an alternative route to RN1 between Sadori and Sokodé in the event of a road blockage over this section of RN1 from a risk management point of view.

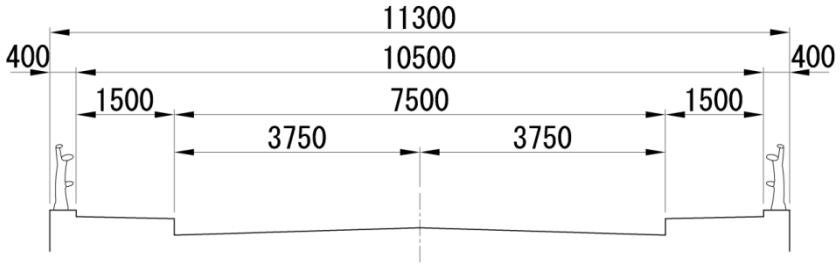
Development of the Katchamba–Sadori road together with the Malfakassa Bypass could have the synergistic effect of reducing the distance between Lomé and Cincassé by approximately 50 km, thus improving the efficiency of the TLC with a remarkable effect on national and regional trade, socio-economic development and poverty alleviation in Togo.

b) Bridge Planning

1) Determination of bridge width

According to the Draft Report of the RN17 F/S – 2, the bridge width was planned as a carriageway width of 7.50 m and a sidewalk width (including felloe guard) of 2 × 1.25 m, giving a total width of 10.0 m. However, the Study Team plans to secure 1.5 m for the sidewalk from the traffic safety point view, and 0.4 m for the felloe guard (the minimum value of a felloe guard on a sidewalk), assuming

the railing is installed on the outside of the sidewalk, as shown in Figure 12.



Source: Study Team

Figure 12 Typical Cross Section of a Bridge Proposed in the Study

2) Selection of bridge sites

- The Study Team decided to select the location of the bridge across the Kara River at 30 m downstream from the existing drift, to minimise the effects for the river during construction and after construction of the bridge.
- As there is no existing structure, that would cause an obstruction during construction, the Study Team decided to select the location of the bridge across the Koumongou River at the road alignment proposed by the RN17 F/S – 2 as the centre line for the bridge planning.

3) Determination of bridge length

- Since the Kara River is not likely to overflow at the planned site, the positions of abutments are determined at control points where the planned high water level crosses the abutments. As a result, the necessary length of river is calculated as 117 m or more, hence, the length of the bridge across the Kara River for the bridge planning is 120 m.
- The planned high water level of the bridge across the Koumongou River is 130.2 m based on the calculated flow. Since the planned high water level is likely to overflow from the river cross section, the width of the river was estimated as 99 m to 158 m. Hence, the Study Team verified the appropriateness of the bridge length by estimating the water discharge volume at this location with a bridge length of 160 m. The Study Team also planned to excavate the jutting part of the right bank in order to adjust the river cross section with the upstream and downstream of the river.

4) Determination of bridge type

- Based on comparison of structural features, workability and cost, the Study Team adopted the PC 3-spans connected post tension T girder bridge for the bridge across the Kara River. Regarding the substructure, 1) column type elliptical piers with direct foundation, and 2) reverse T-style abutment with direct foundation were selected, since there is rock layer at the level of the river bed.
- Based on comparison of structural features, workability and cost performance, the Study Team adopted the PC 4-spans connected post tension T girder bridge. Regarding the substructure, 1)

column type elliptical piers with direct foundation, and 2) reverse T-style abutment with piling foundation were selected, since there is a rock layer at the level of the river bed.

c) Preliminary Estimate of Construction Cost

The Study Team estimated the unit costs of both bridges with reference to the construction cost of recently completed bridges in the African Region under the Japanese Grant Aid Scheme. Tables 13 and 14 show the estimated construction cost of the bridge across the Kara River and the bridge across the Koumongou River, respectively.

Table 13 Preliminary Construction Cost of the Bridge across the Kara River

(Unit: EUR thousand)

Cost Item		Unit	Quantity	Unit Cost	Construction Cost	Note
Substructure	A1 Abutment	m^3	300.39	3.10	931	
	P1 Pier	m^3	485.33	2.00	971	Including river bed protection works
	P2 Pier	m^3	485.33	2.00	971	Including river bed protection works
	A2 Abutment	m^3	286.09	3.10	887	
	Sub-total of substructure				3,760	
Superstructure	Fabrication and erection of main girders	m^3	793.98	3.40	2,700	Provisional beam erection
	Cross beam works	m^3	214.85	3.10	666	
	Bridge surface works	m^2	1,356.00	1.00	1,356	
	Sub-total of superstructure				4,722	
Preliminary Construction Cost					8,482	

Source: Study Team

Table 14 Preliminary Construction Cost of the Bridge across the Koumongou River

(Unit: EUR thousand)

Cost Item		Unit	Quantity	Unit Cost	Construction Cost	Note
Substructure	A1 Abutment	m^3	234.23	3.60	843	Piling foundation
	P1 Pier	m^3	415.47	2.00	831	
	P2 Pier	m^3	415.47	2.00	831	
	P3 Pier	m^3	415.47	2.00	831	
	A2 Abutment	m^3	234.23	3.60	843	Piling foundation
	Sub-total of substructure				4,179	
Superstructure	Fabrication and erection of main girders	m^3	1,058.13	3.40	3,598	Provisional beam erection
	Cross beam works	m^3	287.55	3.10	891	
	Bridge surface works	m^2	1,808.00	1.00	1,808	
	Sub-total of superstructure				6,297	
Preliminary Construction Cost					10,479	

Source: Study Team

d) Economic Analysis of Construction of Two Bridges

Since the two bridges are part of the Katchamba–Sadori road (56.2 km), it is not practical to conduct the economic analysis only for two bridges; the analysis must be conducted for the whole section of the Katchamba–Sadori road, which is under the R17 F/S – 2. As mentioned above, the Katchamba–Sadori road will be passable only after the related roads are also improved. Furthermore, time cost was estimated only for the period when vehicles are able to drive through the whole section of the Katchamba–Sadori road.

Therefore, the EIRR was estimated for the road project which includes bridge construction. In the

Study, all sections of the Katchamba–Sadori road, including construction of two bridges across the Kara and Koumongou Rivers, are assumed to be completed.

The project cost of improvement of the Katchamba–Sadori road and construction of two bridges across the Kara and Koumongou Rivers is shown in Table 16. At this stage, the project cost estimated for the Katchamba–Sadori road in the R17 F/S – 2 was used, excluding construction of two bridges.

Table 15 Project Cost of Improvement of the Katchamba–Sadori Road

(Unit: FCFA million)

Item	Financial Price	Economic Price
Construction cost of road	37,210	32,234
Construction cost of the bridge across the Kara River	8,499	7,079
Construction cost of the bridge across the Koumongou River	10,458	8,705
Consultancy and engineering fees (18%)	10,110	8,643
Land acquisition and compensation	5,058	1,399
Project cost	71,335	58,060

Source: Study Team

Similar to the same concept as the economic analysis of the Malfakassa Bypass, two cases were used for the evaluation.

- Case II-1: Without the Malfakassa bypass construction project
- Case II-2: With the Malfakassa bypass construction project (Same as Case I-2 for the economic analysis of construction of the Makfakassa Bypass)

The results of the economic analysis are shown in Table 16 and the results of the sensitivity analysis carried out for Case II-1 are shown in Table 17.

Table 16 Results of Economic Evaluation

Case	EIRR	ENPV (FCFA million)
Case I-1	38.6%	35,277
Case I-2	30.1%	27,717

Source: Study Team

Table 17 Results of Sensitivity Analysis: Case II-1

Traffic Volume Decrease / Construction Cost Increase	0%	-20%
0%	38.6%	26.8%
+20%	32.4%	19.7%

Source: Study Team

Based on the above analysis, Case II-1, only improvement of the Katchamba–Sadori road including construction of bridges across the Kara and Koumongou Rivers, is economically viable, with an EIRR of 38.6%, which is 8.5% higher than Case II-2.

(3) Overall Evaluation of Projects

a) Results of Economic Evaluation

- From the results of the economic analysis, construction of the Malfakassa Bypass project is recommended for implementation, together with improvement of the Katchamba–Sadori road.
- Construction of two bridges across the Kara and Koumongou Rivers is also recommended for implementation, together with improvement of Katchamba–Sadori road regardless of construction of the Malfakassa Bypass.

b) Environmental and Social Considerations

- The new Malfakassa Bypass to be constructed between Bouzolo–Binako of RN17 will not pass through populated areas and will thus require no resettlement and cause few impacts on noise, air quality and vibration for local residents. In addition, at the public consultation meeting, none of the stake-holders raised any objections to the construction of this bypass. Thus, construction of the Malfakassa Bypass will not cause major negative impacts on the environment or lives along the road.
- Construction of two bridges across the Kara and Koumongou Rivers, will not require any resettlement and will cause few impacts on noise, air quality and vibration for local residents. Also, construction of two bridges will generate positive impacts for people along the road by providing better access to farm lands and easy transportation of agricultural products. Thus, construction of two bridges across the Kara and Koumongou Rivers will not cause major negative impacts provided that the affected people are appropriately compensated.

c) Overall Evaluation

The Study Team has analysed the feasibility of two projects: 1) construction of the Malfakassa Bypass and 2) Construction of two bridges across the Kara and Koumongou Rivers, in terms of technical, economic, regional development, environmental and social considerations. As a result, both projects are considered feasible for implementation at an early stage.

9. Environmental and Social Considerations

(1) Legal Framework for Environmental and Social Considerations

The legal framework for environmental and social considerations in Togo is fairly developed. However, due to active customary laws, special care is needed to understand the “enforcement of common laws” and customary practices, especially concerning land management. Chieftaincy and its associated land management are still common in Togo, especially in rural areas. Because this customary land management is based on trust among a community and surrounding communities, there are no official titles in many cases. In the case of land acquisition, buyers must pay attention to not only legal ownership and rights of use but also customary owners (mostly chiefs) and customary users. In many cases, no official land titles are available, so it is highly recommended for outsiders or foreigners to have a local expert handle such customary matters.

Considering the environmental and social policy frameworks for the proposed construction of the

Malfakassa Bypass and two bridges across the Kara and Koumongou Rives, the Directorate General of Public Works (DGPW) is likely to apply the national political and legal frameworks for environmental management and resettlement. Both the frameworks are principal environmental and social consideration policies for any agency under the MPW. Since both frameworks were developed based on the WB's operational policies in addition to legislation of Togo, the principal policies are identical to the JICA Guidelines for Environmental and Social Considerations. Thus, it is reasonable to apply the frameworks for the proposed road projects.

(2) Major Findings of the Environmental Impact Assessment of the Proposed Project

A pre-EIA environmental impact assessment was conducted to clarify the environmental and social baseline of the proposed project sites and assess the potential impacts of the projects. Though the proposed projects are located adjacent to two natural reserve areas, the environmental conditions of the proposed projects are commonly used farm-land, cattle fields, or degraded bush or wood-land. Based on the references and field surveys, no sensitive area would be affected by the proposed projects.

Regarding the negative impacts on the natural environment, no significant impacts are expected for any of the environmental and social consideration items. Major negative impacts of the proposed projects would be temporary air pollution, soil contamination, and water contamination from the construction activities. As the geology along the proposed alignment is moderate, no significant earthwork is expected. The extent of all impacts would be minimal or limited in extent.

Regarding the negative impacts on the social environment, no significant impacts are expected from the proposed projects. The major negative impacts would be acquisition of mainly open land. None of the farmland owners would be required to relocate.

Regarding the positive impacts on the social environment, namely improvement of the social infrastructure and services during the operation phase, the proposed projects are likely to attract agricultural investment into the region. Though not only resulting from the proposed road and bridge construction projects, the regional demand for skilled/unskilled labours is likely to support new agribusinesses through the new transport network.

As a part of the EIA process, the DGPW hosted one public consultation at the project-affected area. There were no objections to the projects: rather, there was great interest in participating in the projects.

(3) Overall Recommendation from the Environmental and Social Considerations

The Pre-EIA level assessment found that the proposed projects are reasonable. However, it is highly recommended to address the following points during the next detailed design stage.

a) Assurance and Enforcement of Budget for Land Acquisition

Throughout the hearing at the land commission and public consultations, many stakeholders repeatedly mentioned incomplete compensation by the DGPW or other public agencies due to the lack of funding at the beginning of a project and continuous shortage of funding. Though legal frameworks and safeguard policies are well implemented in the DGPW, sufficient budget is the key to accomplishing such duties. Thus, it is highly recommended to monitor the enforcement of the budget

regarding environmental and social consideration matters.

b) Assurance for Environmental Services

The DGPW has an in-house environmental division with several officers and all of whom are unlikely to be able to concentrate on one project. Those officers need to cover all environmental related duties under the DGPW throughout the nation. In order to ensure tightly-controlled EIA processes, it is highly recommended to continuously assist the DGPW's environmental officers by team of foreign environmental experts and local environmental experts in the following stage.

10. Institutional Arrangements for the TLC Development Programme

(1) Institutional Arrangements for the Road Sub-sector

- Togo may have to consider setting up an autonomous Road Authority (RA) to improve road management. If this is done, it should be accompanied by a restructuring of the DGPW under the newly established Ministry of Public Works and Transports (MPWT)[2] to enable it to concentrate on policy formulation, evaluation and monitoring.
- Improvement of most of the trunk roads in the Study Area is expected to be completed in the long term (2030), and so operation and maintenance works to maintain the functions of road assets will become more important in the near future.
- Considerable resources are required both for investment and for maintenance. Strategies need to be developed for bridging existing investment gaps, such as the use of public-private partnerships (PPP). With CAPER revenues only accounting for about a third of the network maintenance needs, new and innovative ways need to be found to increase CAPER's revenues.
- In parallel with the axle control measures proposed in the TLC Development Plan, it would be necessary to provide a legal frame work within which axle loads can be effectively controlled. The Act should define clearly the vehicles that are allowed to use the public roads to ensure uniform interpretation by all parties. To comply with the WAEMU regulation (Reglement No. 14/2005/ CM/UEMOA), which was ratified by member countries, and actually apply it in Togo prior to other member countries, it is necessary to set up a legal initiative for axle load and oversized vehicle control in Togo.
- In order to secure efficient freight transport as well as safety of road transportation, it is desirable to reduce the number of broken-down freight vehicles. One measure is strict vehicle inspections for freight vehicles, and another is to require transport operators to renew their aged freight vehicles more that are over 20 years old, for example. In addition, in order to control aged freight vehicles entering Togo from landlocked countries, it is necessary to discuss with counterparts an agreement to control the operation of aged freight vehicles entering each other's countries.

[2] Even though the Ministry of Public Works and Transports was established on 18th September, 2013 and the Study Team has no information regarding the organisation of the new ministry, the Study Team refer to the new ministry name in Sections 10 and 11 in this summary, since contents of these chapters are proposed future institutional arrangements and recommendations.

(2) Institutional Arrangements for the Railway Sub-sector

- The legal instruments for the institutional arrangements should define the objectives of the implementing authorities and the roles and responsibilities of the various parties. Legal instruments for international railway transport should also be established.
- There are problems and issues in the current concessions between the MPWT and Togo Rail and M.M. Mining. The most urgent matter is who will be responsible for container transport to Burkina Faso in future. This matter should be considered when establishing the policy for developing the railway, including revision work for the current concessionaires.
- The Railway Business Act should be established at an early stage. The purpose of this Act is to secure the safety of railway transportation and protect the benefit of railway users as well as to ensure the sound development of the railway business.

(3) Institutional Arrangements for the Port and Maritime Sub-Sector

- The PAL is preparing to set-up a Single Window System. This system will unify into a single window all the various complicated procedures at the port, import and export procedures, and customs clearance procedures, to speed up the flow of cargoes. In order to improve the efficiency of the port, early implementation and proper operation of this system are necessary.
- The GoT and governments of landlocked countries, together with WAEMU or other international organisations, should support shippers the shippers' council for negotiating with shipping companies to reduce the deposit charge of containers. If the majority of containers are transported to destinations in landlocked countries without devanning in Lomé Port, the operational efficiency of Lomé Port will be drastically improved.
- For the development of the TLC, strengthening the competitiveness of Lomé Port will be the major issue in the near future, so the GoT needs to encourage improving operational efficiency and strengthening the competitiveness of Lomé Port.

(4) Institutional Frameworks for Environmental Management

- Environmental and social management will be implemented by the developer through the company responsible for the execution of works. Monitoring and supervision will be the responsibility of the promoter through its consultant's study of the environmental and social impacts. For the implementation of measures other than those relating to compensation of property and persons affected by the project, an institutional framework encompassing the following four activities is recommended: office control, enforcement measures, control and mediation.

11. Conclusions and Recommendations

The conclusions and recommendations for the development of the TLC are as follows.

(1) Conclusions and Recommendations in the Master Plan

a) Conclusions in the Master Plan

- The proposed projects for the development of the TLC in the Study were selected as the most desirable transport network in terms of economic evaluation, SEA and risk management. In addition, axle load control measures involving installing weighbridges at six locations as a first stage are also judged necessary.
- The corridor choice model was developed by the Study Team in order to compare the import transit cargo volume in four different corridors (Abidjan, Tema, TLC and Cotonou) between their ports and Burkina Faso in the Study. It was suggested that the share of corridor cargo volume could change dramatically due to a reduction in transport time and cost to acceptable levels.
- Among the proposed projects in the TLC development programme, two projects, both on RN17, were selected as the highest priority projects for the F/S.

b) Recommendations in the Master Plan

- The MPWT can inform outcomes of the Study to development partners for possible assistance with project implementation. Also, it is important for the GoT to coordinate with development partners for effective and efficient cooperation on the projects proposed in the TLC development programme.
- The GoT should start implementing axle load and oversized vehicle controls, by setting up weighbridges as recommended in the TLC development programme. At the same time, legal initiatives for controlling axle load and oversized vehicles should be enacted in order to legally control vehicle weight and dimensions.
- The GoT should review the contents of the master plan in 2018 by when the medium-term projects will have been implemented based on the latest economic situation in the West African sub-region, trends of transit cargoes through landlocked countries to/from competing ports, and development plans to strengthen the competitive power of competing ports.
- The GoT should, at an early stage, prepare a F/S for the construction of a new railway line between Lomé Port and the border of Burkina Faso by standard gauge as a long-term plan.
- The GoT should prepare a F/S for the expansion of the mineral berth in Lomé Port to meet the future demand for mineral cargo with a new generation dry bulk carrier, such as the 100,000 DWT class vessel, as the capacity of the planned mineral berth will be insufficient after 2015.
- The MPW needs to secure sufficient budget for the operation and maintenance of the roads to maximise the use of existing road assets, including RN1 between Lomé and Cinkassé, and other national road networks.
- Togo may have to consider setting up an autonomous Road Authority (RA) to improve road management. If this is done, it should be accompanied by a restructuring of the MPWT to enable it to concentrate on policy formulation, evaluation and monitoring.

- It is necessary to strengthen its function and manpower of DGT of the MPWT for executing railway projects. It is also recommended to strengthen the authority of the DGT to supervise the operation and maintenance of the concessionaires.
- The GoT should legislate the railway business act to secure the safety of railway transportation and protect railway users as well as to ensure the sound development of the railway business.
- In order to strengthen the competitiveness of the TLC and to attract transit cargo, it is essential to shorten the transport time in the TLC and reduce cost by the efficient operation of OSBP, reducing check points, improving roads, enhancing port security, and improving the custom clearance procedures at Lomé Port.
- As other corridors are also making efforts to attract transit cargo, it is important that the TLC be made more competitive than other corridors.
- In order to carry out effective and adequate maintenance of the Project roads, the Study Team recommends that the MPWT outsource maintenance works to private enterprises using resources from the Road Fund.

(2) Conclusions and Recommendations in the F/S

a) Conclusions in the F/S

- The Study Team carried out an economic analysis of the above two projects and the results of this analysis indicated that construction of both projects is technically and economically feasible. However, construction of the Malfakassa Bypass is economically feasible only if the Katchamba–Sadori road is improved at the same time. These projects, however, will generate the greatest benefits, if both projects are implemented at the same time, in order to attract more diverted freight vehicles from RN1.
- The Study Team also supported the DGPW in holding one public consultation meeting at Bassar, and no objections to the project plan were raised.
- These two projects will greatly contribute to sustainable economic growth, poverty alleviation and improvement of living conditions in the influence area by improving access to rural growth centres from local communities.

b) Recommendations in the F/S

When the financial source is determined, the DGPW should carry out an EIA to obtain an environmental permit and start land acquisition to secure ROW.

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LIST OF ABBREVIATIONS

Abbreviation	Full Name	
	English	French
AADT	Annual Average Daily Traffic	Débit Journalier Moyen Annuel (DJMA)
ADF	African Development Fund	Fonds Africain de Développement (FAD)
ADT	Average Daily Traffic	Trafic moyen journalier (TMJ)
AEP	Water Supply	Approvisionnement en Eau Potable
AfDB	African Development Bank	Banque Africaine de Développement (BAD)
AFNOR	French Standard Association	Association française de normalisation
AGAIB	Agency Initiatives Support Base	Agence d' appui aux Initiatives à la Base
AGB	General Budget Support	Appui Budgétaire Général
AGR	Income Generating Activity	Activité Génératricede Revenus
AICD	Africa Infrastructure Country Diagnostic	Afrique du Diagnostic des infrastructures nationales
AIDS	Acquired Immunodeficiency Syndrome	Syndrome de l'immunodéficience Acquise
ANAC	Agence Nationale de l'Aviation Civile	Agence Nationale de l'Aviation Civile
ANGE	National Agency of Environmental Management	Agence Nationale de Gestion de l'Environnement
ANPAT	National Association of Agricultural Occupations in Togo	Association Nationale des Professions Avicoles du Togo
ANSAT	National Agency for Food Security in Togo	Agence Nationale de Sécurité Alimentaire du Togo
ANT	National Tourism Administration	Administration nationale du tourisme
ARVs	Antiviral Drugs	Antiviraux
ASATO	National Agency for Food Security in Togo	Agence Nationale de Sécurité Alimentaire du Togo
AU	African Union	Union africaine (UA)
B/C	Benefit-Cost Ratio	-
BCEAO	Central Bank of the States of West Africa	Banque centrale des Etats de l' Afrique de l'Ouest
BIA	International Bank for Africa	Banque Internationale pour l'Afrique
BIDC	Bank for Investment and Development of ECOWAS	Banque d'Investissement et de Développement de la CEDEAO
BINTO	Bakery Industrial in Togo	Boulangerie Industrielle du Togo
BOAD	West African Development Bank (WADB)	Banque Ouest Africaine de Développement
BOD	Biochemical oxygen demand	demande biochimique en oxygène (DBO)
BOT	Built Operate Transfer	Built Operate Transfer
BP	Border Post	Poste de Contrôle Juxtaposé (PCJ)
CAPER	Autonomous Company for Tolls and Road Maintenance	Compagnie Autonome des Péages et de l'Entretien Routier
CBC	Burkina Shipper's Council	Conseil Burkinabe des Chargeurs
CBTC	Communication Based Train Control	-
CCI-BF	Burkina Faso Chamber of Commerce	La chambre de Commerce et d'Industrie du Burkina Faso
CCIT	Chamber of Commerce and Industry of Togo	Chambre de Commerce et d'Industrie du Togo
CDB	China Development Bank	China Development Bank
CENATIS	National Weaving Centre	Centre Nationalde Tissage
CGES	Environmental and Social Management Framework	Cadre de Gestion Environnementale et Sociale
CFS	Container Freight Station	-
CFT	Togo Railway	Chemin de fer du Togo
CH4	Methane	Méthane
CILSS	Permanent Inter-State Fight against Drought in the Sahel	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CIMAO	Cement of West Africa	Cimenteries de l'Afrique de l'Ouest
CIMC	Coronation International Mining Corporation	-
CNACET	National Accreditation and Ranking Tourist Establishments	Commission Nationale d'Agrément et de Classement des Établissements Touristiques

Abbreviation	Full Name	
	English	French
CNCT	National Shipper's Council of Togo	Conseil National des Chargeurs Togolais
CNPPD	National Council of Development Policy	Conseil national de pilotage des Politiques de Développement
CO	Carbon Monoxide	Monoxyde de Carbone
CO_2	Carbon Dioxide	Dioxyde de Carbone
COD	Chemical oxygen demand	Demande chimique en oxygène (DCO)
Cr	Chromite	Chromite
CRM	Regional Chamber of Trades	Chambre Régionale des Métiers
CROP	Regional Committee Guidance and Control	Comité Régional d'Orientation et de Pilotage
CPM	Prefectural Chaber of Trades	Chambres Préfectorales des Métiers
CU	Community Road	Route Communautaire
CVST	Village Committee for Following the Transhumance	Comité Villageois de Suivi des Transhumances
CVD	Village committee Development	Comité villageoisde Développement
DCGL	Diamond Cement Ghana Limited	Diamond Cement Ghana Limited
DCRR	Department of Construction and Reconstruction of Roads	Construction et de la Reconstruction des Routes
DEG	German Investment and Development Corporation	Société allemande d'Investissement et de Développement
DEPSE	Department of Studies, Planning and Monitoring and Evaluation	Direction des Etudes, de la Planification et du Suivi-Évaluation
DGSNA	Directorate General of Statistics and National Account	Direction Générale de la Statistique et de la Comptabilité Nationale (DGSCN)
DGT	Directorate General of Transport	Direction Générale des Transports
DGPW	Directorate General of Public Works	Direction Générale des Travaux Publics (DGTP)
DL	Diesel Locomotives	Locomotives Diesel
DPG	Declaration of Political General	Déclaration de Politique Générale
DPR	Directorate of Rural Roads	Direction des Pistes Rurales
DRAEP	Regional Directorate of Agriculture, Livestock and Fisheries	Direction Régionale de l'Agriculture de l'Elevage et de la Pêche
DRRT	Directorate of Road and Railway Transport	Direction des Transports Routiers et Ferroviaires (DTRF)
DR-TP	Director of Public Works	Directeur des Travaux publics
DTRF	Directorate of Road and Railway Transportation	Direction des Transports Routiers et Ferroviaires
DWT	Deadweight Tonnage	Tonnes de Port en Lourd (tpl/dwt)
EC	European Community	Communauté Européenne (CE)
ECOWAS	Economic Community of West African States	Communauté Économique des États de l'Afrique de l'Ouest (CEDEAO)
EDF	European Development Fund	Fonds européen de Développement (FED)
EIA	Environmental Impact Assessment	Études d'Impact Environnemental (EIE)
EIRR	Economic Internal Rate of Return	Taux de Rentabilité Economique Interne (TREI)
EMATO	Mali Warehouse in Togo	Entrepôts Maliens au Togo
ENPV	Economic Net Present Value	Economique valeur actuelle nette (EVAN)
EPC	Engineering, purchase, and construction	-
EPZ	Export Processing Zone	Zone de traitement des exportations (ZTE)
ERTMS	European Rail Traffic Management System	-
ESOP	Enterprise Services Producer Organisations	Entreprise de Services aux Organisations de Producteurs
EU	European Union	Union Européenne (UE)
EUR	Euro	Euro
EXIM	Export Import Bank (China)	Export Import Bank
FAIR	Regional Integration Aid Fond	Fonds d'aide à l'intégration régionale
Fe	Iron	Fer
FER	Road Maintenance Fund	Fonds d'Entretien Routier

Abbreviation	Full Name	
	English	French
FCFA	CFA franc	Franc des Colonies Françaises d'Ffrique
FCL	Full Container Load	Full Container Load
FDI	Foreign Direct Investment	Investissements Directs Étrangers (IDE)
FMO	Netherlands Development Finance Company	Netherlands Development Finance Company
F/S	Feasibility Study	Étude de Faisabilité (E/F)
FTZ	Free Trade Zone	Zone de libre-échange
GDP	Gross Domestic Product	Produit Intérieur Brut (PIB)
GDSNA	Directorate General of Statistics and National Accounts	Direction Générale de la Statistique et de la Comptabilité Nationale (DGSCN)
GHG	Greenhouse Gas	Gaz à Effet de Serre (GES)
GIFS	Integrated Management of Soil Fertility	Gestion Intégrée de la Fertilité des Sols
GIPATO	Groupement Interprofessionnel des Artisans of Togo	Groupement Inter Professionnel des Artisans du Togo
GIRE	Integrated Management of Water Resources	Gestion Intégrée des Ressources en Eau
GoJ	Government of Japan	Gouvernement du Japon
GoT	Government of Togo	Gouvernement du Togo
GPS	Global Positioning System	-
GSM-R	Global System for Mobile Communications-Railway	-
HCM	Highway Capacity Manual	Highway Capacity Manual
HDM-4	Highway Development and Management Model-4	-
HIV	Human Immunodeficiency Virus	Virus de l'immunodéficience Humaine (VIH)
HS	Harmonized Commodity Description and Coding System	Système Harmonisé de Désignation et de Codification des Marchandises
ICAT	Institute of Technical Support Tips	Institut de Conseils d'Appui Technique
ICB	International Competitive Bidding	Appel d'offres international
ICD	Inland Container Depot	Dépôt intérieur de conteneurs (DIC)
ICT	Information and Communication Technology	Technologies de l'information et de la communication (TIC)
IDA	International Development Association	Association internationale de développement (AID)
IDB	Islamic Development Bank	Banque Islamique de Développement
IEE	Initial Environmental Examination	Examen Environnemental Initial (EEI)
IFC	International Finance Corporation	Société financière internationale (SFI)
IFG-TG	International Fertilizers Group-Togo	International Fertilizers Group-Togo
IMF	International Monetary Fund	Institution de Micro Finance
INFA	National Institute for Agricultural Training	L'Institut National de Formation Agricole
IRDP-Mô	Integrated Rural Development Project of Mô plain	Projet de Développement Rural Intégré de la plaine de Mô
IRI	International Roughness Index	Indice de Rugosité International
ISFM	Promotion of Integrated Soil Fertility Management	Gestion Intégrée de la Fertilité des Sols
ISPS	International Ship and Port Facility Security	International Ship and Port Facility Security
ITC	Information Technology and Communication	Technologies de l'information et de la Communication (TIC)
ITCZ	Intertropical Convergence Zone	Zone Intertropicale de Convergence (ZIC)
ITRA	Togolese Institute for Agronomic Research	Institut Togolais de la Recherche Agronomique
IUCN	International Union for Conservation of Nature	Union Internationale pour la Conservation de la Nature (UICN)
IUOTO	International Union of Official Travel Organizations	l'Union internationale des organismes Officiels de tourisme (UIOOT)
IWRM	Integrated Water Resources Management	Gestion Intégrée des Ressources en Eau (GIRE)
JICA	Japan International Cooperation Agency	Agence Japonaise de Coopération Internationale
KV	Kilovolt	Kilovolts
JPY	Japanese Yen	Yen japonais
LCL	Less than Container Load	Charge Less Conteneur

Abbreviation	Full Name	
	English	French
LCT	Lomé Container Terminal	Lomé Container Terminal
LoS	Levels of Service	Niveaux de Service
MALF	Ministry of Agriculture, Livestock and Fisheries	Ministère de l'Agriculture, de l'Elevage et de la Pêche (MAEP)
MEFR	Ministry of Environment and Forest Resources	Ministère de l'Environnement et des Ressources Forestières (MERF)
MDG	Millennium Development Goal	Objectifs du Millénaire pour le Développement (OMD)
MH	Ministry of Health	Ministre de la Santé (MS)
MIS	Market information System	Système d'Iinformation du Marché (SIM)
MI	Ministry of Industry	Ministère de l'Industrie
MPW	Ministry of Public Works	Ministère des Travaux publics (MTP)
MPWT	Ministry of Public Works and Transport	Ministère des Travaux publics et des Transports (MTPT)
MT	Ministry of Transport	Ministère des Transports
MPDTM	Ministry of Planning, Development and Territory Management	Ministère de la planification, du Développement et de l'Aménagement du Territoire (MPDAT)
MRH	Ministry of Road and Highway (Ghana)	Ministère de la Route et l'Autoroute (MRA, Ghana)
MSC	Mediterranean Shipping Company S.A.	Mediterranean Shipping Company S.A.
MW	Megawatt	Mégawatt
NCTC	National Council for Shippers in Togo	Nouvelles Technologies de l'Information et de Communication
NAP	National Action Programme	Programme d'Action Nationale (PAN)
NEAP	National Environment Action Plan	Plan National d'Action pour l'Environnement (PNAE)
NEMP	National Environmental Management Plan	Programme National de Gestion de l'Environnement (PNGE)
NGO	Non-Governmental Organization	Organisation Non Gouvernementale (ONG)
NO_2	Nitrogen dioxide	Dioxyde d'azote
NOx	Nitrogen oxide	Oxydes d'azote
NSCT	New Cotton Company of Togo	Nouvelle Société Cotonnière de Togo
OCC	Operation Control Centre	Centre de contrôle des opérations (CCO)
OECD	Organization for Economic Co-operation and Development	Organisation de Coopération et de Développement Économiques (OCDE)
O/D	Origin-Destination	Origine-Destination
OIC	Organisation of Islamic Conference	Organisation de la Conférence Islamique (OCI)
O&M	Operation and maintenance	-
OP	Operational Policy (WB)	Operational Policy (Politique Opérationnelle) (BM)
OPA	Professional Agricultural Organizations	Organisations Professionnelles Agricoles
OPT	Togolese Phosphates Office	Office togolais des phosphates
OSBP	One stop border post	Poste de contrôle juxtaposé (PCJ)
OTRAF	Road Transport Organisation in Burkina Faso	Organisation des Transporteurs Routiers du Faso
PACITR	Community Action Program for Infrastructure and Road Transport	Programme d'Actions Communautaires des Infrastructures et Transports Routiers
PADAT	Support Programme for Agricultural Development in Togo	Programme d'Appui au Développement Agricole au Togo
PAL	Autonomous Port of Lomé	Port Autonome de Lomé
PAN / LCD	National Action Programme to Combat Desertification	Programme d'Action National de Lutte Contre la Désertification
PAP	Person Affcted by Project	Personnes affectées par le Project
PARTAM	Project of Development and Rehabilitation of Agricultural Land in the area of Mission Tové	Projet d'Aménagement Hydro-Agricole des Terres de la Zone de Mission Tové
PASA	Project to support the agricultural sector	Projet d'appui au secteur agricole
PAUT	Urban Development Project in Togo	Projet d'Aménagement Urbain du Togo

Abbreviation	Full Name	
	English	French
Pb	Lead	Conduire
PBVM	Hydro-agricultural project in the Lower River Valley Mono	Projet d'Aménagement Hydro-Agricole des Terres de la Basse Vallée du Mono
PC	Prestressed Concrete	Béton pré Contraint
PDC	Community Development Program	Programme de Développement Communautaire
PE	Stated Preference (SP)	Préférences Exprimées
PEA	Promoting the development of Agricultural Enterprises Centres	Pôles d'Entreprises Agricoles
PGES	Development of Environmental and Social Management Plan	Plan de Gestion Environnementale et Sociale
PGM	Platinum Group Metal	En Platinoïdes
pH	potential Hydrogen	potentiel hydrogène
PK	Kilometer Point	Point Kilométrique
PME	Small and Middle Enterprises	Petites et Moyennes Entreprises
PNAE	National Action Plan for the Environment	Plan National d'Action pour l'Environnement
PNDAT	National Policy on Agricultural Development in Togo	Politique Nationale du Développement Agricole du Togo
PNGE	National Environmental Management	Programme National de Gestion de l'Environnement
PNIASA	National Programme for Agricultural Investment and Food Security	Programme National d'Investissement Agricole et de Sécurité Alimentaire
PO	Professional Organization	Organisation Professionnelle (OP)
P_2O_5	Phosphorus Pentoxide	Pentoxyde de Phosphore
ppb Pt.	Parts-Per-Billion Platinum	Parties Par milliard Platinum
PPP	Public Private Partnership	Partenariat Public Privé
PRC	Rural Classified Road	Piste Rurale Classée
PRFTTRIE	Regional Programme to Facilitate Inter-State Road Transport and Transit	Programme Régional de Facilitation des Transports et du Transit Routier Inter-Etats
PRNC	Rural Non Classified Road	Piste Rurale Non Classée
PRSP	Poverty Reduction Strategy Paper	Document Stratégie de Réduction de la Pauvreté (DSRP)
PRT	Development Project of Root and Tuber Plants	Projet de développement des Plantes à Racine et Tubercules
PSAEG	Project Support Economic Activity Groupings	Projet de Soutien aux Activités Economiques des Groupements
PSO	Public Service Obligation	Obligation de Service Public (OSP)
PSP	Private-sector participation	-
PTFM	Multifunctional Development Platform Program	Programme Plate Forme Multifonctionnelle
Q	Quay	Quai
RA	Road Authority	Autorité routière autonome (AR)
RAP	Resettlement Action Plan	Plan d'Action de Réinstallation (PAR)
RC	Reinforced concrete	-
RD	Road Density	Densité des routes (DR)
RDI	Road Development Index	Indice de développement du route (IDR)
RF	Road Fund	Fonds Routier
RN	National Road	Route Nationale
RNNR	National Non Paved Road	Route Nationale Non Revêtue
RNR	National Paved Road	Route Nationale Revêtue
Ro-Ro	Roll-on/roll-off	Roulier
ROW	Right of Way	Garantir l'emprise
RTG	Rubber Tired Gantry	Pneus Portique
S.A.	Limited Company	Société Anonyme

Abbreviation	Full Name	
	English	French
SAFER	Autonomous Company in charge of Road Financing	Société Autonome de Financement de l'Entretien Routier
SAM	Furniture and Joinery Company	Société d'Ameublement de Menuiseries
SAP	Structural Adjustment Programs	Programmes d'Ajustement Structurels (PAS)
SAZOF	Society of Directors of the Zone	Société d'Administration de la Zone Franche
SCAPE	Strategy of Accelerated Growth and Employment	Stratégie de Croissance Accélérée et de Promotion de l'Emploi
SEA	Strategic Environmental Assessment	Évaluation Environnementale Stratégique (EES)
SEDEX	Sedimentary Exhalative	Exhalatif Sédimentaire
SETRA	Technical Guidelines for Design of Roads for the Construction of Major Roads	d'Etudes Techniques des Routes et Autoroutes
SiO_2	Silicon Dioxide	Dioxyde de silicium
SME	Small and medium enterprise	Petites et Moyennes Entreprises (PME)
SMS	Short Message Service	Short Message Service
SNCT	National Society of the Railways of Togo	Nouvelle Société Cotonnière du Togo
SNDD	National Strategy on Sustainable Development	Stratégie Nationale de Développement Durable
SNPR	National Feeder Road Department	Service National des Pistes Rurales
SNPT	New Phosphates Society of Togo	Société Nouvelle des Phosphates de Togo
SO_2	Sulphur Dioxide	Dioxyde de Soufre
SiO_2	Silicon Dioxide	Dioxyde de silicium
SOTOMA	Togolese Marble Society	Société Togolaise de Marbrerie
SOTRAL	Transport Society in Lomé	Sociétéde Transportde Lomé
SP	Stated Preference	Préférences Exprimées (PE)
SPT	Standard Penetration Test	-
SS	Suspended solids	Matière en suspension (MES)
SSA	Sub-Sahara Africa	Afrique subsaharienne (ASS)
STD	Sexually Transmitted Diseases	Maladie Sexuellement Transmissible (MST)
STI	Sexually Transmitted Infection	Infections Sexuellement Transmissibles (IST)
SWOT	Strengths, Weaknesses, Opportunities, and Threats	Forces Faiblesses Opportunités Menaces (FFOM)
TEU	Twenty-foot Equivalent Unit	Équivalent Vingt Pieds (EVP)
TEX	Togo Textile Factory	Usine Textile Togo
TLC	Togo Logistic Corridor	Togo Corridor Logistique
TVT	Togo Television	Télévision officielle du Togo
UDPT	Urban Development Project in Togo	Projet d'Aménagement Urbain du Togo (PAUT)
UIC	International Union of Railways	Union Internationalle des Chemins de fer
UN	United Nations	Organisation des Nations unies (OUN)
UNCCD	United Nations Convention to Combat Desertification	-
UNCTAD	United Nations Conference on Trade and Development	Conférence des Nations Unies sur le Commerce et le Développement (CNUCED)
UNECA	United Nations Economic Commission for Africa	Nations Unies Commision économique pour l'Afrique (NUCEA)
UNUT	Niger Public Transport Utilisation Concil	Conseil Nigerien des Utilisateurs des Transport Publics
UNWTO	United Nations World Tourism Organization	Organisation mondiale du tourisme (OMT)
USA	United States of America	États-Unis d'Amérique
USAID	United States Agency for International Development	L'Agence des États-Unis pour le développement International
USD	United States Dollar	Dollar US
UTB	Union Bank of Togo	Union Togolaise de Banque
VAT	Value Added Tax	Taxe sur la Valeur Ajoutée (TVA)
v/c	Volume by Capacity Ratio	Volume de ratio de capacité
veh./day	vehicle per day	véhicules par jour (véh./jour)

Abbreviation	Full Name	
	English	French
VOC	Vehicle Operating Cost	Coût d'opération des véhicules (COV)
VTCC	Vehicle Technical Control Centre	Centre de Contrôle Technique Automobile (CCTV)
WAAPP	West Africa Agricultural Productivity Program	Programme de Productivité Agricole en Afrique de l'Ouest (PPAAO)
WACEM	West African Cement S.A.	West African Cement
WADB	West African Development Bank	Banque Ouest-Africaine de Développement (BOAD)
WAEMU	West African Economic and Monetary Union	Union Économique et Monétaire Ouest-Africaine (UEMOA)
WB	World Bank	Banque Mondiale (BM)
WFP	World Food Program	Programme Alimentaire Mondial (PAM)
ZAAP	Priority Action Area	Zone d'Action Prioritaire

CHAPTER 1
INTRODUCTION

Chapter 1 Introduction

1.1 Background of the Study

The TLC has significant potential for the economic and social development of Togo and the region. The 667 km corridor, stretching from the Lomé Port, an entrance to Togo to Cinkassé, to the border with Burkina Faso, includes roads, bridges, and railway, and is mainstay of the country. Restarting full-scale economic development in 2007, Togo declared its policy of becoming a "port-oriented nation" by stimulating both transhipment and transit, supported by increasing the capacity of the Lomé Port.

The sub-region also has the same goals. The WAEMU and ECOWAS are taking the initiative for promoting smooth regional logistics. As benchmarks, WAEMU and ECOWAS instituted the Community Infrastructure and Road Transport Action Programme (PACITR: *Le Programme d'Actions Communautaire des Infrastructures et Transports Routiers*) and Regional Programme to Facilitate Inter-State Road Transport and Transit (PRFTTRIE: *Programme Régional de Facilitation des Transports et du Transit Routier Inter-Etats*) to coordinate and harmonise the strategies for development of the transport sector in all member nations, then designated 11 corridors, which include the TLC, as priority for development.

These intrinsic potentials drove the GoT to request the Government of Japan (GoJ) for technical cooperation for development planning through the "Project for Modernisation and Development of the Transport Sector" to harmonise all development projects and plans under one umbrella to achieve the effective and efficient modernisation and development of the country.

Based on the request from the GoT, the MT and MPW[1] of the GoT, and Japan International Cooperation Agency (JICA) have discussed and initiated the project by dispatching a JICA mission to conduct a preparatory survey for the project. As a result of the series of discussions, the Togo side and JICA's mission agreed to carry out the "Project for the Study on Togo Logistics Corridor Development" (Study).

1.2 Objectives of the Study

The objectives of the Study are as follows:

(1) To prepare the TLC Development Master Plan with a target year of 2030, including all medium- and long-term priority projects.

(2) To share the results of the Study to prepare the TLC Development Master Plan, including priority projects, with development partners.

[1] The Ministry of Transport and the Ministry of Public Works merged on 18th September, 2013 after the National Assembly election on 25th July, 2013, to become the Ministry of Public Works and Transports. This report, however, refers to the previous government organizational structure, except Chapters 10 and 12.

(3) To carry out the F/S for the selected priority project(s) in order to confirm the viability of the project(s).

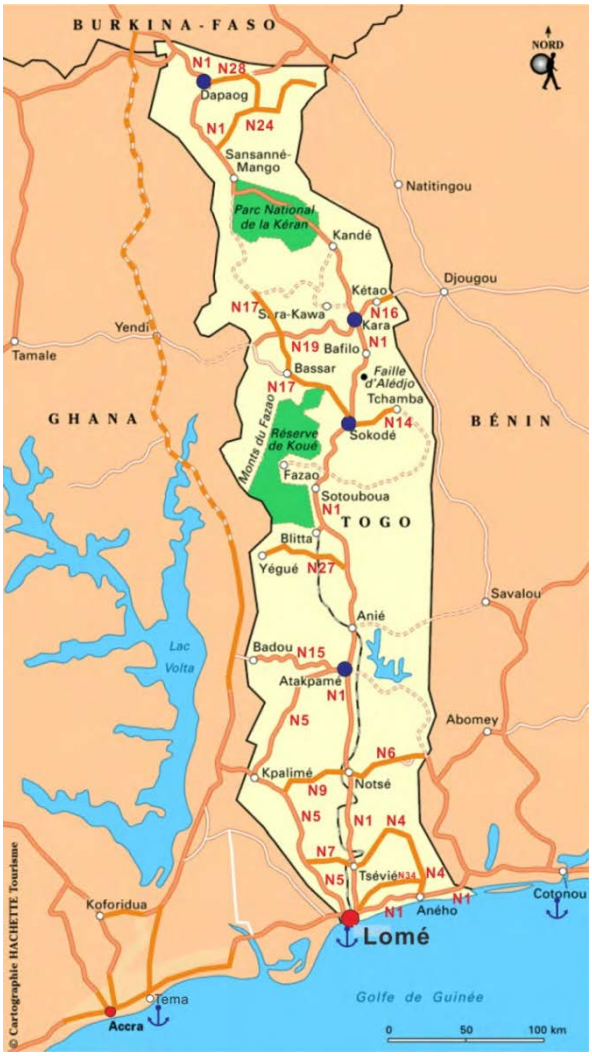
(4) To develop the capacity of personnel in the MT and MPW for planning and implementing transport-related projects.

1.3 Study Area

The Study Area is the whole country of Togo (see Figure 1-1). In addition, Burkina Faso, Niger, Benin, Ghana, Mali and Côte d'Ivoire are considered to be a part of the Study Area from the viewpoint of developing sub-regional logistics corridors in West Africa, as shown in Figure 1-2.

Source: Study Team

Figure 1-2 Study Area Covering Neighbouring Countries



Source: Study Team

Figure 1-1 Study Area in Togo

1.4 Scope of the Study

The Study Team carried out the Study as shown in the flowchart of Figure 1-3.

1.4.1 Work Items

The Study Team completed the following work items of the Study.

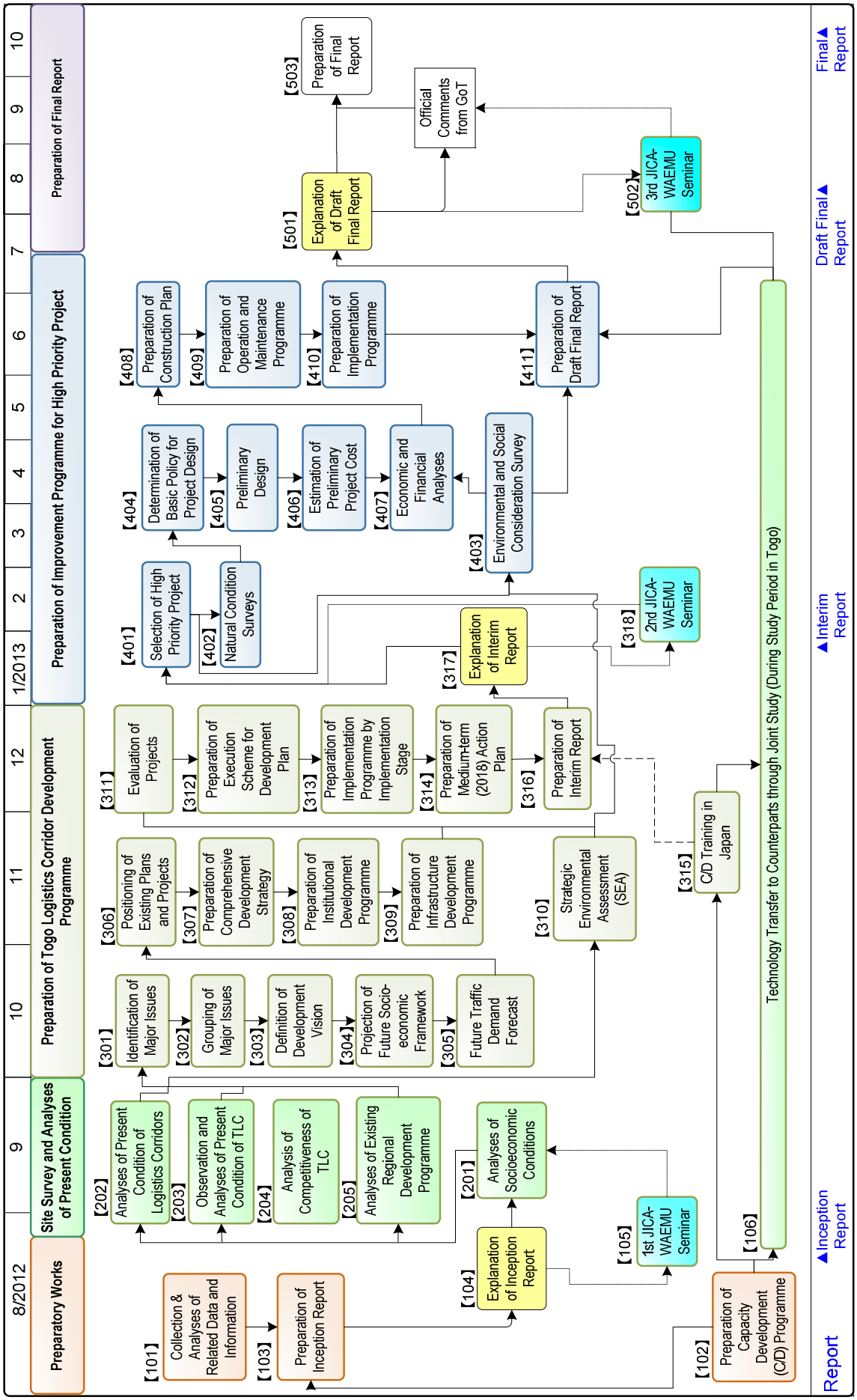


Figure 1-3 Work Flowchart

Source: Study Team

(1) Preparatory Works
[101] Collection and Analyses of Related Materials and Information
[102] Preparation of the Capacity Development Programme for the Study
[103] Preparation of Inception Report
[104] Submission and Discussion of Inception Report
[105] 1st JICA Seminar
(2) Site Survey and Analyses of Present Conditions
[201] Analyses of Socioeconomic Conditions
[202] Analyses of Present Condition of Logistics Corridors in the Region
[203] Observation and Analyses of Present Condition of the TLC
a) Policy for the Transport Sector
b) Present Condition of Transport Sub-sectors
c) Traffic Surveys
d) Logistics Survey
[204] Analyses of the Competitiveness of the TLC
[205] Analyses of Existing Regional Development Programme
[206] Technology Transfer to Counterparts through Joint Study
(3) Preparation of Togo Logistics Corridor Development Programme
[301] Identification of Major Issues
[302] Grouping of Major Issues
[303] Definition of Development Vision
[304] Projection of Future Socioeconomic Framework
[305] Future Traffic Demand Forecast
[306] Positioning of Existing Plans and Projects
[307] Preparation of Comprehensive Development Strategy
a) Basic Policy for the Development of the TLC
b) Alternative Networks
c) Preparation of Development Strategy
[308] Preparation of Institutional Development Programme
a) Analysis of Sub-regional Infrastructure and Road Transport Action Plan by the WAEMU
b) Preparation of Institutional Development Programme
[309] Preparation of Infrastructure Development Programme
[310] Strategic Environmental Assessment
[311] Evaluation of Projects
[312] Preparation of Execution Scheme for Development Programme
[313] Preparation of Implementation Programmed by Phase
[314] Preparation of Medium Term (2018) Action Plan
[315] Capacity Development Training in Japan
[316] Preparation of Interim Report
[317] Explanation of the Interim Report
[318] 2nd JICA-WAEMU Seminar
(4) Preparation of the Improvement Programme for High Priority Projects

[401] Selection of High Priority Project
[402] Natural Condition Surveys
[403] Environmental and Social Survey
[404] Determination of a Basic Policy for Project Design
[405] Preliminary Design
[406] Preliminary Estimation of Project Cost
[407] Economic and Financial Analyses
[408] Preparation of Construction Plan
[409] Preparation of Operation and Maintenance Programme
[410] Preparation of Project Implementation Programme
[411] Preparation of Draft Final Report

(5) Preparation of Final Report

[501] Explanation of Draft Final Report
[502] 3rd JICA-WAEMU Seminar
[503] Preparation of Final Report

1.5 Study Organisation

1.5.1 Study Team Members

The Study Team members are listed in Table 1-1.

Table 1-1 Study Team Members

Name	Organisation	Responsibility
Mr. Hikaru NISHIMURA	CCI	Team Leader/Corridor Planning/Donor Coordination
Mr. Shinya TOYOSAKI	CCI	Deputy Team Leader/Road Management System/Road Design
Dr. Shinya HANAOKA	YEC (TIT)	Regional Logistics/Logistics System (1)
Mr. Osamu OTSU	YEC	Regional Logistics/Logistics System (2)
Dr. Frederick ADDO'ABEDI	CCI (Vision Ghana)	Road and Bridge Planning
Mr. Makoto MATSUURA	YEC (Ingérosec)	Traffic Survey
Mr. Kazuo IWAI	YEC	Traffic Demand Forecast
Mr. Ryuichi OIKAWA	YEC	Logistics Cities/Logistics Facility Planning
Mr. Tsutomu KUBO	CCI (Pen)	Port Planning
Mr. Naoki TAKANASHI	CCI (Tostems)	Railway Planning
Mr. Nobuyuki CHIBA	CCI (Tostems)	Railway Facility Planning
Mr. Masahiro SHIRATORI	CCI	Natural Condition Survey
Mr. Shinichi UEDA	CCI	Bridge Design
Mr. Toshihiro HOTTA	YEC	Construction Planning/Cost Estimation
Mr. Izumi TAKAI	YEC	Economic/Financial Analyses
Mr. Tomomi FUJITA	CCI	Regional Planning/ Environmental and Social Considerations
Ms. Ryoko ONO	CCI	Assistance for Corridor Planning/Project Coordination
Ms. Yuka OKADA	CCI (Franchir)	Interpreter (Japanese - French)

Note - CCI: Central Consultant Inc., YEC: Yachiyo Engineering Co., Ltd., TIT: Tokyo Institute of Technology,
Ingérosec: Ingérosec Corp., PEN: Pen Co., Ltd., Tostems: Tostems Inc.
Source: Study Team

1.5.2 List of Officials and Counterpart Personnel of Togo related to the Study

Table 1-2 lists the officials and counterpart personnel of Togo who worked closely with the Study Team in the Study.

Table 1-2 List of Officials and Counterpart Personnel of Togolese related to the Study

Name	Organisation	Responsibility
Mr. FATONZOUN Mawutoe	MT	Secretary General
Lt. Col. BAOUNA	DRRT, MT	Director
Mr. SIKAO Souleymane	DGT, MT	Director General
Mr. TCHEDE ISSA Kanfitine	DGTP, MTP	Director General
Mr. GATWABUYEGE Vincent	Office of the President	Technical Advisor
Mr. KABITCHADA Komi Essonêya	PAL	Director of Technical Dept.
Mr. APETOVI Anani	DGT, MT	[C/P for Transport Planning], In charge of Studies
Mr. AGBOUKPE Kolion D.	DGPW, MPW	[C/P for Economic Evaluation], Chief of Economical, Environmental and Social Studies
Mr. BOYINDJO Tchontchoko	DGPW, MPW	[C/P for Bridge Planning], Chief of Bridge Design Division
Mr. NAMBIEMA Nodoh Wattara	DGPW, MPW	[C/P for Road Planning], Chief of Earth Road and Rural Road Study and Planning Division
Dr. DEMAKOU Yéndoubé	MPDTM	[C/P for Regional Planning], In charge of Planning and Territorial Management

Note - MT: Ministry of Transport, DGT: Directorate General of Transport, DRRT: Directorate of Road and Railway Transport
MPW: Ministry of Public Works, DGPW : Directorate General of Public Works,
MPDTM: Ministry of Planning, Development and Territory Management,
PAL: Autonomous Port of Lomé

Source: Study Team

CHAPTER 2

OUTLINE OF THE STUDY AREA

Chapter 2 Outline of the Study Area

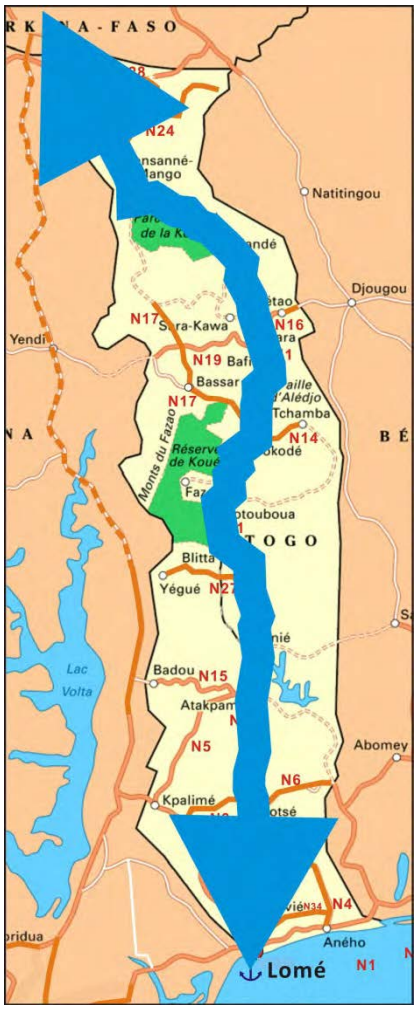
2.1 Definition of the Togo Logistics Corridor

The TLC is defined as the transport network between the Port of Lomé and Cinkassé OSBP, connecting to Burkina Faso, passing through most of the regional capital cities, Lomé, Akakpamé, Sokodé, Kara, and Dapaong. At present, National Road RN1 is the sole transport network functioning as the TLC with the total length of 667 km.

In the Study, a more comprehensive, broader definition of TLC can also be used, applying the broad and general meaning of regional economic activities along the national trunk road in Togo, since the future development of the TLC should be examined as an issue of integrated sub-regional development with the improvement of the national road itself. Therefore, the TLC is defined as the sub-regional area, extending south to north through the country toward the landlocked countries, Burkina Faso, Niger and Mali, composed of the trunk transport network and the economic sub-regions relying on that transport network.

Moreover, the TLC is considered to cover the whole nation of Togo in some cases, including the international (transit) transport network.

Figure 2-1 shows the location of the TLC.



Source: Study Team

Figure 2-1 Location of the TLC

2.2 Regional Coordination Programme

(1) WAEMU

The WAEMU is an organisation of eight West African states. It was established to promote economic integration among countries that share the FCFA as a common currency. WAEMU was created by a treaty signed by seven states at Dakar, Senegal, on 10th January, 1994, and Guinea-Bissau became the eighth and only non-Francophone member state in 1997.

The PACITR was approved at the same time as the network of road infrastructures within the WAEMU, by decision No. 7/2001 of 20th September, 2001.

a) Outline of PACITR

The PACITR has been functioning with participation of the following organisations: 1) the

States of the union, 2) the three institutions of the union (the Commission, the West African Development Bank (BOAD: *Banque Ouest Africaine de Développement*) and the West African State Central Bank (BCEAO: *La Banque Centrale des Etats de l'Afrique de l'Ouest*), 3) the operators of the transport sector, 4) the regional organisation of West Africa (ECOWAS), and the Permanent Interstate Committee of Struggle against Drought in the Sahel (CILSS: *Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel*) and 5) development partners.

As described in the structural chapter on the strategy, a communal network has been determined and three priorities have been designated:

- 1st priority:
  - The trunk roads joining the capitals cities of the Member States of the WAEMU.
- 2nd priority:
  - The alternative links between the capital cities
  - The interconnection roads
- 3rd priority
  - The roads heading toward the neighbouring countries that are not members of the union and extension roads of the communal network.

Table 2-1 shows the road development plans under the PACITR, and Table 2-2 shows the programme for improvement under the PACITR and its target road network is shown in Figure 2-2.

Source : Programme d'Actions Communautaire, September 2001, WAEMU

Figure 2-2 Target Roads of the PACTIR

Table 2-1 Road Development Plans under the PACITR

	Basic plan	Targets	Contents
1	Development of international road infrastructure	· Standardisation of periodic maintenance programme for inter-member road network · Standardisation of paved road levels · Development of missing links in the member states	· Priority 1: Paving of the roads connecting the capitals of the member states, development of missing links, improvement of road service · Priority 2: Periodic maintenance and improvement of roads connecting intra-community cities, including alternative roads connecting the capitals · Priority 3: Interconnecting roads in the ECOWAS countries and extension of road networks in the member states
2	Improvement of secondary roads near borders and branches	· Road development to contribute to poverty reduction in local villages	· Performing pilot projects in five border areas subject to finance by the Regional Integration Aid Fond (FAIR: *Fonds d'aide à l'intégration régionale*). The project selection criteria are based on (1) socioeconomic factors, (2) residents' participation, (3) environmental protection, and (4) regional integration.
3	Development of an information system for roads, transportation and traffic safety, and performance indicators	· Development of information systems in each country to meet the demand · Information transmission to be performed by the WAEMU Secretariat and each country	· Building systems for collecting, processing and managing information on the road networks in each country · Building technical and monetary systems for monitoring and evaluation of maintenance works · Updating legal systems pertaining to road transportation and infrastructure · System management shall be performed by the secretariat of WAEMU; links inserted in the home page of WAEMU. Information covered by three road infrastructure items, road transportation conditions and traffic safety on the WAEMU home page
4	International road transportation and transit facilitation	· Enhancement of competitiveness in the economy in WAEMU zone by smooth trading and removal of non-tariff barriers · Reduction of transportation costs	· Removal of special permissions and checkpoints (refrain from setting two or more checkpoints in each corridor in the future) · Each country to implement policing vehicles in order to use standard vehicles in international transportation · Requiring vehicles used to ship products to carry a customs seal · Promotion of freedom of international transportation and transit in each country · Development of provisions for smooth transportation and smooth inspection escorting to the borders. The escort shall be removed in the future.
5	Traffic safety	· Standardisation of transportation/traffic systems · Promote traffic safety measures in member countries	· Preparation of common road maps and promotion of traffic safety policies in each country · Based on the response of each country, provision of an WAEMU action plan; collection of traffic accident statistics, implementation of traffic safety training programme, etc.

Source: WAEMU

Table 2-2 PACITR Programme and Its Target Roads

Programme	Target Road Length (km)
Periodic maintenance of roads	2,640
Rehabilitation/backing of roads	4,843
Planning and paving earth roads by asphalt concrete pavement	4,811
Special programme for Guinée Bissau	523
Total	12,817

Source: Évaluation à mi-parcours et élaboration d'un cadre logique, Rapport definitive, Septembre 2010, WAEMU

b) Progress of Development

In 2010, the evaluation of PACITR implementation was completed. As of 2001, it was

planned to improve a total road length of 12,817 km. As of 2010, only 52% of this target, or a total road length of 6,721 km, had been improved. A breakdown of Plan 1 progress (Road Development Plan) showed 62% for Priority 14.9% for Priority 2, and 58% for Priority 3.

Table 2-3 Progress of road development under PACITR (as of 2010)

Programme	Plan (km)	Done (km)	Actual rate	Implementation by other projects (km)	Total (km)
Maintenance of paved roads	2,640	952	36%	409	1,361
Road rehabilitation	4,843	2,743	57%	652	3,395
Paving	4,811	3,026	63%	708	3,734
Special programme for Guinea-Bissau	523	0	0%	0	0
Total	12,817	6,721	52%	1,769	8,490

Source: WAEMU

The improvement of secondary roads near borders and branches in Plan 2 has not progressed well due to a shortage of funds and difficulty in selecting subject roads. The development of an information system in Plan 3 is underway now; the work did not start until 2007. Concerning policing of overloading, the WAEMU Summit Meeting in 2005 adopted a "Provision concerning standards regulating size, weight, and axle load, and management procedures for large trucks running in the WAEMU zone." This provision went into effect in 2007. However, the provision has not been enforced well up to now. Concerning international road transportation and smoothing of transit in Plan 4, the Committee for Smoothing Transportation in Each Country, the Committee for Monitoring Abnormalities (Overloading, etc.) on Arterial Roads, and the Committee for Monitoring the Removal of Non-tariff Barriers were set up and construction of a One Stop Border Post (OSBP) was completed. However, the removal of non-tariff barriers, smoothing of international transportation and transit, and reduction of transportation costs have not been achieved and remain pending issues. Concerning traffic safety measures in Plan 5, a WAEMU provision was adopted in 2009. It had not been made effective and enforced as of 2011.

In addition, the WAEMU headquarters has conducted a survey for developing the intra-community road network of each member country, taking advantage of Regional Integration Assistance Funds (FAIR). In 2009, a survey was conducted of road rehabilitation equivalent to 2,210 km, using a budget of FCFA 6.3 billion.

It was expected that PACITR would be implemented between 2001 and 2011. Extending the plan to 2016 due to the low implementation rate is now being considered.

(2) ECOWAS

In the Western Africa region, sub-regional coordination is performed by the ECOWAS. The ECOWAS Treaty was adopted by 18 countries in 1975 and revised in 1991. The revised Treaty defines the coordination programme for the transport, communications and tourism sectors as follows:

Article 32 Transport and Communications

1. For the purpose of ensuring the harmonious integration of the physical infrastructures of Member States and the promotion and facilitation of the movement of persons, goods and services within the Community, Member States undertake to:
   a) evolve common transport and communications policies, laws and regulations;
   b) develop an extensive network of all-weather highways within the Community, priority being given to the inter-State highways;
   c) formulate plans for the improvement and integration of railway and road networks in the region;
   d) formulate programmes for the improvement of coastal shipping services and inter-state inland waterways and the harmonisation of policies on maritime transport and services;
   e) co-ordinate their positions in international negotiations in the area of maritime transport;
   f) encourage co-operation in flight-scheduling, leasing of aircraft and granting and joint use of fifth freedom rights to airlines of the region;
   g) promote the development of regional air transportation services and endeavour to bring about the merger of national airlines in order to promote their efficiency and profitability;
   h) facilitate the development of human resources through the harmonisation and coordination of their national training programmes and policies in the area of transportation in general and air transport in particular;
   i) endeavour to standardise equipment used in transport and communications and establish common facilities for production, maintenance and repair.
2. Member States also undertake to encourage the establishment and promotion of joint ventures and Community enterprises and the participation of the private sector in the areas of transport and communications.

Source: ECOWAS website - http://www.comm.ecowas.int/sec/index.php?id=treaty&lang=en, April 2012

2.3 Social Conditions in Togo

2.3.1 Demography

(1) Population and Population Density in Togo

The latest population census was conducted by the Directorate General of Statistics and National Accounts (DGSNA) of the Ministry of Planning, Development and Territory Management (MPDTM) in 2010 after a long absence following the previous census in 1981. Table 2-4 shows the population and population density by region in 1981 and 2010.

Table 2-4 Population and Population Density by Region

Region	Prefecture	Capital	Area (km^2)	1981	2010	Annual Growth Rate	Population Density (per./km^2)
Maritime	Golfé	Lomé	256	375,499	1,570,283	5.1%	6,133.9
	Lacs	Aného	360	-	172,148	-	478.2
	Vo	Vogan	690	-	210,075	-	304.5
	Yoto	Tabligbo	1,101	-	165,596	-	150.4
	Zio	Tsévié	2,089	-	295,177	-	141.3
	Avé	Kévé	1,050	-	97,830	-	93.2
	Bas-Mono	Afagnangan	465	-	88,846	-	191.1
	Sub-total		6,011	1,040,241	2,599,955	3.2%	432.5
Plateaux	Ogou	Atakpamé	2,719	-	226,308	-	83.2
	Est Mono	Elavagnon	2,691	-	121,789	-	45.3
	Amou	Amlamé	1,831	-	105,091	-	57.4
	Wawa	Badou	1,260	-	100,974	-	80.1
	Danyi	Danyi-Apéyémé	401	-	38,742	-	96.6
	Kloto	Kpalimé	534	-	139,043	-	260.4
	Agou	Agou-Gadzepé	1,108	-	84,890	-	76.6
	Haho	Notsé	3,079	-	247,817	-	80.5
	Moyen Mono	Tohoun	634	-	77,286	-	121.9
	Anié	Anié	1,262	-	95,090	-	75.3
	Akebou	Kougnohou	1,162	-	62,245	-	53.6
	Kpélé	Kpélé-Adéta	950	-	75,890	-	79.9
	Sub-total		17,631	650,393	1,375,165	2.6%	78.0
Centre	Tchaoudjo	Sokodé	2,436		190,114		78.0
	Tchamba	Tchamba	3,249		131,674		40.5
	Sotouboua	Sotouboua	4,470		158,425		35.4
	Blitta	Blitta	3,174		137,681		43.4
	Sub-total		13,329	273,138	617,871	2.9%	46.4
Kara	Kozah	Kara	1,106		225,259		203.7
	Binah	Pagouda	592		70,054		118.3
	Assoli	Bafilo	950		51,491		54.2
	Bassar	Bassar	3,515		119,717		34.1
	Dankpén	Guérin-Kouka	2,588		130,723		50.5
	Doufelgou	Niamtougou	1,179		78,635		66.7
	Kéran	Kandé	1,106		94,061		85.0
	Sub-total		11,988	426,651	769,940	2.1%	64.2
Savanes	Tône	Dapaong	1,222		286,479		234.4
	Tandjoaré	Tandjouaré	848		117,519		138.6
	Kpendjal	Mandouri	1,794		155,091		86.4
	Oti	Mango	4,313		190,543		44.2
	Cinkassé	Cinkassé	293		78,592		268.2
	Sub-total		8,470	329,144	828,224	3.2%	97.8
Whole Country			57,429	2,719,567	6,191,155	2.9%	107.8

Source: Recensement General de la Population et de l'Habitat, Résultants définitifs, Décembre 2011, DGSNA

About 42% of the population is concentrated in the Maritime Region where the capital city Lomé and major industrial and mining activities are located. The population concentration in Lomé is about 13.5%.

The average annual population growth rate in the whole country between 1981 and 2010 was 2.9%, while growth rates are higher in the Maritime and Savanes Regions at 3.2% per annum.

The population density of the whole country and Golfé Prefecture were 107.8 persons/km^2 and 6,133.9 persons/km^2 in 2010, respectively.

2.3.2 Land Use in Togo

Land use in Togo is mainly agricultural, consisting of 44.2% arable land (2005). Mainly food crops are cultivated throughout the country, because food security is the highest priority of the GoT after the food crises in 2008. There is small-scale rain-fed cultivation of cassava, maize, and vegetables all over the country.

2.3.3 Poverty Ratio

In July 2012, the GoT prepared the Strategy of Accelerated Growth and Promotion of Employment (SCAPE: *Stratégie de Croissance Accélérée et de Promotion de l'Emploi*) (Provisional Version) with the target years of 2013 – 2017, following the PRSP-II and the Complete Poverty Reduction Strategy Paper (PRSP-C) with the target years of 2009 – 2011. SCAPE describes the poverty situation in Togo.

Table 2-5 compares the poverty headcount ratio (% of population) between 2006 and 2011 by region.

Table 2-5 Comparison of Poverty Headcount Ratio between 2006 and 2011

(Unit: % of population)

Region	Poverty Headcount		Extreme Poverty Headcount	
	2006	2011	2006	2011
Greater Lomé	32.8	27.2	9	4
Maritime	67.1	53.9	25	21
Plateux	61.1	64.7	25	33
Centre	74.6	80.2	35	45
Kara	74.2	68.4	41	37
Savanes	86.7	90.8	64	73
Whole Togo	61.7	58.7	28.6	30.4

Source: SCAPE

Even though the poverty headcount ratio for the whole country fell 3% from 2006 to 2011, the poverty headcount ratios increased in the Plateux, Centre and Savanes regions. The poverty headcount ratio of the Savanes Region in particular was quite high at 90.8% in 2011. Furthermore, the extreme poverty headcount increased by 1.8% in the whole country between 2006 and 2011, every though the extreme poverty headcount was only 4% in Lomé. These figures indicate that the poverty situation is serious in the central and northern parts of the country, particularly in the Savanes Region.

2.4 Economic Conditions in Togo and Neighbouring Countries

2.4.1 GDP

(1) Gross Domestic Product (GDP) by Sector

Table 2-6 shows the GDP by sector between 2007 and 2011. The agricultural sector had a share of 43.2% in 2011, followed by the service sector (40.9%) and industry sector (15.9%). The share of the agriculture sector has gradually increased, while both the industry and service sectors have slightly lost share, and the GDP price has increased. The GDP growth rate fell 2009 and became negative, but recovered again in 2010.

Table 2-6 GDP by Sector

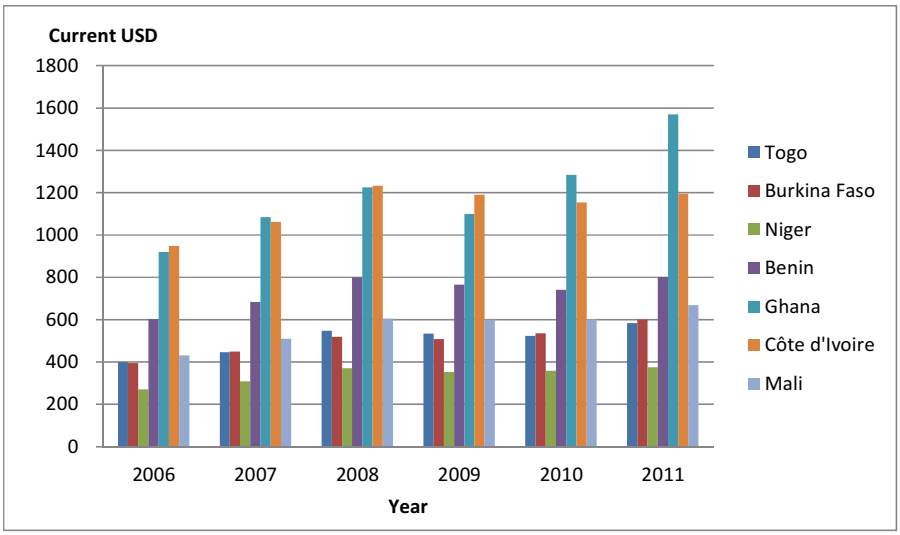
(Unit: USD million, current price)

Year	Agriculture		Industry		Services		GDP Total	Growth Rate
	Price	Share	Price	Share	Price	Share		
2007	904	35.8%	472	18.7%	1,148	45.5%	2,524	-
2008	1,288	40.7%	575	18.2%	1,301	41.1%	3,164	25.4%
2009	1,348	42.7%	506	16.0%	1,303	41.3%	3,157	-0.2%
2010	1,360	42.8%	498	15.7%	1,318	41.5%	3,176	0.6%
2011	1,551	43.2%	573	15.9%	1,470	40.9%	3,594	13.2%

Source: Compiled by the Study Team using WB databank, http://data.worldbank.org/country, Dec. 2012

(2) Comparison of GDP per Capita and GDP Growth Rate in Togo and Neighbouring Countries

Figures 2-3 and 2-4 show the GDP per capita and the fluctuation of GDP growth rate in Togo and neighbouring countries, respectively. Among these countries, the GDP per capita of Togo, Burkina Faso and Mali have been almost the same for the last 6 years (Togo: USD 584 in 2011), at a level which put these countries in the "low income country" category according to the World Bank (WB) definition. The GDP growth rates of all countries except Ghana showed the same tendency of reflecting the world economy.

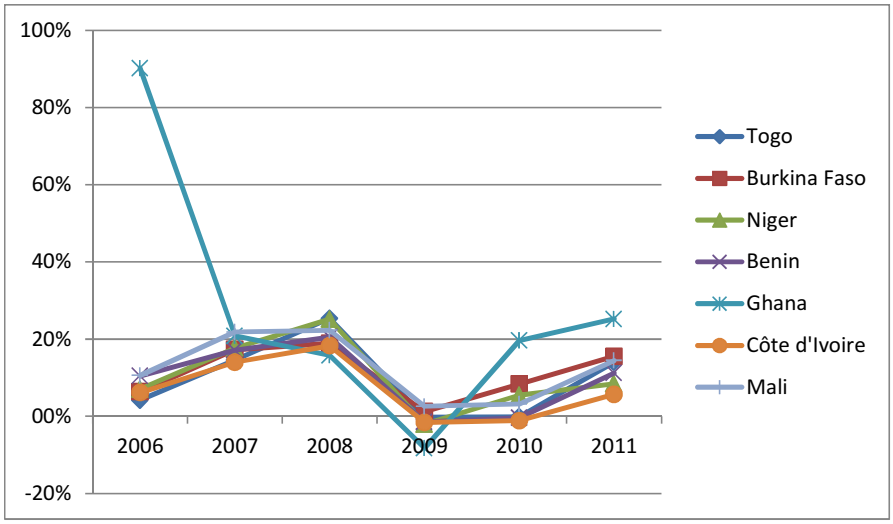


Source: Compiled by the Study Team using WB databank, http://data.worldbank.org/country, Dec. 2012

Figure 2-3 GDP Per Capita in Ghana and Neighbouring Countries

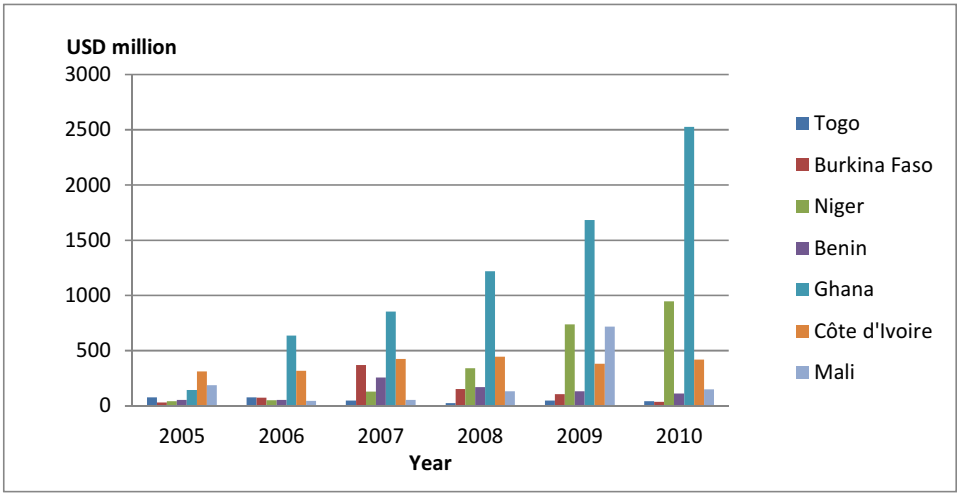
2.4.2 Foreign Direct Investment

Figures 2-5 and 2-6 show the net flow of foreign direct investment (FDI) and its share of GDP in Togo and neighbouring countries. It is clear that FDI into Togo is very limited compared with other countries (USD 41 million in 2010), mainly because foreign investments are limited to certain mining and agricultural sectors. FDI's share of GDP in Togo was also limited to 1.3% in 2010, which was low compared with Niger and Ghana.



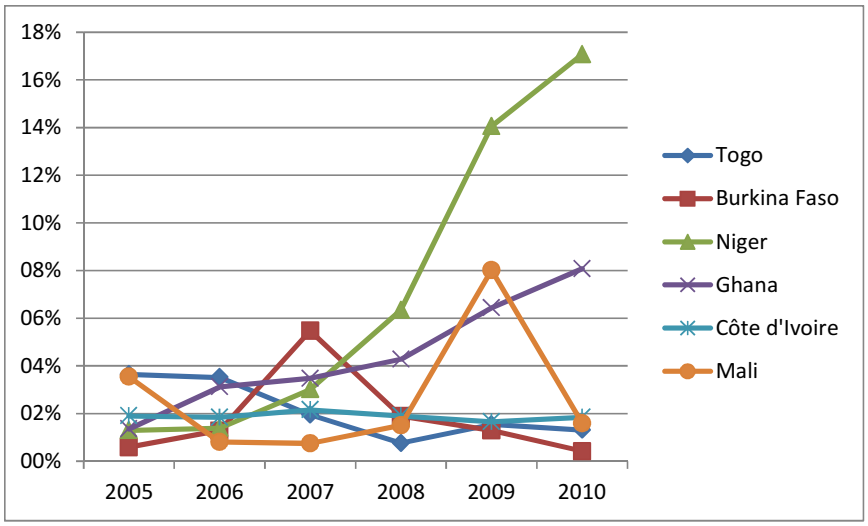
Source: Compiled by the Study Team using WB databank, http://data.worldbank.org/country, Dec. 2012

Figure 2-4 GDP Growth Rate in Togo and Neighbouring Countries



Source: Compiled by the Study Team using WB databank, http://data.worldbank.org/country, Dec. 2012

Figure 2-5 Foreign Direct Investment (Net Flow)



Source: Compiled by the Study Team using WB databank, http://data.worldbank.org/country, Dec. 2012

Figure 2-6 Foreign Direct Investment (% of GDP)

2.4.3 External Trade

(1) Trade Balance

Table 2-7 shows the total imports and exports of Togo. Even though exports increased up to 2010, the trade balance remains negative.

Table 2-7 Total Imports and Exports

(Unit: USD million)

Item	2009	2010	2011
Export of Goods and Services	734.7	667.2	865.5
Import of Goods and Services	983.9	989.5	1 207.7
Trade Balance	-249.2	-322.3	-342.2

Source: "2011 International Trade Statistics Yearbook", UN Comtrade, http://comtrade.un.org/pb/

(2) Export Commodities and Destination Countries

Table 2-8 shows the major export commodities of Togo.

Table 2-8 Major Export Commodities

(Unit: USD million – FOB*)

Commodity	2009	2010	2011	Share
Cotton	136.1	141.7	268.2	31.0%
Portland cement, slag cement	119.0	117.4	121.7	14.1%
Natural calcium phosphates	151.1	47.2	42.5	4.9%
Articles for conveyance	33.1	30.9	47.8	5.5%
Fertilisers	24.1	30.1	45.8	5.3%
Beauty or make-up preparations	26.7	27.6	34.4	4.0%
Gold	4.3	21.5	33.3	3.8%
Plaits	11.6	12.3	17.5	2.0%
Waters with sugar	11.2	12.7	14.8	1.7%
Cocoa beans	15.5	10.4	9.3	1.1%
Other commodities	202.0	215.4	230.2	26.6%
All commodities	734.7	667.2	865.5	100.0%

Note: FOB – Free On Board

Source: "2011 International Trade Statistics Yearbook", UN Comtrade, http://comtrade.un.org/pb/

Cotton and Portland cement/slag cement are the major export commodities with a share of 45.1% in 2011. Export of phosphates has decreased since 2010, mainly due to a decrease of exploration capacity at the site.

(3) Import Commodities

Table 2-9 shows the major import commodities of Togo. Unlike export commodities, there is no predominant import commodity, as the leading commodity of petroleum oil and crude accounts for only 14.5% of total import commodities.

2.4.4 Agriculture

(1) Agriculture in Togo

Agriculture is the most important economic sector, accounting for almost 43.2% of GDP and is predominantly on a smallholder basis in Togo. After the food crises in 2008, the GoT has adopted the policy to mainly focus for the food security.

Table 2-9 Major Import Commodities

(Unit: USD million - CIF)

Commodity	2009	2010	2011	Share
Petroleum oils, crude	144.0	132.1	174.6	14.5%
Portland cement, slag cement	78.3	71.1	93.3	7.7%
Medicaments	56.5	70.6	48.8	4.0%
Motor vehicles for transport goods	35.4	36.5	46.2	3.8%
Electrical apparatus	31.1	33.7	34.2	2.8%
Bars and rods	18.7	17.7	32.4	2.7%
Wheat and meslin	20.3	14.4	29.5	2.4%
Electrical transformers	50.4	6.6	5.9	0.5%
Woven fabrics of cotton	17.9	16.1	24.2	2.0%
Fish and fish meat	7.0	21.2	28.3	2.3%
Other commodities	524.3	569.5	690.3	57.2%
All commodities	983.9	989.5	1,207.7	100.0%

Note: CIF – Cost, Insurance and Freight

Source: "2010 International Trade Statistics Yearbook", UN Comtrade, http://comtrade.un.org/pb/

About 90% of farm holdings are less than 2 ha in size, although there are some farms and plantations, particularly for rubber, oil palm and coconut, and to a lesser extent, rice, maize and pineapples. Agricultural production varies with the amount and distribution of rainfall. Soil factors are also important, but a soil classification map, which is useful for the agricultural development plan, particularly cash crops, has not been produced.

(2) Production of Major Food Crops

Table 2-10 shows the cultivated land and yield of major food crops between 2004/05 and 2011/12. Cultivated lands for all products have increased, except millet, with increment rate of 2.3% per year. Cassava, yam and maize are major products in Togo. Details of agricultural production are described in Section 2.6.

2.4.5 Mining

The mining industry is one of the most important sectors for export earnings, mainly the natural calcium phosphates (4.9% of the total export in 2011), which is explored at Hahatoé and Kpogamé in the Maritime Region, and the ferrochrome, which is explored at Bangeli in the Kara Region. In a case of exploitation of natural calcium phosphates, an industrial railway to transport phosphates, factory to wash slag at Kpémé and a jetty to export the phosphates to overseas. On the other hand, the ferrochrome is transported from Bangeli to the Port of Lomé by trailers, because the railway between the Port of Lomé and Blitta is ceased operation since early 2012.

Even though, deposits of several types of mineral are confirmed, a mineral occurrence map has not been prepared to identify possible deposit quantity of mineral.

Table 2-10 Cultivated Land and Yield of Major Agricultural Products

Cultivated Land (km^2)									
Product	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**Growth Rate**
Maize	479,549	439,481	465,282	468,200	494,994	518,955	715,722	522,629	2.9%
Sorghum	167,488	209,754	215,456	211,779	213,007	216,436	202,319	220,917	1.4%
Millet	49,362	51,358	61,748	72,481	72,048	71,468	73,776	73,356	-0.4%
Rice	32,276	32,711	30,723	32,717	36,492	45,702	47,403	44,713	3.8%
Yam	56,479	56,709	60,246	58,431	63,975	69,178	71,529	71,225	3.1%
Cassava	115,891	112,471	135,720	125,740	131,425	143,427	147,336	152,209	2.0%
Beans	159,112	187,944	186,379	180,299	193,675	203,748	210,617	207,172	2.4%
Ground nuts	59,086	53,544	52,062	57,881	67,357	67,691	69,621	68,784	3.2%
Total	1,119,243	1,143,972	1,207,616	1,207,528	1,272,973	1,336,604	1,538,323	1,361,005	2.3%
Yield (tonne)									
Product	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**	**2009/10**	**2010/11**	**2011/12**	**Growth Rate**
Maize	522,561	509,468	543,343	546,050	590,104	651,738	868,260	650,831	2.7%
Sorghum	169,782	206,032	224,624	210,298	236,257	237,665	244,674	243,267	4.2%
Millet	35,018	42,159	42,413	45,456	47,402	49,146	48,264	50,363	-0.3%
Rice	68,519	72,151	76,287	80,418	85,637	121,295	110,109	112,232	5.5%
Yam	620,653	575,262	621,056	618,212	648,327	704,414	710,481	727,749	2.7%
Cassava	613,538	678,980	767,366	773,162	795,373	895,655	908,755	998,540	3.6%
Beans	48,219	67,359	52,809	62,942	67,325	72,367	76,190	76,465	6.2%
Ground nuts	34,871	33,448	39,284	35,950	42,647	44,528	46,495	50,381	4.0%

Source: Ministre de l'Agriculture de l'Élevage et de la Peche

2.5 Natural Conditions in Togo

2.5.1 Topographical Conditions

(1) Topographical Conditions

Togo, which lies in the centre of the West African coast, has a total land border of 1,647 km: Burkina Faso (126 km) to the North, Ghana (877 km) to the West, and Benin (644 km) to the East. The total area of Togo is 56,785 km^2. The country extends inland for 579 km to the north from the Gulf of Guinea, and is only 160 km wide at the broadest point.

Togo is commonly divided into six geographic regions. In the south are low-lying sandy beaches. The coastal region is narrow and characterised by tidal flats and shallow lagoons. There are also a number of lakes, including the largest Lake Togo.

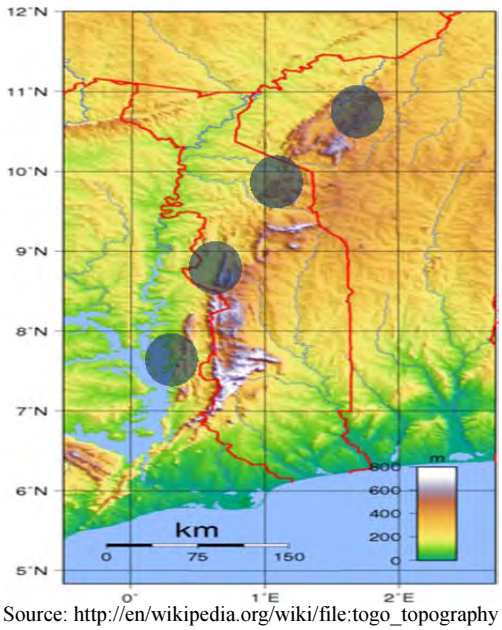
Further north lies the Ouatchi Plateau. This plateau is about 30 km wide and located at an altitude of 60 to 90 m above sea level.

Northeast of the Ouatchi Plateau lies a tableland, which is almost 500 m above sea level at its highest point. The area is drained by the Mono River and its tributaries, including the Ogou River.

To the west and southwest of the tableland, which lie the Togo Mountains. These mountains run across the central region of Togo, from the southwest to the north east (see Figure 2-7). The mountain range into Benin and Ghana. The highest mountain in Togo is Mount Agou with a height of 986 m.

North of the Togo Mountains lies a sandstone plateau through which the Oti River flows. The vegetation is characterised by savanna. The Oti River which drains the plateau is one of the main tributaries of the Volta River in Ghana.

In the far northwest of Togo lies a higher region which is characterised by its granite and gneiss rocks. The cliffs of Dapaong are located in this part of Togo.



Source: http://en/wikipedia.org/wiki/file:togo_topography

Figure 2-7 Topography of Togo

2.5.2 Geological Conditions

Figure 2-8 shows the geological conditions in Togo. The geological structure of Togo is as follows:

- Basement rocks formulated in the Precambrian Era are continuously distributed from NNE to SSW direction for the whole country.
- Sand stone and mud rocks of the Quaternary Epoch are distributed in parallel with the geological structure in the north of the country.
- Sedimentary rocks formed by sand stones and mud rocks of the Precambrian, Proterozoic, Paleozoic and Ordovician Eras are located as basement rocks, and soft layers, such as sand and clay layers of Quaternary Epoch, distributed on the basement rocks at the northern part of the country, where the Oti River flows with headward erosion of soft layers.

2.5.3 Hydrological Conditions

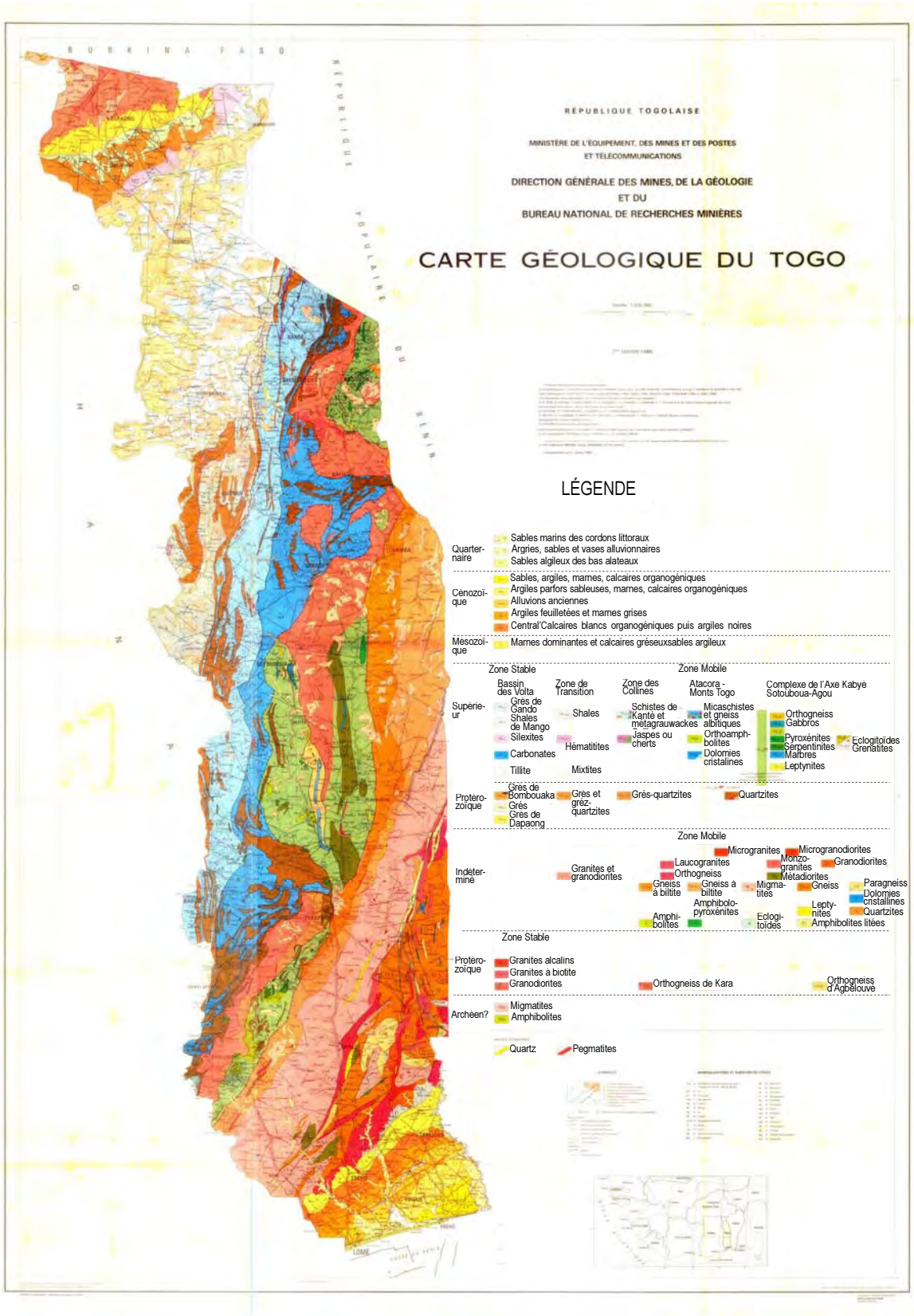
There are three major river basins in Togo, as show in Figure 2-9.

(1) Zio River Basin

The Zio River basin originates in the Plateau de Danyi at the south-western part of Togo near Kpalimé and flows to the north of Lomé, where a wide wetland is formed. The Zio River often overflows and inundates Lomé and the surrounding area. One of the road bridges on RN1 near Touble Kopé was washed away about 10 years ago when the Zio River overflowed.

(2) Mono River Basin

The Mono River basin originates in the south of the Togo Mountain range near Bafilo and collects water from various tributaries. The Nangbéto Dam was constructed on the eastern side of Atakpamé for both hydroelectric power and irrigation. South of Nangbéto, the Mono River merges with the Khra River (this river also washed away a road bridge on RN1 near Wahala a few years ago), and becomes the border river with Bénin, forming lagoons near Grand-Popo in Bénin.



Source: Direction Général des Mines, de la Géologi dt du Bureau National de Recherches

Figure 2-8 Geological Map of Togo

(3) Oti River Basin

The Oti River Basin is one of the major tributaries of the Volta River, and originates both Bénin (Pendjari River) and Burkina Faso (Oualé River). After these two rivers merge, the name of the river changes to the Oti at the north-eastern edge of Togo near Mandouri, then it flows across Togo, and becomes the border river with Ghana, through which it continues and then merges with the Volta River.

Source: http://en.wikipedia.org/wiki/Geography_of_Togo

Figure 2-9 Major River Basins of Togo

2.5.4 Meteorological Conditions

(1) Climate

The climate in Togo is generally tropical with average temperatures ranging from 27.5ºC on the coast to about 30ºC in the northernmost regions, with a dry climate and characteristics of a tropical savannah. There are two rainy seasons in the coastal region, even though the average rainfall is not very high, while there is only one rainy season between April and October in other regions.

(2) Temperature

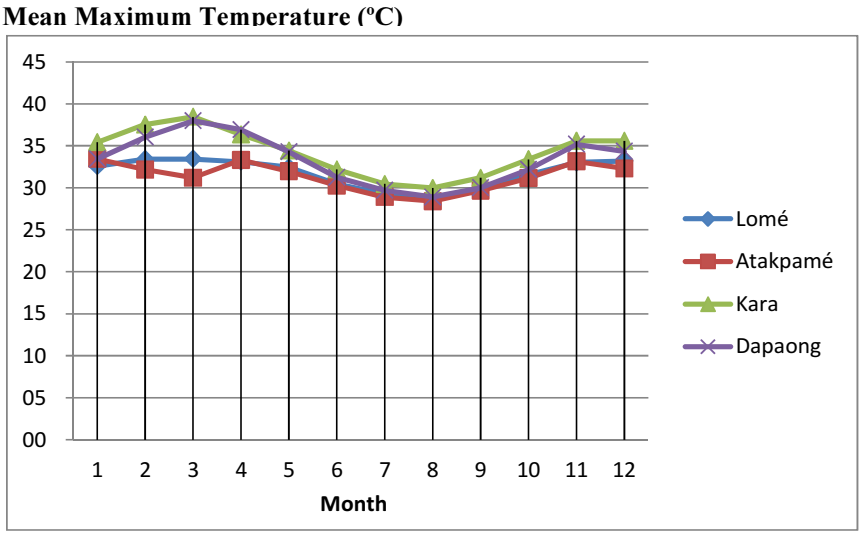
Figure 2-10 shows the monthly mean maximum temperature[2] at the Lomé, Atakpamé, Kara and Dapaong meteorological observatories between 2000 and 2011. The monthly maximum temperatures are about 5ºC higher at Kara and Dapaong than Lomé and Atakpamé in March and the highest mean temperature is recorded at Kara (38.5ºC).

(3) Monthly Precipitation

Table 2-11 shows the monthly precipitation at the Lomé, Atakpamé, Kara and Dapaong meteorological observatories between 2000 and 2011, while Figures 2-11 show the variation of monthly precipitation at those observatories between 2007 and 2011.

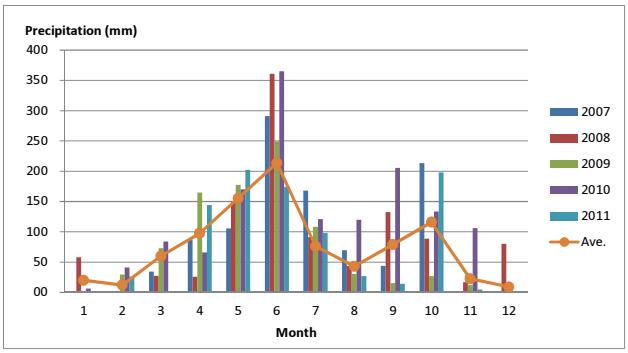
The average yearly precipitation between 2000 and 2011 was highest at Atakpamé (1,426.6 mm) and lowest at Lomé (903.7 mm). The rainy season at Lomé starts in April and ends in August, and starts again in September and ends in October, while the rainy season starts in April and ends in October in other regions; rainfall is very limited between November and February.

[2] Monthly mean maximum temperature is the mean value of monthly maximum temperature between 2000 and 2011.

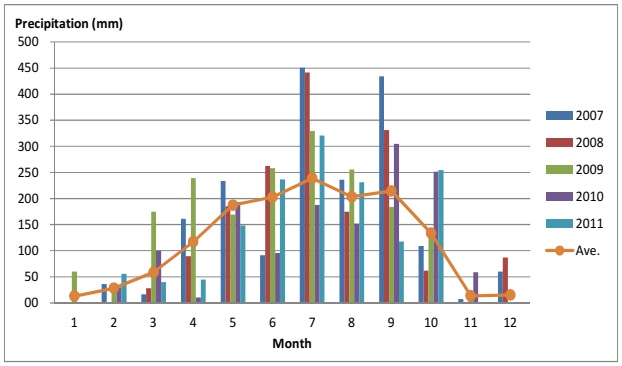


Source: Direction General de la Meteorologié Nationale

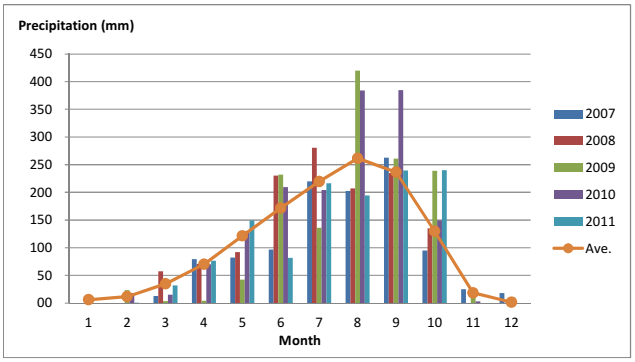
Figure 2-10 Maximum Temperature in Togo (2000–2011)



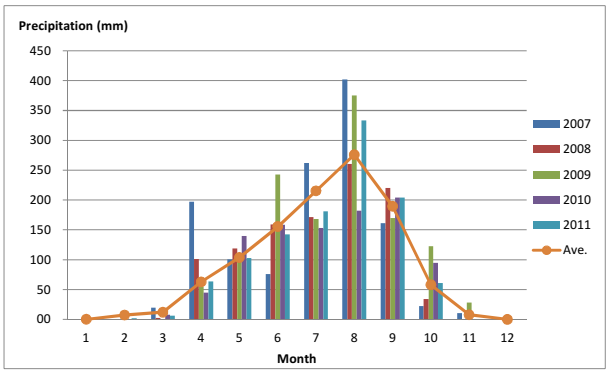
Lomé



Atakpamé



Kara



Dapaong

Source: Direction General de la Meteorologié Nationale

Figure 2-11 Monthly Precipitation at Major Cities between 2007 and 2011

Table 2-11 Monthly Precipitation at Four Observatories between 2000 and 2011

(Unit: mm)

Lomé	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2000	0.1	0.0	87.0	24.6	73.3	103.1	23.0	39.4	18.1	39.8	9.9	5.6	423.9
2001	0.0	0.9	39.9	202.6	196.2	127.7	29.6	3.2	60.2	39.3	0.0	0.0	699.6
2002	32.7	0.0	7.6	145.5	137.4	300.7	59.4	19.1	5.8	90.8	40.7	0.0	839.7
2003	82.5	8.0	78.7	115.5	75.4	203.6	12.3	8.0	66.1	180.6	24.8	20.9	876.4
2004	20.7	39.0	19.5	52.7	186.4	139.1	35.4	42.1	226.9	231.1	15.3	0.0	1,008.2
2005	0.0	0.4	130.4	95.2	126.0	166.8	88.8	60.2	30.8	50.5	35.3	0.0	784.4
2006	39.7	1.6	136.0	44.9	263.6	80.6	81.2	51.8	128.0	99.5	3.3	1.1	931.3
2007	0.0	0.0	33.9	87.0	105.6	291.2	168.0	69.7	43.9	213.3	2.2	0.0	1,014.8
2008	57.8	0.0	27.3	25.7	150.3	361.0	91.4	43.9	132.6	88.7	16.6	80.0	1,075.3
2009	0.0	29.4	73.0	164.8	177.3	249.4	108.4	30.3	14.9	26.6	12.1	0.0	886.2
2010	6.1	40.7	83.8	65.9	170.0	365.1	120.7	119.7	205.5	133.4	105.8	0.0	1,416.7
2011	0.0	26.4	0.0	144.4	202.5	174.1	97.8	26.6	14.0	197.9	4.4	0.0	888.1
Ave.	20.0	12.2	59.8	97.4	155.3	213.5	76.3	42.8	78.9	116.0	22.5	9.0	903.7
Atakpamé	**Month**												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2000	39.5	44.3	148.3	237.1	320.9	231.0	118.0	254.4	0.0	0.0	2.3	0.0	1,395.8
2001	0.0	0.3	27.1	79.2	116.6	151.6	118.9	190.8	235.6	43.0	7.2	0.0	970.3
2002	11.2	0.0	66.3	109.3	312.5	222.8	147.0	184.1	155.7	246.5	26.1	0.0	1,481.5
2003	2.1	35.4	7.6	86.8	129.8	281.4	276.9	252.0	275.8	190.0	28.2	1.8	1,567.8
2004	28.8	11.1	25.0	126.9	154.7	127.0	210.7	131.7	122.2	126.9	13.3	33.6	1,111.9
2005	0.0	82.4	16.4	140.2	84.3	203.8	88.3	110.2	244.7	86.5	1.9	0.0	1,058.7
2006	14.4	4.5	55.6	82.2	201.6	269.6	177.9	266.6	167.9	107.2	3.3	0.0	1,350.8
2007	0.0	36.4	16.8	161.1	233.7	91.5	450.6	236.4	434.6	109.3	7.4	59.8	1,837.6
2008	0.0	0.3	28.1	89.8	185.5	262.2	441.9	174.9	330.9	62.0	0.0	86.9	1,662.5
2009	60.2	36.5	174.6	239.5	168.9	258.1	329.1	255.6	184.1	127.5	16.0	0.0	1,850.1
2010	0.0	29.8	100.2	10.0	193.3	95.6	187.9	152.3	304.4	251.4	58.7	0.0	1,383.6
2011	0.0	55.3	39.5	44.3	148.3	237.1	320.9	231.0	118.0	254.4	0.0	0.0	1,448.8
Ave.	13.0	28.0	58.8	117.2	187.5	202.6	239.0	203.3	214.5	133.7	13.7	15.2	1,426.6
Kara	**Month**												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2000	31.8	76.4	149.6	81.7	216.2	194.7	239.6	240.3	0.0	0.0	13.3	0.0	1,243.6
2001	0.0	0.0	7.9	35.9	154.8	176.9	240.1	259.7	332.6	30.6	0.0	0.0	1,238.5
2002	0.0	0.0	51.0	110.6	94.7	83.2	187.4	332.1	204.2	113.6	17.1	0.0	1,193.9
2003	0.0	2.5	14.5	121.9	155.4	321.5	207.5	363.7	276.6	249.3	58.2	0.0	1,771.1
2004	38.4	0.0	9.4	68.2	118.2	202.4	265.5	183.0	195.2	61.8	89.2	0.0	1,231.3
2005	2.8	3.6	45.1	78.3	100.4	153.4	203.5	119.9	198.6	98.1	0.0	0.0	1,003.7
2006	0.0	13.1	18.7	43.8	122.4	78.3	236.2	232.4	249.6	147.5	0.0	0.0	1,142.0
2007	0.0	0.0	12.7	79.3	81.9	96.6	219.9	202.3	262.6	95.3	24.7	18.3	1,093.6
2008	0.0	0.0	57.5	70.4	92.0	230.0	280.7	207.3	234.8	134.9	0.0	0.4	1,308.0
2009	0.0	23.3	3.9	4.5	42.2	232.3	135.6	420.0	260.9	238.8	15.5	0.1	1,377.1
2010	0.0	18.2	15.3	70.1	130.3	209.4	204.1	383.9	384.7	149.2	3.2	0.0	1,568.4
2011	0.0	1.0	31.8	76.4	149.6	81.7	216.2	194.7	239.6	240.3	0.0	0.0	1,231.3
Ave.	6.1	11.5	34.8	70.1	121.5	171.7	219.7	261.6	236.6	130.0	18.4	1.6	1,283.5
Dapaong	**Month**												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
2000	0.0	0.0	0.0	34.1	83.5	113.0	144.7	179.0	208.0	101.3	0.0	0.0	863.6
2001	0.0	0.0	0.0	2.7	158.4	218.3	232.4	368.6	172.5	17.9	0.0	0.0	1,170.8
2002	0.0	0.0	0.0	93.0	50.9	116.9	188.8	143.7	164.3	96.3	0.0	0.0	853.9
2003	0.0	6.2	88.0	38.4	125.2	100.0	210.2	386.4	348.8	18.4	3.0	0.0	1,324.6
2004	0.6	3.4	7.7	33.8	78.7	203.6	356.7	188.9	123.0	4.0	51.1	0.0	1,051.5
2005	0.0	4.8	13.2	54.6	64.4	201.2	326.5	237.9	62.7	25.3	0.0	0.0	990.6
2006	0.1	70.1	0.0	36.0	121.4	134.1	188.4	254.3	235.0	97.1	0.0	0.0	1,136.5
2007	0.0	0.0	19.7	196.8	100.5	75.9	262.2	402.1	161.0	22.6	10.7	0.0	1,251.5
2008	0.0	0.0	2.2	101.1	118.9	159.0	171.6	260.2	220.6	34.0	0.0	0.0	1,067.6
2009	0.0	0.7	0.0	54.4	100.9	242.8	168.2	375.1	170.1	122.9	28.1	0.0	1,263.2
2010	0.0	0.0	7.8	45.0	139.8	158.7	153.4	182.3	204.3	94.7	0.4	0.0	986.4
2011	0.0	1.7	6.2	63.4	103.0	142.3	181.3	333.6	204.2	61.1	0.0	0.0	1,096.8
Ave.	0.1	7.2	12.1	62.8	103.8	155.5	215.4	276.0	189.5	58.0	7.8	0.0	1,088.1

Source: Direction General de la Meteorologié Nationale

2.6 Existing Development Programmes

Three kinds of the development plans; national, regional and sectorial level, are summarized with a list of major development programmes designated in the existing development plan.

2.6.1 National Development Plan

The National Development Plan explains a broad idea of national strategy for economic growth in Togo, which should be correlated to prepared the development of the TLG. The DSRP II is the prior national development plan and it would be appropriate to understand the contents of the plan for analysing the current and the future development direction of Togo.

(1) Condition of the National Development Plan

The first national development plan was adopted by the GoT in the early 1980s, known as the Structural Adjustment Programmes (SAP), to overcome a financial stabilization and improvement of microeconomic framework, however the plan unfortunately brought imbalances between economic and social development.

With the intentions of next challenges, the Millennium Development Goals (MDG) was issued in 2007 covering the period of 2009 to 2015. The MDG was kept followed up and validated in 2010. The general descriptions of the MDG are listed below.

- MDG 1: Elimination of extreme poverty
- MDG 2: Assure of primary education
- MDG 3: Promotion of gender equality
- MDG 4, 5, 6: Improvement of environment for health in terms of death of infancy and pregnancy
- MDG 7: Conservation and restoration of natural environment
- MDG 8: Establishment of international partnership for the development

The GoT, then, published the Interim Poverty Reduction Strategy Paper (I-PRSP) in 2008 to consolidate public finances and urge private development. One of the significant effects of the analysis of the paper was the strong recognition of crisis in the field of the national economy, which leads to the development of the PRSP-C in 2009, serving as a unifying framework of various development activities on period of 2009 to 2011. The development plan was successfully organized with priority action programs, and the progress indicated its achievement in the political, economic and social fields.

Concerning the continuing achievement of MGD, the GoT began to prepare the further national development plan to keep the successful efforts of the previous development plan, and it was featured by the development of the SCAPE in July 2012, which is currently known as the PRSP-II.

DSRP II was launched in order not only to collect political, economic and social data which illustrate current situation of Togo in the various levels, but also to ensure the economic growth covering the period of 2013 to 2017. It has two important functions, document and process. As a document, it provides a roadmap of national development, directed by the strategies in the plan,

initiated with the government, development partners, private sectors and public society. As a process, it is prepared according to a sequential approach defined by participatory manner of five (5) major steps as followed: i) Developing Roadmap, ii) Survey and Study, iii) Developing Strategic Plan, iv) Developing draft Strategy, v) Going through schematic procedure for validation and adaptation. In terms of the last step, levels of dialogue include a public consultation, regional and national workshop and reviewed by National Council of Development Policy (CNPPD).

(2) General Strategy

In the Stage of the development of strategy, the strategies are prioritised by four (4) principal directions as followed: i) Acceleration of economic growth, ii) Increasing employment, iii) Strengthening governance, iv) Reduction of regional disparity.

a) Acceleration of Economic Growth

For the acceleration of economic growth, there is the fact that the average growth rate is 3.8% per year over the period of 2008 to 2011, which can be estimated that demographic growth rate of 2.84% could be double within the 25 years. And this acceleration of economic growth reflects to increasing employment and reducing poverty. One of the key for the continuing growth over the next five years is an investment. A private investment is expected in the field of mining and agricultural industry to ensure sustainability of economic growth of Togo.

The goal and objectives of the strategy for the acceleration of economic growth is stated as listed below:

- Rehabilitate, in partnership with industry deprives the main network infrastructure along the corridor, including road and rail links between Togo and its neighbouring countries.,
- Optimize the investment in the area of the corridor taking advantage of new opportunities created by rehabilitation of infrastructure,
- Optimize the opportunities of social development and market outlets while encouraging the participation of traditionally underprivileged communities and
- Reduce the regional disparities and promote the development at regional level.

b) Increasing of Employment

Employment is one of the main subjects that the government intends to develop to improve incomes. Employment policy will aim to respond to improving the unemployment rate of 29.15 in 2011.

c) Strengthening of Governance

The good governance will be deployed during next five years in the political, administrative, institutional and economic level, including public finance and corporate governance. Continuity of the relative activities provides strengthening the region, a section of security and justice, durability against corruption, capacity building of human resources, decentralization economic development. Regional office is supposed to create the right conditions for participation and ownership of the development vision. The challenge is to build the rules, behaviour and ethics

conducive to the economic development and social progress of Togo.

d) Reduction of Regional Disparity

Reducing the regional disparity promotes the smooth development procedure and creates definite base of the economic decentralization. For the maximum support for the reduction of regional disparity, the government plan to have items followed as: (i) ensure the gradual transfer of skills and resources in favour of territorial communities, (ii) support the capacity building of communities to manage local affairs, and (iii) ensure the coherence of local action with State policies.

(3) High Potential Areas of Growth

In the last stage of organizing the PRSP-II, it was finalized by sectorial committees in eleven(11) areas of activity groups as followed: i) Agriculture, ii) Political and administrative governance, iii) Justice, human rights and society, iv) National defence, v) Infrastructure, vi) Competitiveness of private sector, vii) Health, viii) Social protection and employment, ix)Capability of governance, x)Water, sanitation and quality of life, xi) Education.

In this study, among the areas of activity mentioned above, relevant elements to the TLC are to be selected as the outline of the regional development, such as agriculture and Infrastructure.

a) Agriculture

Togo has significant agricultural potential due to an adequate arable land estimated as approximately 3.4 million hectares of which only 45% is currently cultivated. Togo's varied climate and soil provide the variety of agricultural production. Moreover, it is the fact that land suitable for irrigation development is estimated to 86,000 ha and the area of exploitable low land is 175,000 ha in total.

The report defines constrains against the acceleration of agricultural growth in Togo as follows: i) Size of the farms is too small, ii) Most of the farmers have only rudiment knowledge level for agriculture and agricultural machinery, iii) Consequence aging of farmers and lack of succeeding young due to their leaving, iv) Small number of agricultural organization, v) Increasing impoverished agricultural fields especially cocoa, coffee, sugar cane fields, vi) Only exporting operation is well functioned to traders and farmers, vii) Isolation of agricultural field, viii) Lack of accessibility to the cultivated land, ix) Increasing pressure on arable land, x) Low transformation rate of agricultural products, and xi) Difficulties of accessing to finance for agricultural development.

In the medium term of the agricultural growth (2013 to 2017), the report states that the Togo government will devote at least 10% of the national budget to the agricultural measurements. And the long term, implementation of logistic corridor from south to north will affect to acceleration of agricultural development of the country and regions. Addition to the budgetary support, the government will encourage activities of granting credit to farmers to help reducing an impact of substantial poverty. Some other implementations are to be carried out as the national policy of agricultural sector, and with these implementation mentioned above the report

ensuring the agricultural growth rate at least from 4.0 % to 6.0% by 2017.

b) Industrial Productivity

Growth of industrial sector in Togo is characterised as one of the immature and it is mentioned that the sector is poorly integrated to other sectors. The report analyses major difficulties for the growth of industrial sector as followed: i) no favourable business opportunity conducive to attracting investment, ii) too small domestic market size, iii) difficulties of access to financing, iv) tough competition of foreign products, v) high production cost, vi) and a lack of designated industrial parks.

The updated main concept of the industrial policy is stated as “It is to develop and sustain a domestic industry integrated, internationally competitive, environmentally friendly, and can significantly improve living standard”. With the main concept, the main priorities is developed as followed: i) upgrading of existing enterprises more competitive and sustainable, ii) creating diverse opportunities of the national industrial production and increasing processing rate of raw materials and local products to an average of 20% in 2030, iii) and promoting small and medium sized enterprises.

As a part of development programs based on the main concept and priorities mentioned above, the report stated that the GoT could develop following implementations for examples.

- Togolese phosphate could be transformed locally into fertilizer and exports
- Accelerate growth of cotton yarn for knitting and the manufacture of traditional fabrics
- Cocoa could be transformed into local made chocolate
- Establish food processing industry from local agricultural products

c) Mining Industry

Mining industry has played an important role for Togo’s economy since the exploitation and exportation of phosphate started in1996. Although there were more than 20 licensed private company for operation of exploitation for gold, diamond, manganese, nickel, zinc and phosphate, the government has not evolve the appropriate legal and institutional framework to attract either domestic or international private investment. For this reason, it can be said that the existing regulation of the mining does not allow appropriate benefits to the mining industry. In the PRSP-II, significance of creating a strong strategic vision is stated for the development of mining industry, and some of the actions to be beneficial to the sector is implied as followed: i) construction of north to south corridor including rail and port services, ii) and promoting institutional reforms. Strategic targets of major mining products are summarized in the Table 2-12.

Table 2-12 Current and Future Amount of Mining Products

Name	Current and Future Amount	Remarks
Phosphate	Year 2007: 751,000 tonnes/year Year 2008: 843,000 tonnes/year Year 2009: 725,000 tonnes/year	Problems: • Antiquation of the mining and transport equipment • Fluctuation of world phosphate market
	Year 2012: 1,100,000 tonnes/year Year 2013: 1,400,000 tonnes/year Year 2017: 4,100,000 tonnes/year	Conditions: • Renewing production facilities • Applying new technology
Cement	Year 2011: 500,000 tonnes/year	• Production capacity
	Year 2014 : 1,500,000 tonnes/year	
Iron	Year 2011 : 50,000 tonnes/year	• Iron ore deposit in Bassar
	Future : 1,000,000 tonnes/year	Condition: • Improvement of processing speed

Source: PRSP- II

d) Trade Industry

Operation of import and export particularly in the field of clothing, agricultural products, and cosmetics is considered to be a major activity for the trading industry, and it is characterized as a high predominance of particular operator and has little diversity.

With some of the constrains mentioned in the report, such as low capacity human resources for the provision of service quality, a lack of effective information systems, low capacity of statistic systems and an absence of foreign trade agency, the government intend to focus on the challenges listed below as sectorial priorities.

- Strengthening the legal and institutional reforms
- Developing the skills of public and private operator
- Ensuring quality of products and services for the local market and / or international and benefits to stakeholders
- Facilitating the access of trade operators with adequate funding to ensure security and sustainability of their activities
- Enhancing the use of the Information and Communication Technology (ICT) and establishing a system of information and intelligence available to economic operators and users.

e) Tourism Industry

The contribution of tourism to national economy of Togo, the performance of 70 and 80 years, were reduced during periods of socio-political crisis and continues to decline the quality level of hotel's infrastructure. Yet, the advantages of adequate tourism element such as sandy beach, varied flora and fauna, museum, historical and archaeological structures, arts and traditions, etc. are more or less intact. In order to re-establish the value of those elements, the report imply that the government intends to develop a new action plan to enhance the tourism potential which contributes to the benefit of implementation of the north-south corridor.

The challenges mentioned in the report as the strategic development plan for tourism sector in national level are summarized below.

- Finalizing financial restructure of public hotels (Privatisation of parastatals hotels)

- Defining a scheme of tourist sites maps based on a master plan for tourism development
- Defining a strategy of promotion for tourism products
- Updating the regulations governing the sector and ensuring to their application
- Promoting and marketing of active tourism in Togo (advertising, brochures and documentaries about tourism)
- Educating local communities and the development of tourism and enhance local and the option chosen by the government public infrastructure set up home in the most remote areas to promote a displacement of both the applicants and the development of tourist poles, valuing traditional festivals and cultural events
- Create a powerful institution for skills training sector executives

(4) Strategy of Economic Infrastructure

a) Transport Infrastructure

The strategy of economic infrastructure relevant to the transport can be referred to the implementation of development of north-south corridor in PRSP-II. The concept of corridor development is to be achieved with the following aspects as followed: i) maritime transport infrastructure, ii) road infrastructure, iii) the rail network, iv) and aviation network to clear the image of strategic development plan. Descriptions of the each aspect are summarized on Table 2-13.

Table 2-13 Strategy Plan for Economic Infrastructure (1)

Development of Maritime Network
(Strategy for the Port of Lomé) To control the port as an international trade, To provide a lowest exchange cost to a foreign trade country to build competitiveness To build the port with a sub-regional service function To provide a transit and transhipment function to neighbouring countries (Proposed Investment for the strategy) (i) Construction of a third pier container (FCFA 300 billion) including the delocalization of fishing port (FCFA 30 billion), (ii) Layouts of the dock, transfer to increase the number of ships for docking (FCFA 450 billion), (iii) Layouts of several parking areas, (iv) Construction of a weighbridge at Tsévié followed by the WAEMU's regulation, (v) Layouts of a dry port in Blitta, (vi) Rehabilitation of inner roads of port (FCFA 6 billion), (vii) Layouts and sanitation deserted lanes of the port area (FCFA 3 billion), (viii) Extension of the main operator of the port and other rehabilitation (FCFA 1.8 billion), (ix) Layouts of a new site in Adeticope to delocalize the sales activities of vehicles and equipment (FCFA 3.5 billion), (x) Rehabilitation of medians inside the port (FCFA 4 billion), (xi) Management of industrial road from the wharf to the different mining site (FCFA 10 billion), (xii) Extension of Terminal Sahel (FCFA 2.5 billion), and (xiii) Extension of the mining dock (FCFA 30 billion) used for the export of clinker, coal and iron.

Table 2-13 Strategy Plan for Economic Infrastructure (2)

Development of Road Infrastructure
(Strategy) (i) Rehabilitation of 20 km of urban roads per year in Lomé, (ii) Rehabilitate urban roads other cities, (iii) Divert the corridor Tsevié Lomé (FCFA 700 billion) (iv) Conduct studies of diversion of the RN1 from the Port of Lomé to the border of Burkina Faso and promote flexible trade and regional integration between Togo and trading countries. (The GoT obtained funding FCFA 1.05 billion from WAEMU), (v) Rehabilitate the corridor from Lomé to the border of Burkina Faso (FCFA 115 billion) (vi) Rehabilitate major roads of the north-south corridor such as Agou – Notsé - Tohoun, Atakpamé - Badou, Dapaong – Mandouri - border Kabou – Ghana – Kara - Kemeridafrontière, Bénin and the ramp - KétaoPagouda, Sokodé – Tchamba - Bénin border, GLEI - Amu Oblo, Kabou - Guerin Kouka - Katchamba, Aného – Tabligbo - Tsévié, Kpalimé - Atakpamé, Lomé – Vogan – Anfoin, etc.. (FCFA 666 billion) (vii) Strengthen the pavement maintenance of roads (FCFA 40 billion per year). (viii) Support to the private organization for the transport (ix) Continue to promote the emergence and development of PMEs (Small and Middle Enterprises: *Petites et Moyennes Entreprises*) road maintenance and BEL, and their professional qualifications and their ability management, (x) Develop urban transport image of SOTRAL (Transport Society in Lomé: *Sociétéde Transport de Lomé*) in other cities and urban traffic control (xi) Study and implement a new regulatory framework for the management of road safety (xii) Study and implement a regulatory framework for safety workers on construction sites, (xiii) Reinvigorate the implementation of common policies and projects regional ECOWAS and WAEMU to improve the movement of goods and persons.
Development of Railway Network
(Strategy) • The railway line from Lomé to Blitta, 276 km in length, should be the main focus of coverage from Togo and other landlocked countries, which will be very an important link to the inter-connections of ECOWAS countries. • The development of railway network plays significant rolls of transit and export of mining and industrial products in Togo. • Togo government has a challenge to develop rehabilitation and construction of the railway line from Lomé to Cinkassé by the end of 2020, and reform the existing railway network as main priority for coming year. • With the railway development mentioned above, the internal volume of products transported by rail is projected at 2,3 million tonnes in 2013, to 10 million tonnes in 2016 and nearly 13 million tonnes in 2017. • The overall cost of the program is estimated at FCFA 1,500 billion.
Development of Aviation Network
(Condition) • The Aviation network in Togo is classified as two main aspects, international airport Gnassingbe Eyadema and Niamtougou. The former is currently operated by several airlines, Air France, Ethiopian Airlines, A-sky, Air Burkina, Air Mali, Air Côte d'Ivoire, Brussels Airlines, Royal Air Morocco and Afriquiya. The latter is operated as domestic use. ▪ (Strategy) • The modernization of the international airport Gnassingbe Eyadema by extending airport space to operate as a hub for the whole Western Africa is projected to host more than 1.5 milliion passengers by 2017. The project is estimated FCFA 87 million. • The development program of new airport construction in Lomé is planned by the government with its cost estimation of the development FCFA 300 billion. The projection of the project is to achieve the total traffic of 2.5 million passengers by 2025.

Source: SCAPE

b) Infrastructure of Energy

The main challenges of the sector is to ensure stable, accessible, and substantial energy supply at a reasonable cost, while diversifying source of energy, including especially clean energy. To meet the challenges, the report states that the government intends to have development plan to increase the power generation capacity with its goal of increase from 161

MW of electricity in 2010 to at least 300 MW in 2015, and 500 MW in 2020.

The proposed development programs are developed to achieve the goal mentioned above to increase not only production capacity but also power transmission as followed:

- Construction of the hydroelectric dam in Adjarala
- Ultimately research for a comprehensive solution of energy problems and water in the context of sub-regional cooperation (project-interstate pipeline Ghana, Togo, Bénin and Nigeria),
- Continuing interconnection projects (330 KV between Nigeria, Bénin, Togo and Ghana to facilitate the transit of energy optimization of four countries and mutual assistance in case of difficulty
- Inducing international competition for the concession to independent producers for minimal power warranty of 50 to 100 MW by 2013
- Development project of micro-hydro inventoried the major rivers
- Rehabilitation of the dam Nangbéto (32.5 MW)
- Rehabilitation project of the micro hydro Kpimé

Under the programs above, about 700 km of MV lines will be constructed across the country.

Additionally, discovering natural energy resource such as solar, wind, biogas, is implemented with several measures to ensure the reliable accessibility of energy. And it is projected to produce 5MW of electric energy from the solar energy, 12 MW from the wind farm, 450 MW from the thermal power station by 2020.

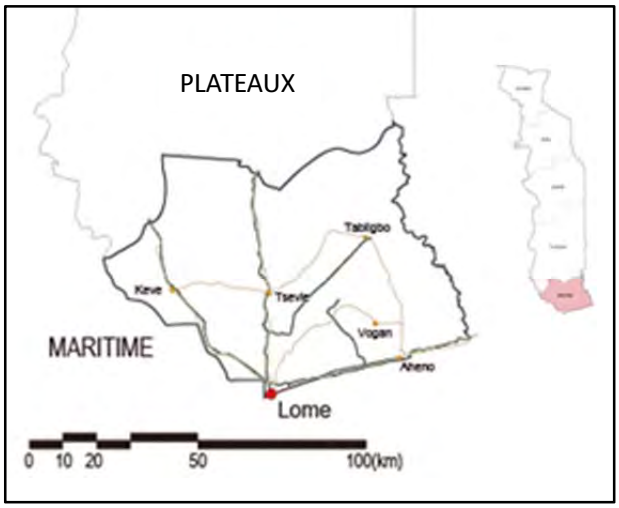
2.6.2 Regional Development Plan

For the regional development plan, it is fair to adapt the Regional PRSP-II as a lower hierarchy of the national plan so that the Study will be able to confirm the relationships of the both contents in the development plans.

(1) General Description of Region

a) Maritime Region

The Maritime Region is located on the very south of Togo, adjacent to the Plateaux Region on north, which covers an area of 6,100 km^2, approximately 11% of the national land of Togo and is consisted by seven prefectures. Topography of the region is fairly monotonous and there is little altitude difference from the south to north. The Maritime Region has a crystalline subsurface dominated by granite on southeast sedimentary rock basin, however, the region ends with



Source: Study Team

Figure 2-12 Location of Maritime Region

coastal line composed with sand and silt layer.

Mining resource in the region implies significant potentiality of the future regional development including phosphate, limestone, attapulgite, peats, and sand glass. Product of phosphate and limestone are two of the famous mining products in Togo which is respectively laid on Vogan city and Tabligbo.

The population of the region has increased from 489 283 inhabitants in 1960 to approximately 2,600,000 inhabitants, including Lomé Commune, in 2010 according to DGSNA.

Agriculture is the main activities of the region for the locals. The population engaged in agriculture is estimated 287,500 which represent 19.7% of total population for the data of 2006. The major agricultural products in the region are maize, rice, cassava, yams, sweet potato, legume, groundnuts for food crops, and oil palm, cotton for cash crops.

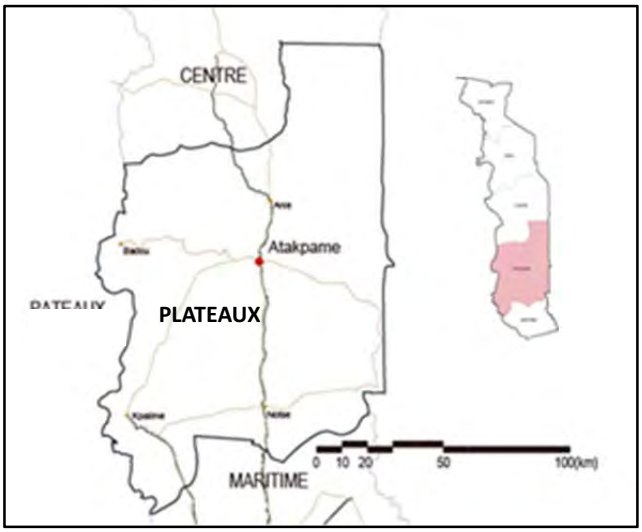
Livestock is the second major economic activity in the region including cattle, sheep, goats, pig, poultry and rabbits. Prefecture Zio and Lakes are the leading prefecture of the livestock industry.

Fishery is also characterized industry in the region. Although the region has benefit of natural conditions of availability of sea and inland water body, the fishery industry is still under development.

As long as industrial activity, in 1989 the government passed the low for Free Trade Zone to promote the industrial development, which aimed to create a framework of business development and export oriented services for relevant countries.

b) Plateaux Region

The Plateaux Region is located on the southern border of the Centrale Region, and is the largest region of the country with an area of 16,800 km^2. The region consists of 9 prefectures, 2 sub-prefectures, 95 township and 6 autonomous villages. Atakpamé in Haho Prefectures located on south of the region is the capital of the region.



Source: Study Team

Figure 2-13 Location of Plateaux Region

The physical environment of the region is characterized by two oppositional aspects, western mountain area where the ridge of Atakora composed of plateaux Akebou and eastern plains of Litimea where Precambrian slate covers more than two third of the region.

Research of mining resource has been conducted and existence of mining deposit, granite and marble, have been exploited in eastern area of the region.

The population of the region in 1981 was 648,548 and it was estimated at more than 1,222,000 inhabitants in 2006 with an average growth rate of 2.8%, and 1,375,165 inhabitants in 2010 according to DGSNA.

Agricultural activity is the most populated industry in the region. Approximately 80% of population is engaged in the activity due to fertile soil for agricultural products. Main food crops are characterized by maize, yam, cassava, sorghum, beans on middle and eastern area, banana, orange, avocado predominantly cultivated in west area such as Dayes, Agou and Badou. The Plateau Region produces enormous cash crops such as coffee, cocoa and cotton mainly marketed to outside of the country. Other vegetable crops are practiced in small sized farms including okra, peppers, tomatoes, ginger, green beans, eggplant, lettuce, cabbage, spinach etc., however, it significantly helps local economy.

The livestock is traditional industry in this region. Grazing livestock close to their home field is regular way to raise the animals. Short-cycle species are occasionally chosen, including sheep, goats, pigs and poultry. The grazing cattle is particularly done by nomadic tribes called Fulani.

Even though the region has high potential of fishery due to the existence of a vast body of water of the Nangbeto Dam, the practice of the fishing in the region is not well developed. There are many imported fishes, such as mackerel and tuna in a local market.

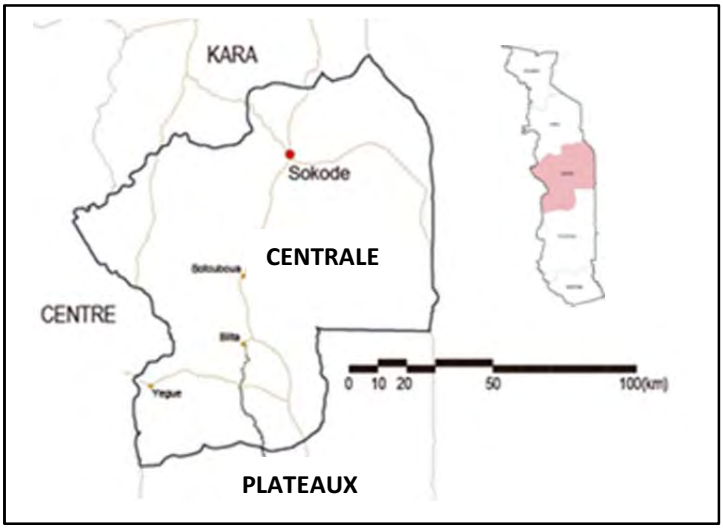
In terms of the industry in the region, there are several processing factories listed below.

- Candy factory at Annie operated by Sino-Togolese
- Cotton gining factory at Talo and Notsé
- Textile factory at Datcha (currently non-active)

The oil mill at Agou (currently non-active)

c) Centrale Region

The Centrale Region is located on the middle of 5 regions between the Plateaux Region on south and the Kara Region on north with an area of 13,474km^2. The region consists of 4 prefectures and Sokodé in Tchaoudjo Prefecture on the north of region is the capital of the region.



Source: Study Team

Figure 2-14 Location of Centrale Region

The mountains laying on the west extended from the south ridge to Adele Koronga plateau in the north are one of the conspicuous topographic characteristics in the region, which retains adequate water resource as well as faunal and floral environment. On the other hands, the Mono plain located western edge of national

border provides the region a vast flat plain with river which is considered to be one of the most appropriate area for the agricultural development in Togo.

In terms of mining deposit, few deposits have been found in this region comparing to adjacent regions.

The population of the region in 1981 was 301,670 inhabitants and it was estimated 617,871 inhabitants in 2010 according to DGSNA. Despite high economic growth, size of the human resource in this region is relatively small.

The Centrale Region has a high agricultural potential. More than 20% of agricultural crops for food of national consumption are produced in the region. Major crops are maize, sorghum, rice, beans, soybeans, yam, cassava etc. for food crops, and coffee, cocoa and cotton for cash crops. Particularly the cash crop is dominated by cultivation of cotton. The population engaged in agricultural activity is also significant in this region, which is estimated 144,789 agricultural workers out of 348,888 inhabitants of total population in 1996.

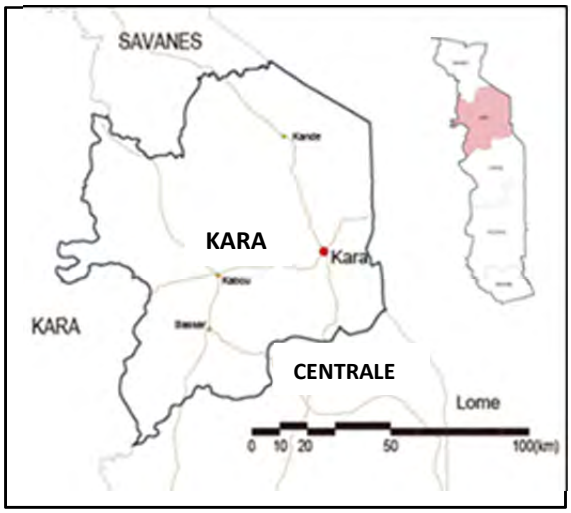
Fishery industry in this region is very limited due to a lack of water resource for fish. There are 12 fish ponds scattered throughout the region, and most of the pond tends to have difficulties for maintaining the adequate water in the pond.

The Centrale Region has only one industrial unit of cotton ginning, however, the operation of the factory has been stopped since 2004. Despite the fact of the cotton factory, artisanal sector in the region is very large and diverse. It provides a significant income population rural and urban.

d) Kara Region

The Kara Region is located between the Centrale Region on south and The Savanes Region on north, covering an area of 11,490 km^2, which represents 20.5% of the national area of Togo. The region consists of 7 prefectures and Kara in Kozoa prefecture located on south of the region is the capita.

The region has two distinctive topographical characteristics. One is the flat plain of Guérin-Kouka laid on the northwest of the region, and the other is characterized in the mountainous area which consists of a combination of mountains, hills and plains elongated from south to north in southern part of the region.



Source: Study Team

Figure 2-15 Location of Kara Region

Significant mining potential has been recognized due to the research result of mining deposit in the region. Iron ore in Bassar is one of the major mining deposits exploited in recent year.

Potential of other mining deposit is under research to ensure detailed amount of deposit. Possibility of mining deposit is summarized in a list below.

- Iron ore at Bassar
- Uranium at Niamtougou
- Chromite at Farende
- Copper at Bohou Yade, Somde and Assere
- Alluvial gold at Karan and Binah
- Marble at Djamde
- Phosphate at Bassar
- Dolomic Limestone at Namon
- Sand, gravel, armor, clay, granite throughout the region

The population of the region in 2000 estimated 626,000 inhabitants and increased 769,940 inhabitants in 2010 according to DGSNA.

Agricultural products are dominated by the following crops: sorghum, millet, maize, rice, yams, beans, groundnuts, soy beans etc. for food crops, and cotton, shea for cash crops. Addition to the crops of grains and tuber, fruit production is also conspicuous characteristics in this region including cashew nuts, mangoes, oranges, palm nuts, etc..

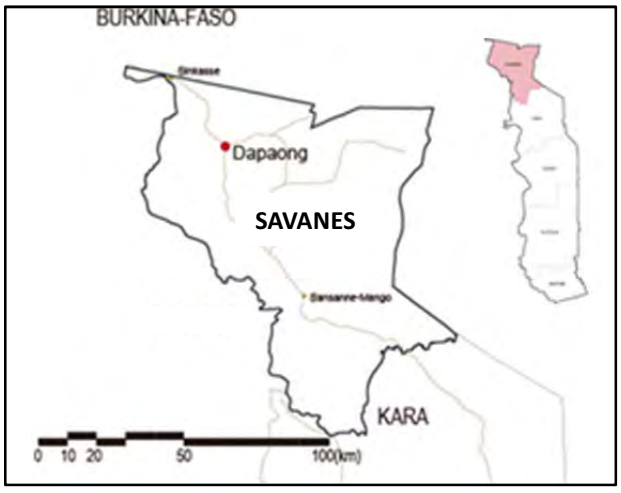
Kara region has a vast grass pastureland suitable for grazing cattle, which contributes to the growth potential of livestock industry.

e) Savanes Region

The Savanes Region is located the north edge of Togo where Burkina Faso is attached to the national border, covering an area of 8,470 km^2 which represent 15% of the national land. The region consists of 5 prefectures and Dapaong in Tone prefecture located on north of the region is the capital.

Topographic characteristic of the region can be easily visualized by two the plain on south is covered by national park and reserve area.

One the major potentials is manganese at Nayega. Otherwise other possibility of a mining deposit is limited.



Source: Study Team

Figure 2-16 Location of Savanes Region

The Savanes Region experienced significant population growth from 182,582 inhabitants in 1960 to 828,224 in 2010. However the expansion of natural reserve brought about decrease of population in 1981, recovering population has been witnessed after the incident.

Producing agricultural crop is the main activity in the region and about 90 % of the products are consumed in the region. The main crops are maize, sorghum, millet, rice, legume, beans, ground nuts and cotton.

(2) Regional Development Strategy

As a lower hierarchy of the national development policy, the Regional PRSP-II represents direction of the development strategy, for which the methodology of the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis is applied to clear the directional challenges of the regional development. Since the strategy of agriculture, mining, industry and tourism of each region are the major elements contributed to the development study of TLC as well as the strategy of infrastructure such transportation, the Study Team selected these strategies to summarize and account for the regional development policy. General descriptions of the analysis related to the TLC of each region are attached in Appendix 1.

2.6.3 Potential Growth Sector

Sectorial development policy plays a significant rolls to build a frame of the national development policy same as regional one. Economic activity of agricultural, industrial, mining and tourism are considered to have a close relationship with the economic growth linked to the development of north-south corridor. The Study focuses on the enlightening the fact of these sectors to ensure those potentials for future economic growth.

(1) Agriculture

a) Trend of Agricultural Products

The trend data of yields of agricultural products and cultivated areas by regions at the period of 2006 to 2011 are illustrated in Figure 2-17, and the data of major yields of regional base in recent years is shown in Figure 2-18.

The data of agricultural products and cultivated area explains that dramatic change of these elements of major food corps are not found in past 7 years in Maritime, Kara and Savanes Regions. On the other hands, the growth of either agricultural crops or cultivated lands is conspicuous in Plateaux, Centrale and Kara Regions. Especially the production of Yam and Cassava meets its tonnage amount more than double.

With an aspect of regional base of major agricultural product, it is clear to say that Plateaux and Centrale Regions comparatively have much amount of the tonnage of food crops within last few years, which represent existence of suitable environment regarding as meteorological and soil condition. Furthermore, it can be determined that the fact would contribute to future agricultural potential for agricultural development which effect on the development plan of the TLC.

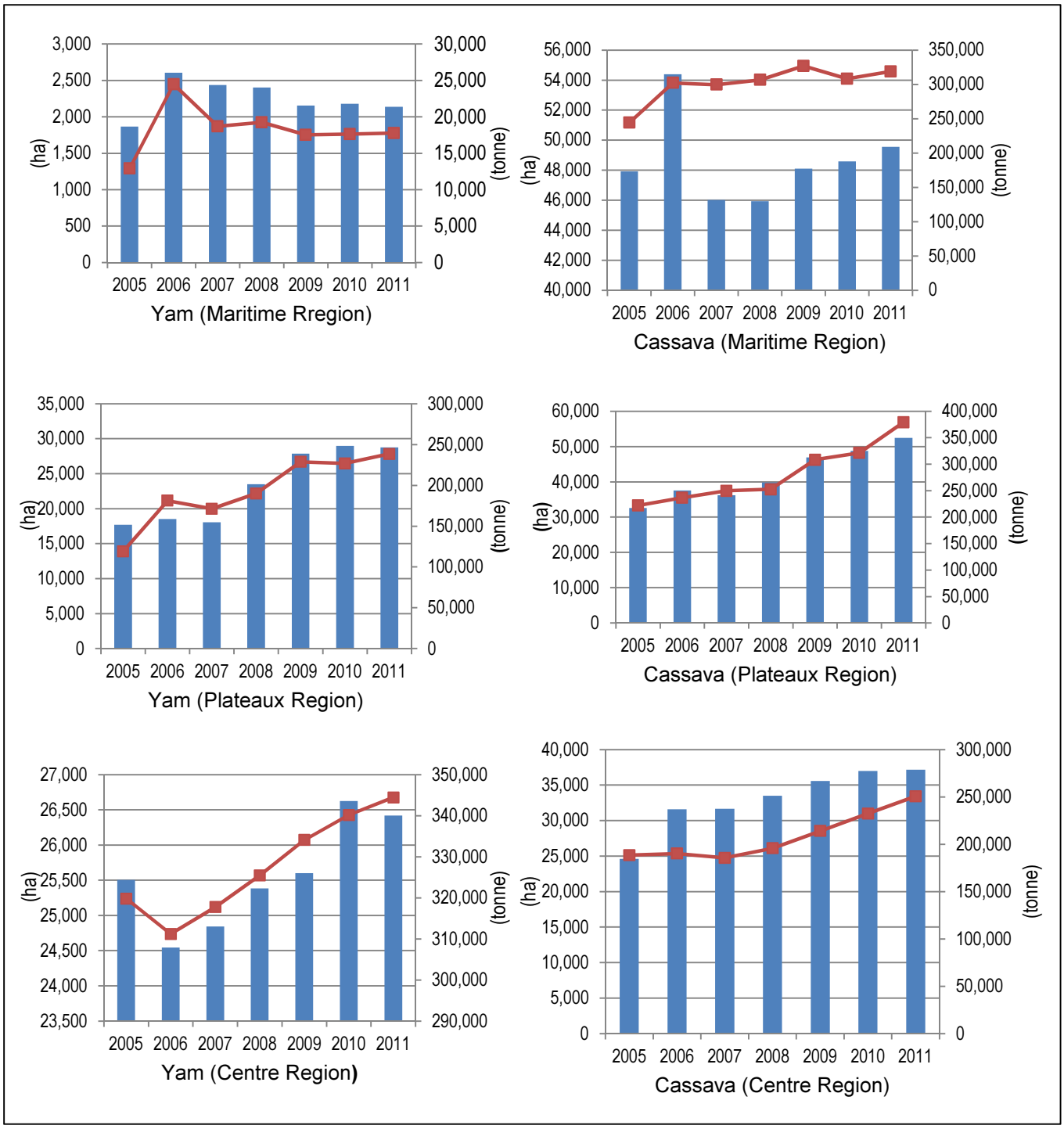
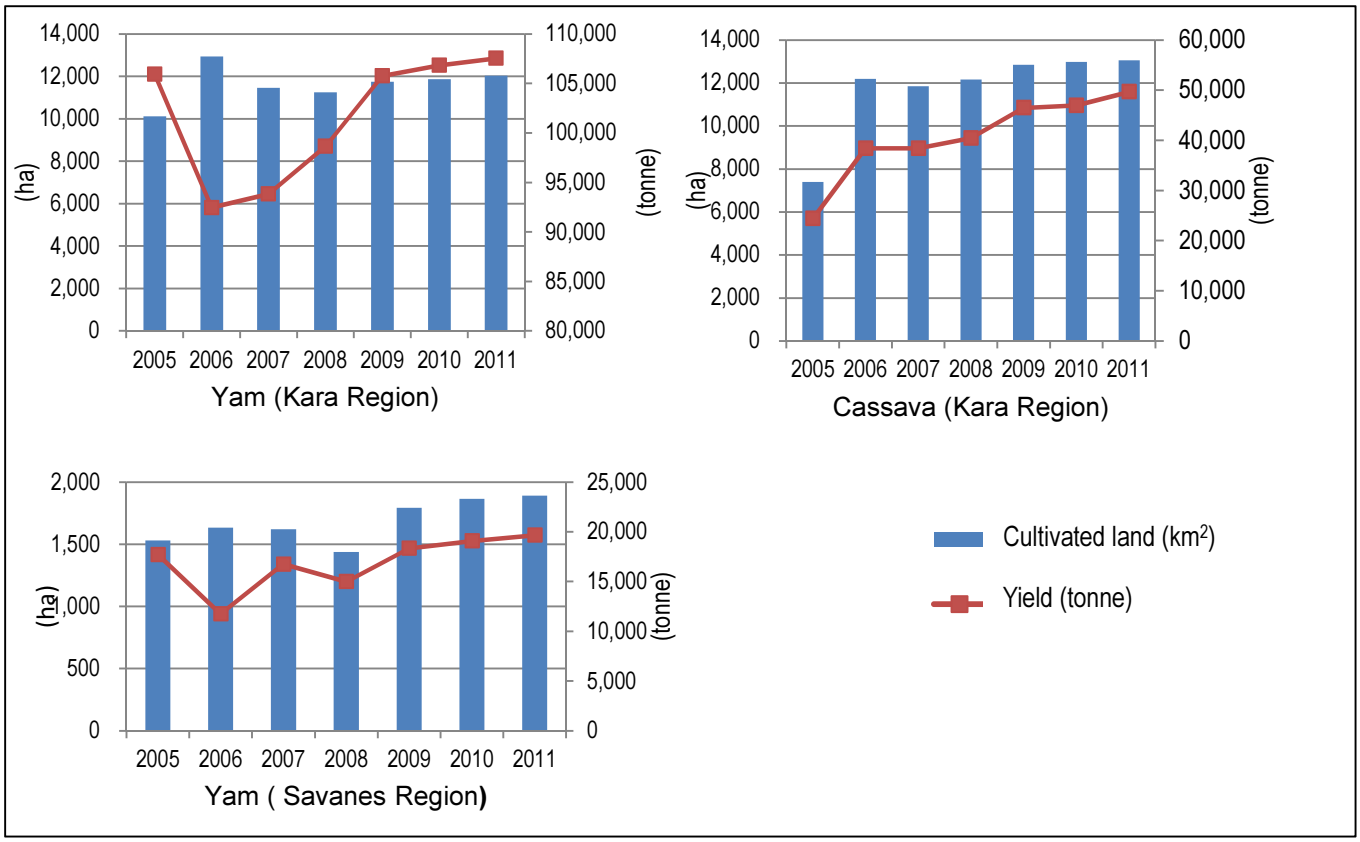


Figure 2-17 Total Amount of Yields and Cultivated Land (1)



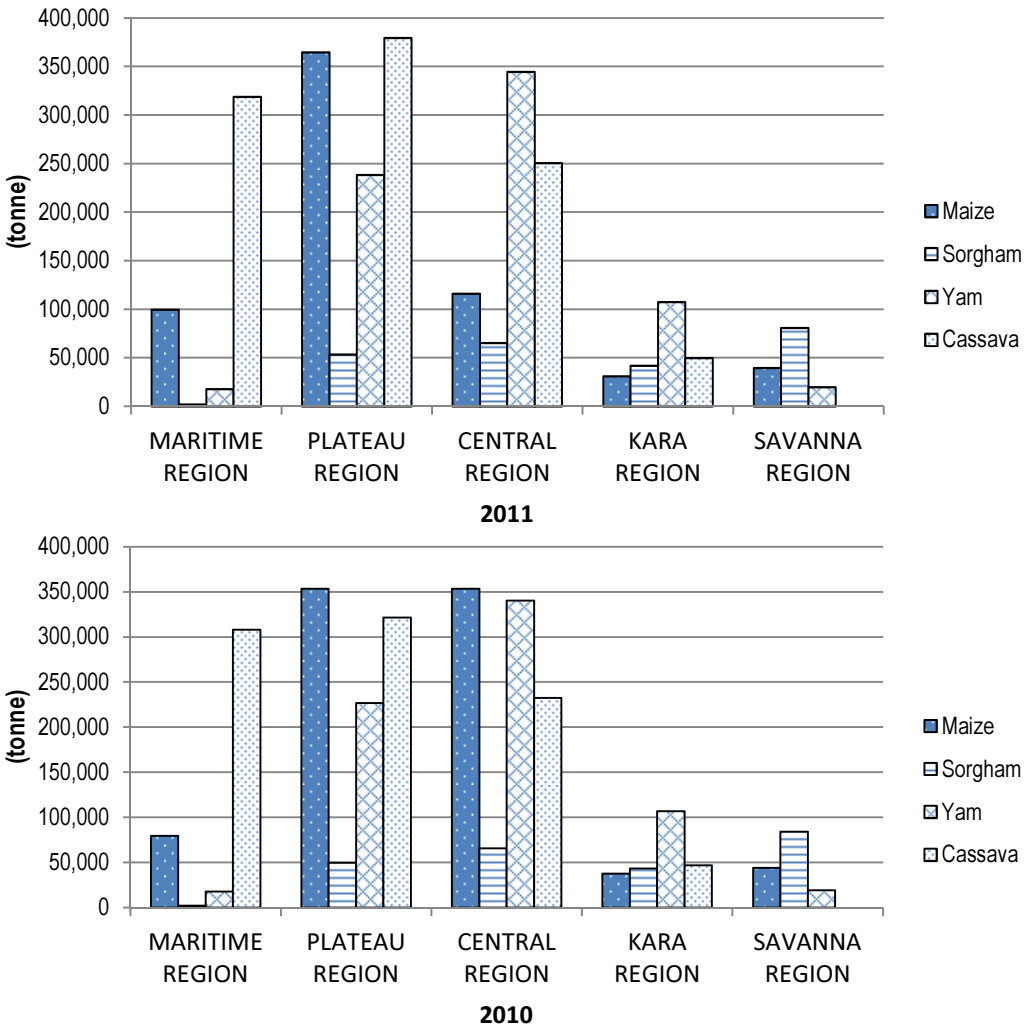
Source: Ministry of Agriculture, Livestock and Fisheries (MALF)

Figure 2-17 Total Amount of Yields and Cultivated Land (2)

Cash crops in Togo are dominated by mainly coffee, cocoa, and cotton, besides the other products such as palm oil and shea can be categorized as miner products. Amount of major cash products in national level is defined in the PNDAT (National Policy on Agricultural Development in Togo: *Politique Nationale du Développement Agricole du Togo*).

Production of coffee and cocoa are estimated at 12,540 tonnes and 6,305 tonnes in 2010 respectively, however the both products had a saw tooth type of tendency ranging over the last eight years. It can be noted that an association of cocoa farmers was organized in Akebou prefecture, Plateaux Region, in 2011, which can be one of the elements to represent the growth cocoa farms.

Cotton production is managed by the agency called NSCT (New Cotton Company of Togo: *Nouvelle Société Cotonnière de Togo*) established since 2011, and estimated at 80,000 tonnes in the first operation year. Comparing with the previous production amount of 46,844 tonnes in 2010 and 27,906 tonnes in 2009, establishment of the organization contributed to the growth of cotton business significantly.



Source: MALF

Figure 2-18 Yield Amount of Major Crops

Typical agricultural fields along the RN 1 are shown in the photos below.

Photo 2-1 Agricultural Field (Beans) in Maritime Region

Photo 2-2 Agricultural Field (Rice) in Maritime Region

Photo 2-3 Agricultural Field (Maize) in Maritime Region

Photo 2-4 Agricultural Field (Sorghum) in Maritime Region

Photo 2-5 Agricultural Field (Cotton) in Plateaux Region

Photo 2-6 Cassava Venders in Plateaux Region

Photo 2-7 Agricultural Field (Cocoa) in Plateaux Region

Photo 2-8 Agricultural Field (Sugar cane) in Plateaux Region

Photo 2-9 Agricultural Field (Beans) in Centre Region

Photo 2-10 Agricultural Field (Cotton) in Centre Region

Photo 2-11 Agricultural Field (Maize) in Centre Region

Photo 2-12 Agricultural Field (Yam) in Centre Region

Photo 2-13 Agricultural Field (Millet) in Kara Region

Photo 2-14 Agricultural Field (Sorghum) in Kara Region

Photo 2-15 Agricultural Field (Maize) in Kara Region

Photo 2-16 Agricultural Field in Kara Region

Photo 2-17 Agricultural Field (Rice) in Savanes Region

Photo 2-18 Agricultural Field (Cotton) in Savanes Region

Photo 2-19 Agricultural Field (Millet) in Savanes Region

Photo 2-20 Agricultural Field (Soy Beans) in Savanes Region

Photos by the Study Team, November 2012

b) National Agricultural Policy

For the national agricultural strategy, PNDAT defines six strategic and priority actions summarised in Table 2-14.

Table 2-14 National Agricultural Strategy

Priority Project	Strategy
Priority 1 : Promotion of vegetable sectors	Improving access to quality agricultural inputs
	Mobilization and sustainable management of water resources
	Promoting integrated management of soil fertility (GIFS: g*estion intégrée de la fertilité des sols*)
	Promotion of agroforestry and forestry facilities
	Promotion of mechanization of agricultural production
	Support the creation of areas of agricultural development and planned multifunctional platforms
	Development of traditional cash crops
	Development speculation diversification
	Development of market gardening / horticulture in urban, suburban and rural
	Valuation of plant products
Priority 2 : Development of Livestock sectors	Improving the productivity of family and community systems
	Promotion of modern livestock farms
	Livestock development unconventional
	Processing of animal products
	Improved management of transhumance
Priority 3 : Development of fisheries production	Conservation and sustainable use of marine and inland fishery resources
	Development of aquaculture and fish farming
	Conservation and fish processing
	Capacity of professional organizations (POs) fishing
Priority 4 : Improving market access and financing	Access to areas of agricultural production
	Improvement of marketing
	Improving access to finance
Priority 5 : Improving the provision of agricultural services and strengthening of farmer organizations	Development and management of knowledge and technological innovation
	Capacity of research structures and dissemination strategy
	Improving the provision of extension services and advisory support
	Capacity building support and advisory structures
	Capacity building of POs and their umbrella
	Development of agribusiness
	Improving the supply of agricultural training
Priority 6 Improving governance of the agricultural sector :	Improved policy and legislative framework sector management
	security of land
	Human capacity and physical coordination of MALF
	Improved mechanisms for monitoring, control and communication
	Enhancing the resilience of the population to climate vulnerability and food

Source: PNDAT

c) Potential of Agricultural Sector

To search the potential of agricultural sector in Togo, the government developed comprehensive analysis of future conditions of agriculture to direct and drive the appropriate agricultural investments which would significantly contribute to Togo's economy. The analysis was established based on the effects of implementation of PNIASA (National Programme for Agricultural Investment and Food Security: *Programme National d'Investissement Agricole et de Sécurité Alimentaire*) which stated that it is expected to meet substantial increase in yield and cultivated areas accompanied with relatively large productions which enable to provide adequate amount of food and cash crops.

Current condition of distribution of agricultural products from region to region is defined in the Figure 2-19. According to the figure, surplus of the products can be found in Plateaux and Centrale Regions, which has definite correlated to the total amount of food crops mentioned previous section.

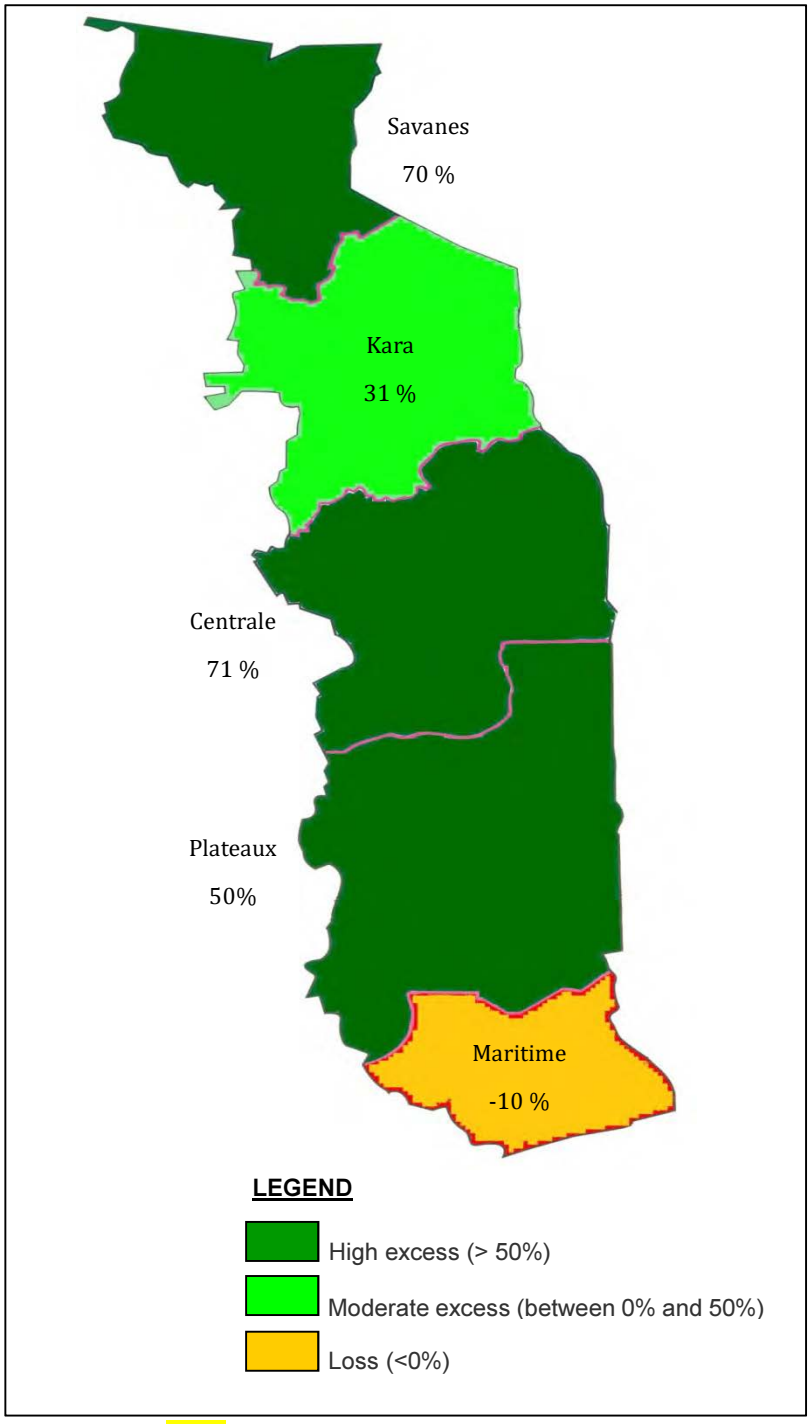
Figure 2-20 illustrates minimum scenario of total agricultural food productions by prefecture in the period of 2010, 2015 and 2020.

(2) Industry

a) National Development Policy

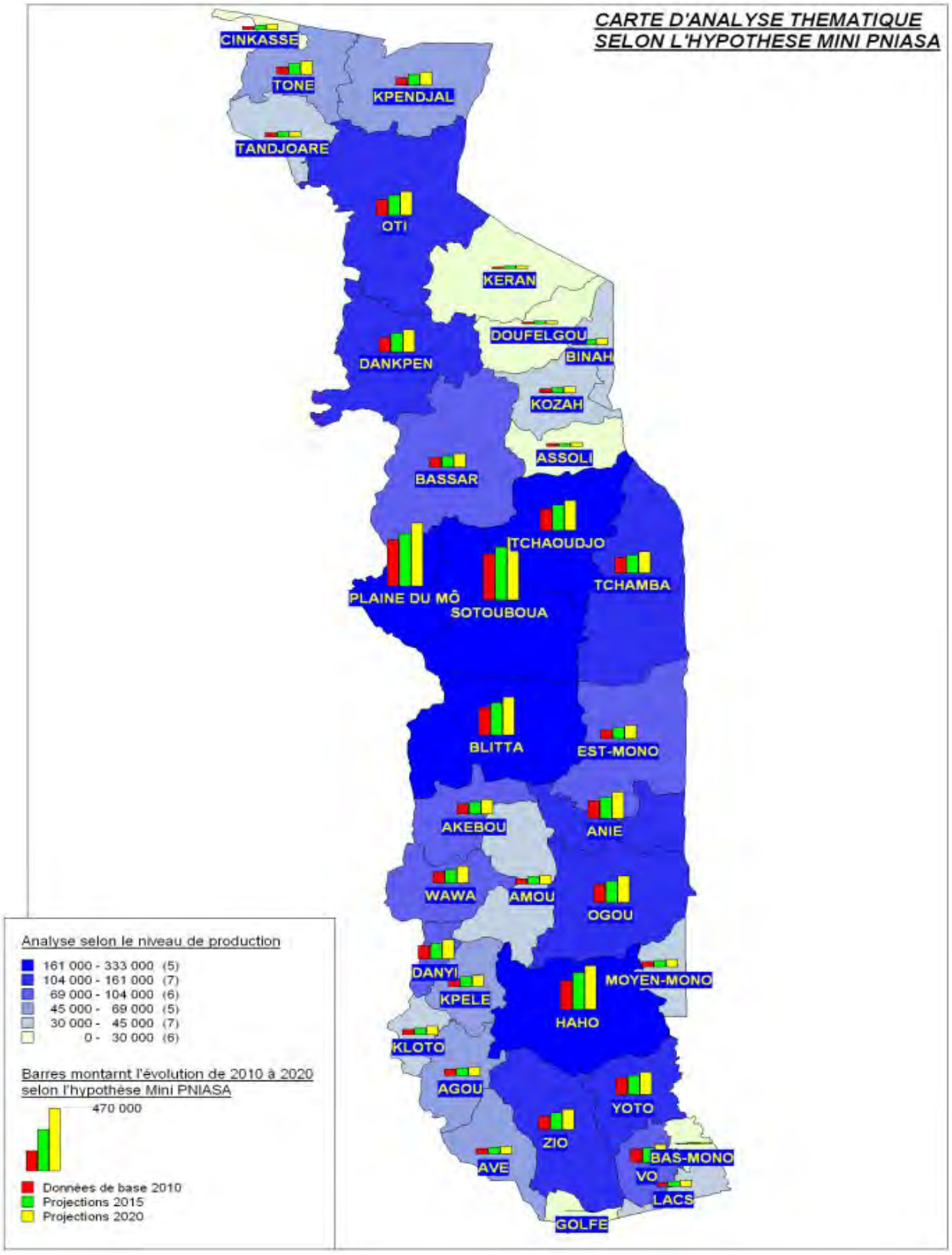
The national policy of industrial sector has been developed by the Ministry of Industry (MI). The policy consists of five components to frame the direction of industrial growth of Togo with its strategies of the components described below.

- Component 1: Processing, Production and Distribution
  - Raw materials, supplies, equipment, plant and machinery
  - Development and training workforce
  - Promotion of products manufactured in Togo
  - Financing industrial development
  - Plots and infrastructure development industry
- Component 2: Technology and Innovation
  -Supporting the emergence of a system of innovation and industrial technology;
  -Awareness-industrial environments on technological innovation and industrial property;
  -Capacity building support structures;
  -The industrial development of ICT.
- Component 3: Promotion of standardization, metrology, certification, accreditation, quality and environmental protection
  -Organisation, functioning structures quality management
  -Norma/standards metrology
  -Accreditation/certification
  -Promotion of quality
  -Promotion and protection of the environment awareness



Source: MALF

Figure 2-19 Surplus of Agricultural Production by Region 2010



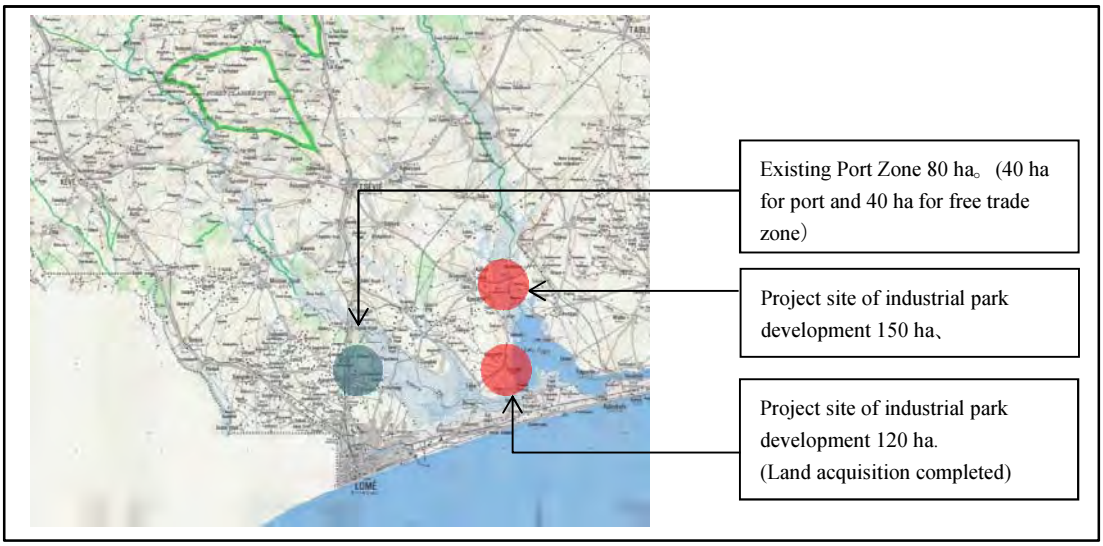
Source: MALF

Figure 2-20 Scenario of Agricultural Production by Prefecture 2010-2015-2020

- Component 4: Incentives and regulatory regime
  - Stimulation of industrial development
  -Industrial legislation and regulations
- Component 5: Others
  -Health-quality in the workplace
  -Environmental sustainability
  -Data and industry information
  -Gender in the industry

b) Development Projects

Several development projects are approved to be implemented for the industrial sector. The programs are identified as the development of industrial parks and one of the programs is about at the stage of preparing an environmental impact assessment (EIA). Due to the physical condition related to preferable location, required size and land acquisition, two of the projects are located in Maritime Region, east of Tsévié (Figure 2-21).



Source: Study Team

Figure 2-21 Location of Industrial Development Project Sites

(3) Mining

Since the national mining policy has not been disclosed due to the reorganization of ministries in Togo in 2012, the development plan or programs are now under way to approve with relevant organization including private sectors. However, potential and current products, regardless of its details of the information are can be determined by previous information and interviews from Ministry of Mining.

a) Potential

Researched mining sites are determined to search the mining potentiality according to the reference, Geological Potential of Mining in Togo, and were ranked in order of priority from 1 to 3 listed below.

- Priority 1: about 50 sites;

- Priority 2: 70 sites;
- Priority 3: about 120 sites;

Only thirty sites in the priority 1 and 2 have taken for geological research until the year of 2004. For the adopting a classification element, following situations have been analysed:

- 150 Sites for gold
- 70 sites for polymetallic (zinc, lead, copper, tin, tungsten, molybdenum)
- 5 Sites for phosphates
- 2 Sites for rutile
- 2 Sites for chromite
- 2 Sites for platinum
- 1 Site for the diamond
- 1 Sites for rare earth
- Dapaong-sheet (north of 10th parallel): 18 sites
- Kara-sheet (between 9 and 10th parallel): 68 sites
- Sokodé-sheet (between 8th and 9th parallel): 78 sites
- Atakpamé-sheet (between 7th and 8th parallel): 44 sites
- Lomé-sheet (below the 7th parallel): 25 sites;

Although the information is relatively old, it would be helpful to understand overall image of the mining possibility. Followings are description of potentiality of certain minerals.

1) Diamond

In Plateau Akébou in the structural unit of Atacora is estimated to more than 5,000 the number of stones found by local diamineurs. These stones are often 1 carat or less, however, individuals from several carats have been identified, the maximum being 37 carats a stone found in the early 1990s. No studies have been carried out to this day, dedicated to the search for primary source of diamonds. If have known that microscopic diamonds were isolated from alluvial concentrated in the north of Benin, in similar geological formations, the entire chain of Atacora and its eastern edge (suture zone) which must be the subject of investigations, an area of more than 25,000 km^2. The host rocks are the subject of speculation, namely:

- Rock-type ophiolite furrow basic-ultrabasic;
- Metavolcanic-found in the structural unit of Atacora;
- Old volcanic breccias revised by the Pan-African orogeny.

2) Zinc

By studying the Gossan in Pagala area hat zinc has been highlighted. The local geology includes, from west to east and vertically from bottom to top:

Unit-1: Metavolcanics (basalt, ferro-basalts) and nodular carbonates;

Unit-2: Muscovite quartzites and feldspathic quartzite;

Unit-3: All sandstone-pelitic schist alternations, including quartzite, graphitic schists and dolomites;

Unit-4: All albitic schist including shale and séricitoschistes alternating with quartzite;

Unit5: Carbonate series including the sericitoschistes brechoides dolomites and black shale.

Gossans in signing Zn-Pb-As-Ba-Cu are present in all units. Mineralization intersected in the survey in 1991 conducted by BRGM works is hosted in schist unit 4.

Simple Paragenesis, pyrite-sphalerite-galena-barite-siderite, is characteristic of sedimentary exhalative (SEDEX) of sulphide mineralization type. The ore grades were intersected 4.5 to 14.50/0 Zn.

Between 1995 and 2002, two companies of international standing (Coronation International Mining Corporation (CIMC)-AMBASE and Exploration, Anglo American branch) successively obtained permits research area, for work including geochemistry, soil, airborne geophysics (electromagnetism) and surveys. Other levels of zinc mineralization were intersected including a 300/0 Zn. However, these studies did not permit the identification of an economic whimper.

3) Nickel

During surveys in recent years, nickel saprolite containing interesting was highlighted on Mount Kpote. Mount Kpote part of the basic-groove ultabasique, about 150 km north of Lomé. It consists of serpentinites occurring in silicified facies schistoses, sometimes with the presence of pimelite. The investigations have consist in sinking 15 wells to a maximum depth of 12 m, no wells met the bedrock. Six wells have given nickel values between 10/0 and 2 080/0 of several meters. These wells delimit an area favourable 1,600 m x about 400 m.

4) Platinum

In the massive Kabyè (basic-ultrabasic furrow), 10 km NE of the town of Kara, two anomalous areas of Platinum Group Metal (PGM) were discovered during the geochemical strategic in 1990. These areas are associated with blades pryroxenites hosted in amphibole gneiss.

The first anomaly Stream sediment (Mount Soto) has values of around 60 ppb Pt and 40 ppb Pt.

The second area (Mount Toldja) is characterized by values of the order of 20 ppb Pt and 17 ppb Pt. During the years 2000 to 2002, the area of Mt Soto is the subject of a tactic by sampling soil profiles with a distance of 500 m x 50 m sampling all the profits. Significant results (forty platinum values between 40 and 620 ppb. Out of a total sample equal to about 600) are grouped together in an area of approximately 2,000 m x 500 m.

5) Iron

The iron ore is geographically located in the centre of the country, in the prefecture of Bassar. School textbooks talk about the iron Togo Bandjéli but Bandjéli is only localities where there prefecture iron ore, along with other places like Tchodokou, Manka, Bitjabé, Ditankpayabouri, Dimouri the list is not closed.

- The list of places proves that it is a scattered field which in fact extends to Ghana, where it forms the deposit Shieni.

- The iron ore reserves were estimated at 500 million tonnes with an average grade of 45% iron.
- The ore consists of hematite iron very fine crystallization with a silica content up to 50%.
- World reserves of iron ore are estimated at 750 billion tonnes, of which more than half is held by only four countries: Brazil, Australia, Canada, and Russian Federation.
- In Africa, the largest reserves are found in Liberia, Guinea, Mauritania and Côte d'Ivoire.
- World production (50 producing countries), about 700 million tonnes, is provided to more than 50% by Brazil, Australia, India, China, the USA and the countries of the former Communist bloc (Russia, Ukraine).
- Back in Togo, Bassar, to say that currently, iron ore Togo does not show very favourable for operation at industrial scale:
- Because of its quality, low content: minerals headlined sold 60 to 70% iron metal. Theoretically, it is possible, with appropriate treatment, raising the level of content, but for that you need to have cheap energy, which is not the case in Togo;
- To cause as reserves, rather average if we consider the global level. Also because of the distance from the coast: 450 km and 150 km of the port railway terminus. However, the use of iron ore may be considered by Bassar locally. It should be noted in this connection that the time when the steel plant operating in Lomé, ore blocks were incorporated into the scrap iron for the production of concrete.

6) Manganese

A Nayéga, 30km east of the city of Dapaong was discovered a small deposit of manganese (in the series of sandstones and shale Voltairian) whose reserves were estimated at 13 million tonnes, with content ranging 10 to 35% Mn metal.

Manganese is used in 90% in the production of ferro-alloys used in industry, alongside steel. Its other uses include: the manufacture of dry cell batteries, disinfectants, deodorants, chemicals and pharmaceuticals.

7) Chromite

Two small chromite deposits were discovered at Mount Ahito Farendè and 30 km north-east of the city of Kara, in the series of basic-ultrabasic furrow.

Proved reserves are:

- Ahito -10,000 tonnes with a grade of 25% Cr metal and a ratio of Cr / Fe ratio of 2.46.
- 30,000 tonnes Farende with a content of 15% Cr and a metal ratio of Cr / Fe less than 1.

Chromium is used for a large proportion (60-70%) in the metallurgical industry for the manufacture of chrome steel and various alloys. Its other uses include: the manufacture of paints and pigments, corrosion products and other chemicals. Ore (chromite) can be used in the manufacture of refractory products.

8) Bauxite

Bauxite is the ore from which aluminium is extracted. Considering global distribution the

mineral, the bearing of Mount Agou (1 million tonnes) seems rather modest. However, it could be used locally for the manufacture of refractory bricks in addition to kaolin clays, this part of local pottery production.

9) Phosphate

Phosphates are found in the Eocene formations of the coastal sedimentary basin and in the meta-sedimentary formations proterozique upper Bassar region.

Phosphates coastal sedimentary basin were discovered in 1952. The exploitation of the deposit was started in 1962 with extends over 35 km. Layer industrial thickness of 2 to 6 m, is topped by a layer of clay and sandstone-ironstone from 7 to 30 m.

The ore is a phospharenite furniture. Concentrates merchants have an average grade of between 36.1 and 36.4%. According to the feedback of the operating company, the deposit would still have more than 50 million tonnes of reserves concentrated merchant.

Phosphates are indurated upper Proterozoic and occur in the landscape as the hills 10 to 20 m high, aligned discontinuous in the meridional direction over a distance of more than 100 km.

Sites studied (trenches and holes) are named Bassar I, II, III and IV. The mineral is fluorapatite grading 35-42% P_2O_5 (Phosphorus Pentoxide), SiO2 (Silicon Dioxide) and Feral with generally lower, respectively, 11% and 3%, and absence of cadmium and arsenic.

Reservations are not precisely known, they are estimated in the tens (or even hundreds) of millions of tons.

Semi-industrial tests carried out on samples of Bassar I have shown that these phosphates are well suited to the manufacture of phosphoric acid.

10) Dolomite and limestone

The Togo has many deposits of dolomite and limestone, which have been recognized to varying degrees. For dolomite, the sites are spread over the whole territory are: Is Mono Gnaoulou, Pagala, Kamin-Akébou, Djamdè, Namon. Some of these deposits have been exploited as pirres marbrieres (Gnaoulou, Pagala). Dolomite reserves are estimated at several hundred million tons.

Regarding the limestone deposits are found in the coastal basin: outside Tabligbo operation include Avéta, Animabio, and Kpogamé Gladjoé. Avéta of the work has highlighted a deposit of 200 million tonnes.

Many sectors of industry use dolomite and limestone: iron and steel foundry, chemical industry, glass industry, the paper industry, plastics and rubber, paint industry, ceramics, refractories, the agriculture and agri-food. But the main uses are related to the manufacture of cement and lime.

World reserves are virtually limitless, dolomites and lime stones are very widespread in geological formations many countries of the world.

11) Industrial clays

Togo, industrial clays include: -Kaolin clays; - Illite clays; -Attapulgite clays and bentonite.

The kaolin clays have been identified in many parts of the coastal basin, particularly in the south-east, but the reserves have not been quantified. A Kpodji near Kpalimé to nyitoé-Zoukpé SW Kpalimé well as Houloum north of Kara, kaolinite clays were recognized, with reserves of 3 million, 1.5 million and 125 million tonnes respectively. Kaolinite clays uses depend on their composition and purity. Tests on these clays in Togo showed that suitable for the manufacture of ceramic products such as tiles and tile flooring.

When the illite clays, they appear as indurated and cover a large area in the prefecture of Bassar between Bandjéli Kabou and north of the river Katcha south. Reserves are virtually limitless. These clays are also suitable for the manufacture of ceramic products, as demonstrated by tests performed by the company installed zone Stilart Noépé.

Regarding the attapulgite and bentonite clays, are found in the coastal basin, including Avéta and Watchidomé or prospecting took place. Reserves are quantified 20 and 300 million tonnes respectively. Attapulgite and bentonite clays are used primarily for their industrial absorbent properties and bleaching. They are also used in the manufacture of drilling muds and oil in the manufacture of pesticides and pharmaceuticals.

12) Peat

Peat is a fossil mineral that forms in the basement by the decomposition of plant debris.
Peat is used as an energy source in the industrial and domestic use. It is also used in agriculture for soil amendment.

In Togo, small groan were highlighted in the coastal basin in fluvial systems Mono, Zio and Haho and lake systems in Togo and Boko. Reserves were estimated at 5 million m^3.

The use of peat as an energy source Togo is possible for some sites-especially Kondji Logo and Esse Ana as indicated by initial tests, but these tests need to be refined.

Regarding the chain soil amendment, tests were conducted at the University of Lomé, the results of these tests show that, under certain conditions, the peat can be used as agro mineral of Togo.

13) Ornamental stones

Ornamental stones are stones used for decoration because of their aesthetic and technical qualities. The main uses are for flooring, interior finishes and exterior stairways, doorways and windows, the monuments, the knickknacks, sculpture. The aesthetic quality is assessed according to the colour, grain size, the presence of polished surfaces such as drawings or shapes rubanements mosaic.

Togo, two sites were dolomitic marble Gnaoulou and operated by Pagala SOTOMA (Togolese Marble Society: *Société Togolaise de Marbrerie*) between 1970 and 92. Before its closure, the production was SOTOMA 6,000-11,000 m^2 350 m^3 slices and blocks a year with a plant capacity of 60,000m^2. To date, the SOTOMA still looking for a buyer. Marbles and Gnaoulou Pagala were used in the construction of banks (BCEAO, BIA, UTB (Union Bank of Togo: *Union Togolaise de Banque*) to luxury hotels (Sarakawa, Bénin, Peace), public buildings

(Congress, the Presidency Palace).

Sites outside of masons and Gnaoulou Pagala, other sites ornamental stones have been extensively studied up to the French standards AFNOR (French Standard Association: *Association française de normalisation*) tests and, for some, to the polls. Studies have shown that these sites are usable. They can include:

- Them dolomitic marbles Eastern Mono
- Dolomitic marbles Kamina-Akébou
- Dolomitic marbles and Djamdè Namon (Kara region)
- It cipolin Djéti Green Mountain, which was carved in the stele Nangbéto inauguration of the dam
- Granite-green Ezime
- Granites, grey, yellow and pink Glito in eastern Mono
- Migmatites Alokoegbé them in Zio
- Porphyritic granite-Tovégan in Hail
- Amphibole gneisses and garnet solid Kabyè
- Quartzites of Akata and Bafilo
- Pink granites Dapaong
- Sotouboua-gabbros.

b) Current Production and Deposit of Mining Resources

Table 2-15 and Figure 2-22 show approved deposit of mining resources researched in 1996. Since exploitation of the mining deposit has not been developed so far apart from the minerals which have been licensed for exploitation such as phosphate, it would be informative to analyse the possibility of future development of mining.

(4) Tourism

a) Conceptual Framework

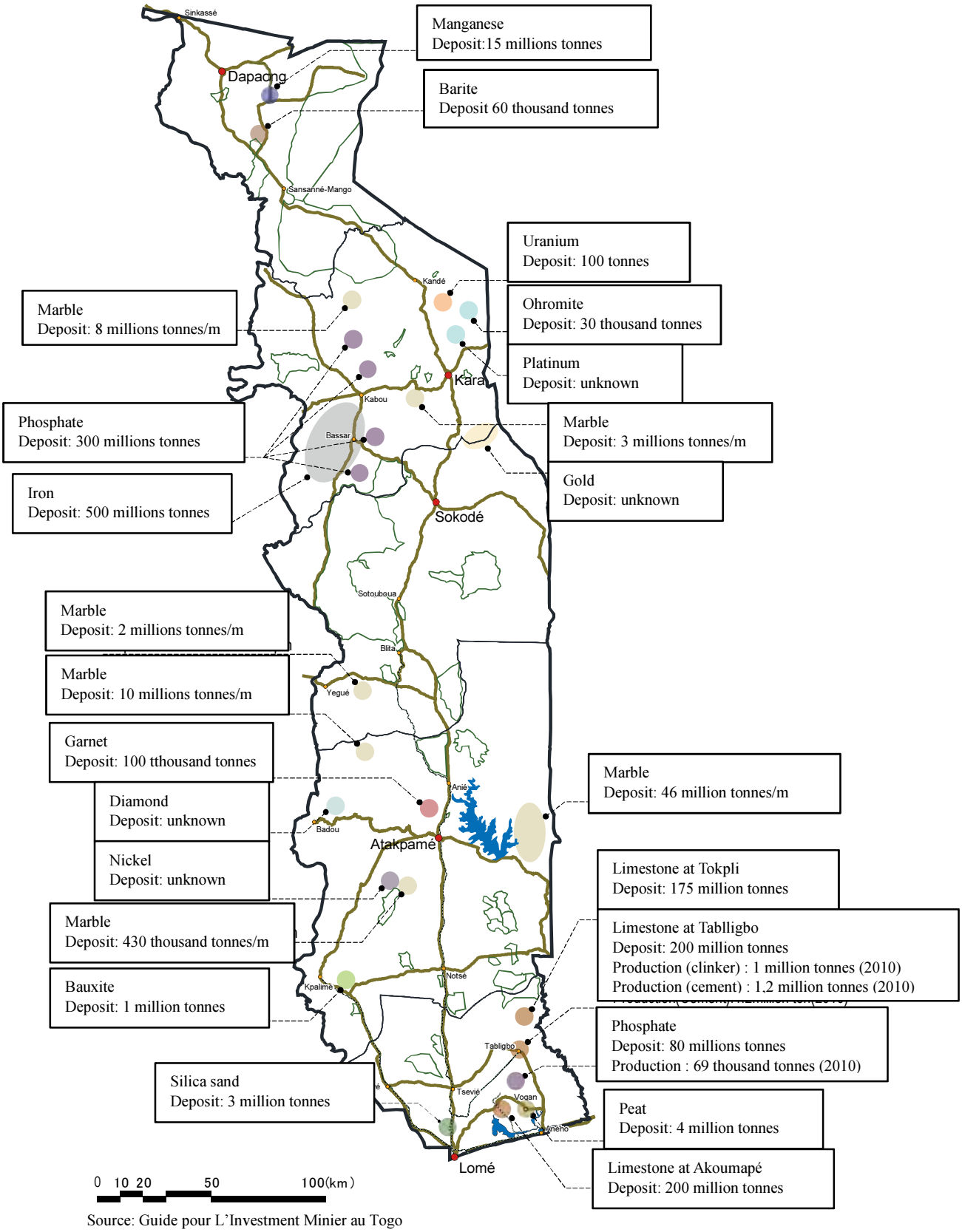
Tourism is undoubtedly one of the human activities that experienced a significant change in practice in the aftermath of the Second World War. The institution which regulates tourism globally is the United Nations World Tourism Organization (UNWTO) was created in 1975. It has replaced the International Union of Official Travel Organizations (IUOTO), and continues so bold, develop management mechanisms for control tourism development.

Many countries in the world have opted for the expansion of tourism have focused primarily on economic considerations without any real attention to the sometimes contradictory interactions of its uncontrolled development in relation to environmental and socio-cultural exchanges. To ensure the sustainability of its growth and its contribution to sustainable human development, the WTO adopted legal instruments, including the Global Code of Ethics for Tourism and Sustainable Tourism Charter. It also encourages Member States to observe the relevant provisions for the protection of tourism resources and interests of stakeholders, visitors and host communities. As a member state of the WTO, Togo fully adheres to all its provisions.

Table 2-15 Approved Mining Deposit (1996)

Name	Location	Amount of Deposit	Remarks
Iron	Bassar region	500 million tonnes	
Chromite	Ayito mountain and Farendé		20,000 tonnes in Ayito and 30,000 tonnes in Farendé
Manganese	Nayéga	15 million tonnes	
Bauxite	Agou mountain	1 million tonnes	
Phosphate	Bassar		There will be 50 million tonnes of extra deposit in 1995
Limestone	Tokpli	175 million tonnes	Used for the production of clinker by West African Cement (WACEM)
Limestone	Avéta, Kpogamé, Animabio, Akoumapéand Gladjoé	200 million tonnes	The quality seems to be penalized by the presence of phosphate
Barite	Boïlogou, Natongou and Nagbéni	60,000 tonnes	Filling ratio of 15%
Dolomite	Doposit of Est-Mono	46 million tonnes per meter depth	
Dolomite	Gnaoulou	430,000 tonnes per meter depth	Exploited by SOTOMA
Dolomite	Deposit of Pagala	2 million tonnes per meter depth	
Dolomite	Deposit of Kamina-Akébou	Tens of millions of tonnes	
Dolomite	Deposit of Djamdè	3 million tonnes	
Dolomite	Deposit of Namon	8 million tonnes	
Kyanite	Togo Mountain particularly Yeloum	110,000 tonnes	
Garnet	Gamé regions	100,000 tonnes	Some can be found in Kpélou rivers
Sand glass	Yogon	2 million tonnes	
Peat	Togo and Boko lake, Mono river valleys	4 million m^3	The quality varies with the origin
Uranium	Kara region	Hundreds of tonnes	
Iron	Center of Bassar prefecture	5 million tonnes	Bandjéli, Tchodoukou, Manka, Bitjabé, Ditankpayabouri, Dimouri and others…
Manganese	Nayéga	13 million tonnes	
Chromite	Ayito and Farandè mountain	10,000 tonnes at Ayito and 30,000 tonnes at Farendè	
Phosphate	Bassar		
Limestone	Tbligbo, Avéta, Animabio, Kpogamé Gladjoé	200 million of tonnes at Avéta	
Dolomite	East Mono, Gnaoulou, Pagala, Kamina-Akébou, Djamdè, Namon	Hundreds of millions of tonnes	
Peat	Coastal basin; Mono, Haho and Zio rivers; Togo and Boko lakes	5 million m^3	
Uranium	Kara region		

Source: Guide pour L'Investment Minier au Togo



Source: Guide pour L'Investment Minier au Togo

Figure 2-22 Production and Deposit of Minerals

The United Nations Conference on Trade and Development (UNCTAD), for its part, is committed to the establishment of trade relations more balanced in the tourism operation between sending countries and receiving countries tourists. Thus, it strengthens the capacity of these negotiations and in control at the base exchange of goods and services in the field.

Faced with the challenges of globalization and environmental challenges including climate change, the WTO supports the promotion of the green economy and invites Member States to better exploitation of the tourism sector in favour of the integrity of destinations and satisfaction of visitors and host populations.

Initiatives organization, operation and joint promotion of tourism economy are also involved at the African sub-region. They operate in particular the African Union (AU), the ECOWAS and especially the WAEMU in the context of the integration of this space.

It is in this dynamic sector developments at global, continental and sub-regional development that is part of the national tourism policy. It is based on the realities necessarily Togo. Therefore, it is guided by the provisions of the operating sector, the national environmental concerns, the need to protect cultural heritage and promotion of diversity and the obligations of economic growth for an integrated development of countries. It refers to various legal and regulatory frameworks in these various areas.

The ultimate goal of the development and implementation of national tourism policy is to define a guideline and conduct of government action for the harmonious development of the tourism sector in Togo.

b) Strength

As one of the reports which defines the potentiality of tourism economy, analysis of strength listed below is developed and these can be a key to know outline of the tourism situation in Togo for the Study.

- Political will to develop the tourism sector.
- Diversity existing potential, whether related to nature (landscape, flora and fauna, coastal) or related to the history and culture (monuments, museums, crafts, music, folklore).
- Stakeholder engagement to address the sector.
- Existence of state and private institutions in tourism.
- Associative grouping of private operators
- Existence of a certain practice of consultation between government officials and tourism private operators.
- Experience in development and management of tourism in the 1980s.
- Existence of a diverse clientele and faithful.
- Qualities of welcome and hospitality of the Togolese people.

Existence of two international airports and a deep-sea port.

These advantages are significant for Togo tourism development opportunities if they are highlighted optimally both the planning as well as marketing. The cultural and natural riches

must constitute elements of choice in the country's tourism development.

The combination of increasingly visible in the local implementation of a sustainable development, protection and enhancement of cultural heritage sites and is also an asset for the area.

c) Challenges and Opportunity

In a context of global financial crisis and general economic and competitive tourism Togo faces new challenges:

- Insufficient development of quality tourism products, very competitive among competitors and recovery under a policy of promoting and aggressive with large budgets.
- Security concerns due to the rise of terrorism (11th September, London and Sharm El-Sheikh, the socio-political crises). Tourism of Togo has great opportunities to seize.
- Maintaining traditional customers and new markets such as the Nordic countries (Sweden, Norway, Denmark, Finland), China, South America, Centre Asia.
- Contribution to the achievement of the MDG through the reduction of unemployment and poverty.

In the context of globalization with many implications economic, environmental, cultural and social, the state is seen as the guarantor of a controlled tourism development, coherent and sustainable.

d) Strategy

To direct economy of tourism sector to the confident growth corresponding to the TLC, the strategy of national tourism policy was developed by the Ministry of Tourism recently. The policy has eight priorities in Table 2-16 to concrete following action plans and implementations.

e) Measures and Action Programs

Expected actions of the state are intended to catalyse and guide the energy sector. Thus, the government's efforts will focus on the elements described below:

- Organizing, enhancing and strengthening management actions, monitoring, training and facilitation.
- Stabilisation of the institution concerned what the National Tourism Administration (NTA).
- Identification, delineation and servicing centres of tourism development.
- Redefinition of the tourism product, taking into account the originality of the tender and the requirement of the application.
- Updating and implementation of legislation regulating the sector.
- Revitalization of frameworks with different departments related to tourism.
- Promoting tourism through a strategy of information and communication for the consolidation of existing markets and new markets.
- Strengthening the promotion of domestic tourism.
- Training and the provision of training courses for upgrading the design staff and current framework.

Table 2-16 Priorities of Tourism Strategy

Priority 1: Register tourism among the priorities of the state
Tourism is now an industry as important exporter to the point that no government can build its model of development without counting with this sector. It is therefore necessary for the government to make the sector a priority to raise awareness of its importance and to encourage public and private actors to invest.
Priority 2: Strengthen institutional and legal capacity
It is now necessary to create favourable conditions for the development of the sector through its institutional stability. For better organization and coordination of activities, it is essential to create regional offices, to encourage the creation of framework between the public and private sectors, local authorities, host communities and provide the sector legal texts.
Priority 3: develop sustainable tourism that respects the natural balance of life
The concept of sustainable development is integrated into all planning considerations across all sectors. Therefore the quality of the environment is a fundamental pillar of tourism. Tourism development induces consideration and management by the people in their environment and their cultures so that the tourist does not affect their lives. It will ensure the protection of landscapes and build infrastructure that respect the environment.
Priority 4: Structuring the offer, redefine and enrich the product
In order to structure the offer of tourism development poles are designed and built according to the potential of existing sites; natural (coast, mountains, protected areas), cultural (Koutammakou Aného Glidji, Nangbani, etc.) or historic sites (slavery, colonial relics, etc.). The choice of accommodation and recreation should be diversified and spread over the five economic regions of Togo. Products such as business tourism, eco-tourism, beach tourism, sports tourism, health tourism and conference tourism is to develop or revitalize.
Priority 5: professional capacity building of human resources
It will develop human capital recycling and administrative staff by opening other branches in the fields of tourism to meet the requirements for employment in various trades. It is imperative to develop and make these efficient training to ensure the quality and excellence.
Priority 6: Develop a communication policy and proper marketing
Implementation of trade policy will adequately by: • The demand analysis through exploration in all markets with strong potential for tourists namely: Western Europe, North America, Africa, as well as emerging countries (China, India, Brazil, Arab countries, Central Asia, etc.) • Product offerings in an excellent quality / price ratio. • Marketing of the tourism product by all modern means of communication including. • Media (TV, radio, print and electronic media), information and advertising (brochures, leaflets, CD-ROM, DVD). • Use of ICT in the development and promotion of tourism so that any player or client has at any time access to accurate and timely information about the destination. • Opening performances "houses of Togo" in sending countries in order to carry out daily activities with sales channels and distribution. • Creation of a national agency to promote tourism. • Promote domestic tourism through incitement to explore the country and raising the standard of living of households, tourism is a tool for strengthening cohesion and national unity.
▪ Priority 7: Improve the development of statistics
Statistical data allow a comprehensive evaluation of the contribution of tourism to the economy. They facilitate the detailed analysis of the supply and demand for goods and services related to tourism and its interaction with other sectors. It is imperative for the National Tourism Administration to improve the methods of preparation of statistical data to meet the ever growing needs of policymakers, planners, researchers and organizations.
▪ Priority 8: Promoting tourism investment and improve the impact of tourism at the local level
It is important to create a society that will guarantee investment or tourism support sector projects. In addition, the National Tourism Administration will provide technical assistance to project promoters. The benefit for the host populations of economic and financial impacts of tourism will go through: • Support for the creation of these populations income generating activities oriented sector [small tourism enterprises (accommodation, meals, guide), agriculture, livestock, handicrafts, etc. • The organization of host populations (in unions initiative) for the management and maintenance of sites within their territory. • Respect for the moral, cultural values and environmental protection.

Source: Ministry of Tourism

- Integration options or specializations in tourism in university curricula and/or training courses in tourism and hospitality and enrichment training programs in existing private schools.
- The development and implementation of a system of incentives for investment in the sector (Tourism Investment Code).
- Strengthening the capacity of Gnassingbe Eyadema International Airport for wide body, encouraging companies to serve Niamtougou airport, the rehabilitation of secondary airports and also the strengthening of road, rail and river to Togo.
- encouraging competition through the implementation of the Yamoussoukro agreements and the open sky policy for both scheduled for charters.
- Looking for quality equipment and services for tourism businesses through the revitalization of the National Accreditation and Ranking Tourist Establishments (CNACET: *Commission Nationale d'Agrément et de Classement des Établissements Touristiques*).
- Strengthening international and regional cooperation (framework agreement, ratification by Togo texts in the field).
- Measures of facilitation of travel (visa, vaccination, etc.).
- The requirement for environmental impact study for projects to be implemented.
- Taking measures to protect and conserve the natural coastline, lakes and rivers.
- Capacity building of local participatory management of natural resources and conservation of cultural heritage.
- Strengthening the public-private partnership.
- Regulation of associations and Non-Government Organizations (NGOs) working in the sector.
- Creating a font tourist.
- The development of the special status of NTA staff.

f) Present Tourism Site

Table 2-17 describes present tourism sites and elements by regions and the major tourism sites illustrate in Figures 2-23 and 2-24.

Table 2-17 Present Tourism Sites and Elements (1)

▪ City of Lomé and Maritime Region

(1) Sites and tourist attractions:

- Large market Adawlato and new market Hédzranawé: Typical colourful and markets, famous for trade campaigns with Nana hold the secrets in Africa.
- The fetish market of Akodessewa; Present the sights of animism and Togo in the subregion Cathedral-Lomé system with its Gothic towers, has been completely renovated.
- The National Museum: Located at the background of the convention centre, gives an idea of the cultural identity of Togo.
- The Village Artisanal de Lomé presents a variety of handicrafts. Its different sections are: weaving, dyeing, macramé, ceramics, wood carving, leather, shoemaking, basketry, pyrography, jewelry, sewing, hairdressing, taxidermy.
- The ruins of the ancient Germans and French warfs in Lomé.
- "Bathing sites PK10_-PK15 's coastal area, stretching about 300 m long with a width of 10 m holding a water protected from the physical effects of the ocean by a ban of" Rock Beach "playing role of breakwaters. Easy access to one kilometer 500 of the international road. Site for swimming in sea water
- "Blue dot" Rest area "PK22 PK-27". Coastal zone stretching "PK 25 PK-27" with a width of 200 m conducive to recreational activities, picnic, camping and other recreation.

(2) Monuments

- The Independence Monument in the administrative district in Lome Togo mark the accession to independence (1960)
- The memorial Lomé
- The Monument of Martyrs (Martyrs Square / Lomé)
- The dove of peace in Lome
- Building Brand Hosts and the justice
- The Memorials: these are tombs on which are erected statues of men and animals to mark the social rank or wealth of the deceased.

2. The historic city of Agbodrafo: it was known as Porto Seguro, who was a former slave counter to the Portuguese. Here is Lake Togo, navigable place to practice water sports and through which you can get in a traditional pirogue to the historic village of Togoville.

3. The historic village of Togoville: gave its name to the whole country "Togo" by the Protectorate Treaty signed in 1884 between the king MLAPA III (Togoville) and the German explorer Nachtigal. One can discover the contents of this Treaty at the National Museum. Lady of the Lakes Catholic pilgrimage center. the center of the blind, a craft center and cultural par excellence. the village which is operated Hahoété career phosphates and Vogan which runs every Friday largest market in the region.

4. The historic city Aného: evidence from colonial times, was twice the capital of Togo 1885a 1887 and 1914 to 192. Shared between the lagoon and the sea, it provides a framework for walking and relaxing on the beaches.

5. The shores of Mono

- Aveve (village of the prefecture lakes) where the river is a natural border between Togo and Benin. Attractive for its crossings traditional canoes to explore the wild landscape.
- Reserve Togodo (Tabligbo: Yoto prefecture) with diverse wildlife: antelope, monkeys, hippos, etc.
- There is also a centre of taxidermy
- A Tokpli (Yoto Prefecture) Togolese side, the former German Customs faces the old French post Bénin-side. These two relics of the past are separated by the Mono River. You can visit the hippos' located in the area of togofruit.
- There Afagnan sculpture workshops at the Catholic Mission with a park antelope.

(3) Traditional Element

- ECE-ECE (festival history guen): Clean the guen from Ghana in the 17th century to settle in the Lake District in 1666, EPE-EPE is the opportunity of taking the sacred stone (kpessosso) which remains the core around which the events. This ritual feast that marks the beginning of the ethnic Guen takes place in September each year.
- Ayizan (harvest festival in Zio), according to the history of the people EWE, the exodus of the city dates back to Notsè 1720, the founders of the city of Tsévié migrated southward. Tired and lacking, they decided to plant beans. When was back on the road, the sowers protested, demanding to expect the harvest. Hence the current name Tsévié formed "flies" (produce) and "deviated" (a little). Ayizan owes its name to the bean "Ayi" and is celebrated every year in August in Tsévié.

(4) Dances and Crafts

- Dance: Djokoto (royal dance) Gbekon, Adjogbo
- Craft: Weaving, pottery, basketry, beads

Table 2-17 Present Tourism Sites and Elements (2)

▪ Plateaux Region

(1) In Kloto Prefecture
a) The peak is the highest point Agou Togo (986mètres).
b) The palm of the National Society for the development of the Palmeraie and plant red palm oil (Agou).
c) The Craft Centre Kloto (Kpalimé) became in 1984 the College of Education and Artistic Craft
d) The National Institute for Agricultural Training (INFA) deTové (Kpalimé)
e) The Castle Viale, built during the Second World War on the MONT Kloto.
f) Kpalimé Cathedral in Gothic style, with high towers
g) The Camp-hotel Kloto
h) The German cemetery Missahoe five kilometers from the residence of the prefect Kloto in green (forest of Missahoe)
i) The waterfall on the road Kpimé Kpalimé-Atakpamé.
j) The cave-Lavié Huimé: Lavié-Huimé is a village located 12 kilometers from Kpalimé on the axis Kpalimé - Atakpamé.
k) The cave of bats Kuvévé to Kouma-Adamé in Kloto.

(2) On Plateau Danyi
The plateau owes its name to the river Danyi, runny collected in the valley in the middle of a gallery forest.
a) "The great-circle Ahlon Denu"
b) The wall Tinipé and exhumation of an underground chamber called "brain"-Expose Ahlon.
c) A large circle and a brain Danyi Amouta Dzidzolé (PK9 village north of Danyi Elavagno).
d) Zogbégan Monastery: Located on the plateau Danyi, the cultural center of the

(3) In Ogou Prefecture
a) Atakpamé: Historical city located 165 km from Lomé is a big shopping center. City built on seven hills
b) Kamina: Village located seven kilometers Atakpamé on the road to Nangbéto, Kamina is a historical site where the German era is installed directly connected radio Togo to Germany (Berlin) in 1914.
c) The dam hydroelectric Nangbéto

(4) In Akposso Prefecture
a) The cascade of Aklowa (Installed in 1988 by the Ministry of Tourism): Located ten kilometers of Badou,
b) The ruins of the palace of Lonfoh to Akébou In the prefecture of Wawa. An archaeological site
c) George Amoutchou in Amu to explore.

(5) In the Middle Haho and mono
a) The historic town of Agbogbomé (Notsé)
b) The cemetery European Wahala (prefecture Haho) 24km north of Notsè.
c) The terracotta floors Notsè: Coming sheets made in archaeological 1984.1985 and 1987.
d) Polissoires du Notsè on the road Tado: archaeological remains discovered AGUIGAH.
e) The archaeological remains of Tado

(6). List of traditional festivities
a) Dzanwuwu-zan (harvest festival of Ewe Kloto)
b) Ovazu (harvest festival in country-Akposso Akébou)

(7) Dances and Crafts
a) Dances: Akpêssê, Tchébé, Adehou and Adjobo
b) Craft: Ceramics, macramé, weaving, batik, wood carving.

▪ Centrale Region

(1) In Blitta Prefecture
a) Blitta Station
Located 27 km south of Sotouboua, as the northern terminal of the Togo railway built in 1936 to open up the region, is now a museum - town with cranes that load nor unload more goods , stores crumbling abandoned houses, old houses whose occupants have the look of residents. Blitta Gare has yet those sights of a city we visit with the respect due to his past evoked by his old abandoned waggons, these water towers and dried envieillis rails with brush.
b) Maria Falls
They are located about 5 km from Diguingué (canton Adélé). Site inaccessible especially during the rainy season by a track from Diguingué. 127 km of paved road starting from Langabou, interconnects proud to villages Adélé Yégué, head of the canton of the locality.
c) "The poor sacred Tintchro"
t was a massive stone considered patron deity of Tintchro.

(2) In Sotouboua Prefecture
a) Sotouboua with its worship of the mountain lion worshiped (worship Foukpa)
b) Sotouboua city built of successive migrations faithful to its past culture, teeming world along RN1.
c) Yomaboua (slaves River (10 km) southeast of RN1).
d) The natural river Fazao-Malfakaza.
e) The great sacred baobab 'Yari-Beri', It is Fazao, located 38 km north-west of Sotouboua. It is a giant baobab is worshiped by the people of Fazao. It is located in the village, close to the hotel.
f) In Tchaoudjo (Sokodé)
The top of the water tower heights of the residence of the Sokodé Prefectiure, a panoramic view of the city and its surroundings offers eyes impregnable ramparts splendid vision of a green site.
g) The European cemetery Sokodé:
h) The cavalry Sokodé Kparatao, Tchamba and Koussountou
i) The village of Yao renaissance Kopé 13 km from Sokodé:

Table 2-17 Present Tourism Sites and Elements (3)

▪ Centrale Region (Continued)
j) The vestibule OURO Djobo Semassi MALAO first King said Muslims: k) Aléhéridè: The lake crested Natural site located 28 km from Sokodé, along RN1. Aléhéridè home implantation of two dams serving drinking water to the city of Sokodé. (3) In Tchamba Prefecture a) The Tree Of god Gbomgbore at the western entrance of the city of Tan-tan in Tchamba b) Sanctuary deity Apu c)River Gnakpimkpim to N'Tambu d) The baobab Larini e) "Hall of the head Oniaklitan" to Kabou f) Markets: Sotouboua, Sokodé, Tchébébé , Agbandi, Adjengré, Tchamb g) Traditional festival: Tchaoudjo: Gadao (harvest festival: March), Tchamba: Kilikpo (harvest festival)
▪ Kara Region
(1) In Assoli Prefecture a) The famous Aledjo; 36 km north of Sokodé, it is the link between the northern and the rest of the country. b) Alédjo Kadara: Alédjo part of the chain of Atakora which crosses the south-eastern Togo. c) The cascade Bafilo (2) In Bassar Prefecture a) The head of the vestibule Kibédipou: The vestibule is the head Kibédipou built on a mound of mud in front of the chief's house in Canton Kibédipou Bassar. b) The blast furnaces Nangbani (3) In Kozah Prefecture a) Trap the beasts of Atchangbadè, forges Tcharè and Pya (4) In Doufelgou Prefecture a) Yaka and cascade tchoutchou, waterfall (5) In Keran Prefecture a) The castles - forts Tamberma or tata Temberma. b) The border markers. (6) In Binah Prefecture a) Efapri: evalo stone, stone initiation. b) Monuments: The mausoleum Sarakawa, the memorial of Pya-Hodo (7) Traditional festivals - Kamaka: harvest festival of Assoli tem (January). - Tislim-Lifoni Oboudan: harvest festival in Keran (February). - Evala: initiation party: fight Kabye countries (mid-July). - Akpéma: initiation party girls in countries Kabyè (late August). - Sinto-djadjaagou: Nawdeba party history and of Doufelgou Lamba (August). - D'pontr: harvest festival in Bassar (September). - Singaring: Day Kabye initiation of Binah (November). - Habyè: religious festival of Kabye the Kozah (is celebrated every five years). (8) Markets: Pya, Kante, Kara, Kétao, Défalé, Soumdina Netherlands, Kouméa, Farandè, Bassar.,Niamtougou, Landa
▪ Savanes Region
(1) Museum of Pana 20 km from Dapaong This is an ethnographic museum objects including utilities. (2) La Marre alligators to Pana It is located a few hundred meters from the residence of the head Pana. (3) The cave frog Nok or Nano (4) The International Market Cinkassé:Togo-Ghana-BurkinaFaso: The market days are Thursday and Sunday. (5) Cave paintings Namoudjoga (6) Regional Museum at Dapaong (7) Other curiosities a) The natural reserve Keran straddling the Kara and Savanes Regions. b) Reserve the Fosse aux Lions (Dapaong) c) Mandouri Nature Reserve (east of Dapaong) d) The pit Sacred Dung /Tandjouaré Prefecture The site is located within 1 km from the border with Ghana. (8) Monuments The monument of the union at the camp in Dapaong. (9) Traditional festivals: a) Kurubi: religious festival of girls Oti. b) Tingban-pab: harvest festival of Moba Tône (December) (10) Markets: Barkoissi, Mango, Dapaong

Source: Ministry of Tourism

Source: Ministry of Tourism

Figure 2-23 Tourism Map of Togo (North)

Source: Ministry of Tourism

Figure 2-24 Tourism Map of Togo (South)

2.6.4 Major Development Project

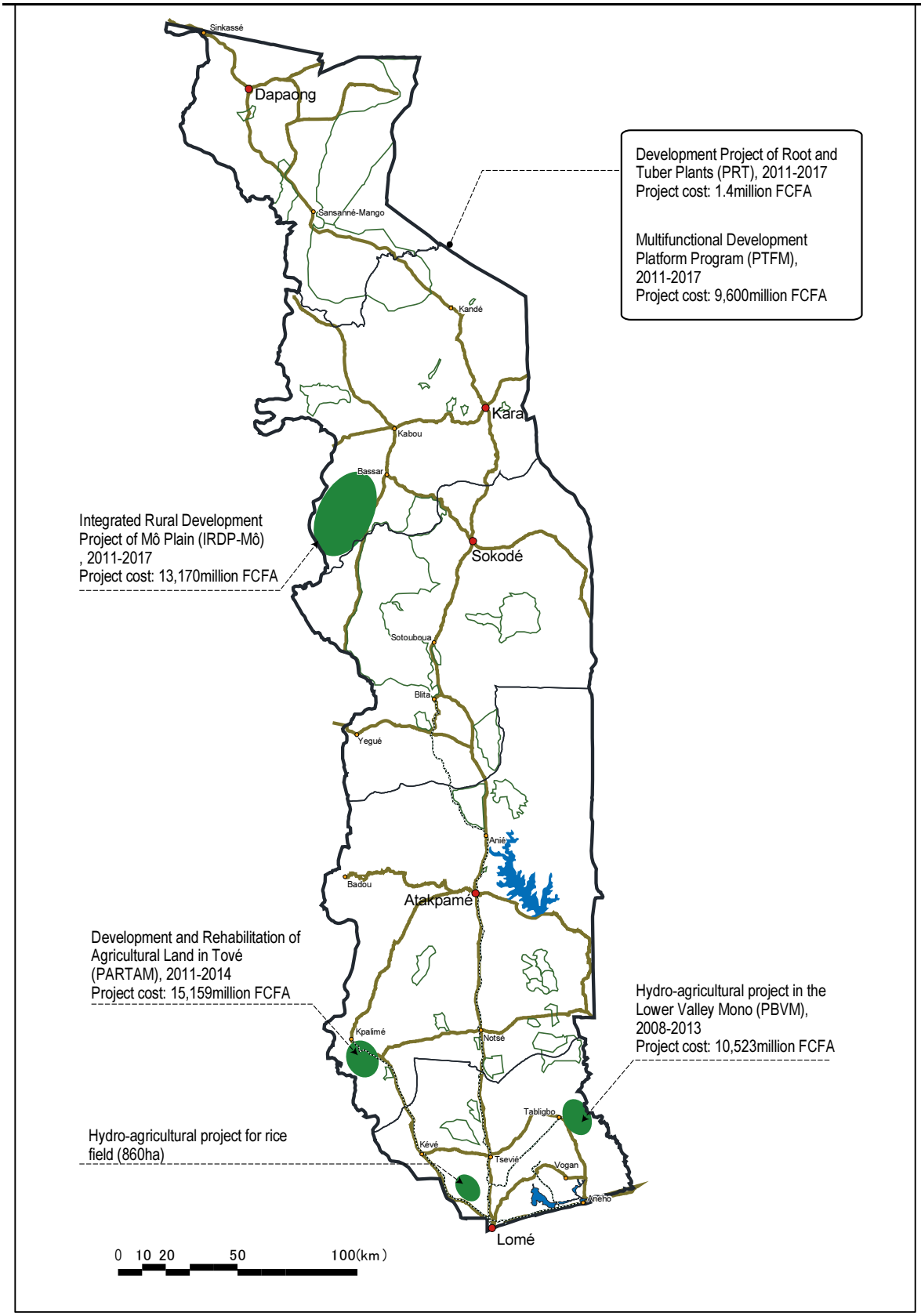
(1) Agricultural Development Project

Ongoing agricultural development programs in the PNDAT are shown as Table 2-18 and Figure 2-25.

Table 2-18 Ongoing or Future Agricultural Development

Project Name	Period	Location	Component	Cost
Project of Development and Rehabilitation of Agricultural Land in the area of Mission Tové (PARTAM)	2011 - 2014	Tové , Maritime Region	• Design, control, monitoring and supervision of general work • Rehabilitation and development of perimeter • Production support • Environment and accompanying measures • Awareness, organization, training and coaching support • Organization and project management	FCFA 5,400 million and FCFA 9,759 million for two phases
Hydro-agricultural project in the Lower River Valley Mono (PBVM)	2008 - 2013	Mono Valley, Maritime Region	• Inventory research • Arrangements of perimeters and related equipment • Control and supervision of works • Accompanying measures and environmental protection • Support the development and commercialization • Project management unit	FCFA 10,523 million
Integrated Rural Development Project of Mô plain (IRDP-Mô)	2011 - 2017	Mo Plain, Centrale Region	• Research, monitoring and surveillance work • Structuring of village organizations • Sustainable agriculture • Strengthening rural infrastructure • Environmental and social measures • Organisation and project management	FCFA 13,170 million
Development Project of Root and Tuber Plants (PRT)	2009 - 2013	The whole of Togo	• Development of cassava, yam, potato fields	FCFA 1.4 Million
Multifunctional Development Platform Program (PTFM)	2011 - 2017	The whole of Togo	• Dissemination of the platform • Development of inter-sectoral synergy • Action of capacity building and institutional development.	FCFA 9,600 million

Source: PNDAT



Source: PNDAT

Figure 2-25 Project Site for Agricultural Development

CHAPTER 3

CURRENT TRANSPORT SYSTEM IN TOGO

Chapter 3 Current Transport System in Togo

3.1 Overview of the Transport Sector

Togo has a multimodal transport system comprising four main modes of transport. These are road, railway, air and maritime. The system is progressively being upgraded with the support of development partners in order to improve the performance of the transport sector to enable it support the country's economic growth.

- Togo currently has a road network of approximately 11,672 km of which 2,376 km or 15% is paved. One main road, completely paved since 1980, runs north from Lomé to the border with Burkina Faso. Another runs east along the coast from Lomé to Aného and onward to the Togo – Bénin border.
- Togo has 575 km of a metre gauge railway currently under the concession, including two major lines from Lomé to:
  - Atakpamé and Blitta (276 km).
  - An 85 km spur extends to Tabligbo.
- There is an autonomous free Port at Lomé. The port not only serves Togo but also the landlocked countries of Burkina Faso, Mali and Niger. The port is also increasingly providing services to Bénin. A phosphate handling jetty is located at Kpemé.
- Lomé International Airport only serves as Togo's link with West and Central Africa and Europe at present.
- The transport sector contributes 6.5–7% of GDP with road transport accounting for a dominant 65–70% of this contribution, followed by maritime transport with 13–17%.

3.2 Transport Policy, Planning and Coordination

In the National Strategy on Sustainable Development (SNDD: *Stratégie Nationale de Développement Durable*) for the year 2030, Togo plans to establish a society based on harmonious economic and social development, while considering the environment and protecting its cultural heritage. The GoT's in accelerating progress toward lasting development for the next ten years are stated in the four strategies of the SNDD. These are: (i) development of economic recovery and promotion of production and sustainable consumption, (ii) acceleration of development in the social sectors and promotion of social overhead capital, (iii) improvement of environmental protection and management of natural resources, and (iv) provision of education and fostering of expertise for sustainable development.

Moreover, the GoT's economic policies for the medium term from 2013 to 2017 will provide an essential platform for the future growth of Togo. To achieve these challenges, the GoT should introduce the following new policies: (i) acceleration of the economic growth, (ii) employment and recruitment, (iii) enhancement the governance, (iv) reduction of regional disparities and promotion of basic development.

Consequently, the SCAPE was established for medium-term development to achieve the Declaration of General Politic (DPG: *Déclaration de Politique Générale*) of the GoT, the MDG and the GoT's vision of making Togo an emerging country in the next 15 to 20 years, respectful

of human rights and promoting the State based on right.

SCAPE is premised on support for democracy, peace and national reconciliation, stability of the macroeconomic setting, development of human capital, management of the environment, and sustainable development.

The five strategies of SCAPE are as follows:

Strategy 1: Development of the sectors with high growth potential

Strategy 2: Development of the economic infrastructure

Strategy 3: Development of human resources, social protection and employment

Strategy 4: Enhancement of governance

Strategy 5: Promotion of balanced and sustainable developments

The concept of Strategy 2 is to introduce modern and efficient transport infrastructures including multimodal transport: (i) maritime infrastructures (Lomé Port, Kpémé Port), (ii) road infrastructures, (iii) railway network, and (iv) airports (Gnassingbé Eyadema International Airport and Niamtougou International Airport). In this context, Togo should establish a strategic plan for transportation development by 2030 of the major means of transport.

The transport development policy falls within the country's broader economic strategic objectives in support of the Government's Vision 2030 and the current PRSP-II.

The development strategy for the sector therefore demonstrates the Government's recognition of its importance. The goals of the Government for the sector are to:

- Improve the effectiveness of the sector to support economic recovery and contribute to growth,
- Improve the competitiveness of Togolese products on the domestic and foreign markets through reduced transport costs and better service delivery,
- Encourage regional trade
- Improve the mobility of goods and persons for poverty reduction,
- Ensure autonomous and sustainable development of the sector.

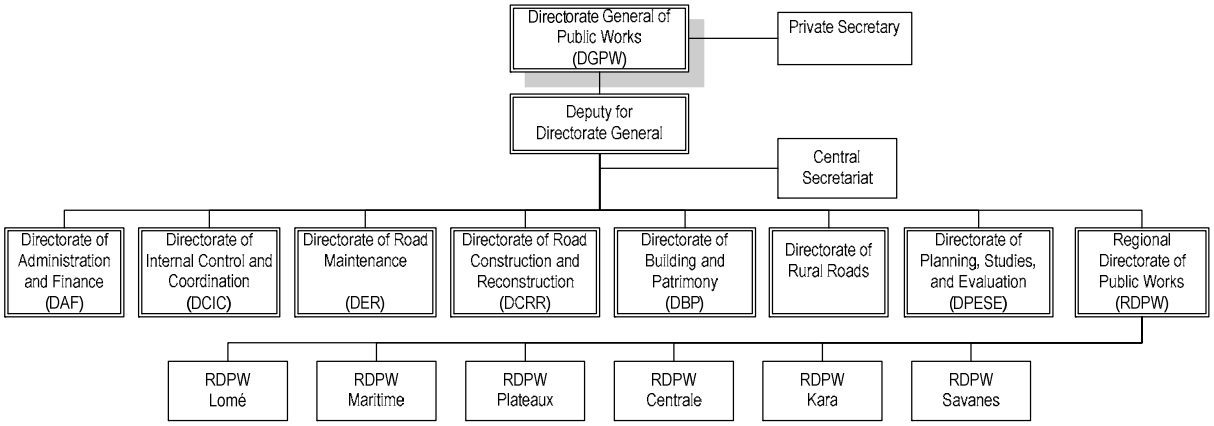
The Government's policy for the sector is entrusted to the MPW[3] and MT. The Ministries are specifically responsible for defining the sector policy with regard to transport infrastructure and related programmes and actions, ensuring their implementation, as well as organising and regulating the transport industry. The Ministries are supported by a number of implementing agencies to ensure that the policy objectives and action plans are realised

3.3 Present Situation of Road Sub-sector

3.3.1 Administration

The MPW in Togo has overall responsibility for the road sub-sector. The MPW is in charge of setting policy and monitoring. Implementation is carried out through the DGPW on behalf of the Ministry. As part of the on-going reforms in the transport sector, a Directorate of Rural Roads (DPR) in charge of the entire feeder road network has recently been created. The DPR has been placed under the DGPW for improved coordination and overall efficiency. Figure 3-1 shows the current organisation chart of the DGPW.

[3] The government organisation in this report refer to the previous organisation before the restructuring of ministries on 18th September, 2013.



Source: DGPW

Figure 3-1 Organisation Chart of Directorate General of Public Works

3.3.2 Policy and Programmes of the Road Sub-Sector

There does not appear to be any specific sub-sector policy but the strategies and programmes of the sub-sector are governed by the broad national policies and strategies contained in the Government's Vision 2030 and the current PRSP-II.

The sub-sector programmes are geared towards maintaining a reliable and efficient road network to provide better transport services at lower cost. This is expected to be achieved through:

- Improving the condition of the road network through adequate and sustained maintenance.
- Carrying out appropriate interventions on the network based on the application of sound socio-economic principles.
- Capacity building of road sub-sector institutions for improved management, planning, programming and monitoring of sub-sector activities.
- Establishing a mechanism for attracting the private sector into the sub-sector through Public Private Partnerships (PPPs).
- Improving the capacity of the local private sector to actively participate in quality road construction and maintenance.

3.3.3 The Road Network

Road is the predominant mode of transport in Togo and accounts for 98%, almost the entire internal transportation of passengers and freight traffic and a portion of imports in the country. Togo has a road network of 11,672 km with a relatively high road density of 20.62 km/100 km^2 which is among the highest in the West Africa sub-region. About 2,376 km, which is 15% of the network, are tarred. The distribution of roads by surface type, classification and region is shown in Table 3-1, while the national road network is shown in Figure 3-2.

Roads play a dual role in Togo. The network in addition to providing transport for in-country passenger traffic and domestic freight traffic serves as a major transit means for the haulage of imports and exports to the country's landlocked neighbours of Burkina Faso, Niger and Mali.

Since the socio-political crisis in Côte d'Ivoire, road transport between the latter and some countries in the region, particularly Burkina Faso and Mali, has been diverted through the Togolese corridors, for the transit of external trade.

Table 3-1 Regional Distribution of Roads in Togo

Road Type		Regional Network Length (km)					Total	
		Region						
		Maritime	Plateaux	Centrale	Kara	Savanes	Length (km)	%
Paved National Roads		373.7	527.7	347.5	300.0	183.0	1,731.9	14.8
Unpaved National Roads		267.6	337.6	88.3	375.9	285.6	1,355.0	11.6
Classified Rural Roads		209.0	180.0	171.8	309.3	22.0	892.1	7.6
Unclassified Rural Roads		645.0	2,930.8	721.9	884.4	728.0	5,910.0	50.6
Urban Roads		1,056.1	270.7	150.2	201.2	104.9	1,783.0	15.3
Total	Length(km)	2,551.4	4,246.8	1,479.6	2,070.8	1,323.5	11,672.0	100.0
	%	21.9	36.4	12.7	17.7	11.3	100.0	-

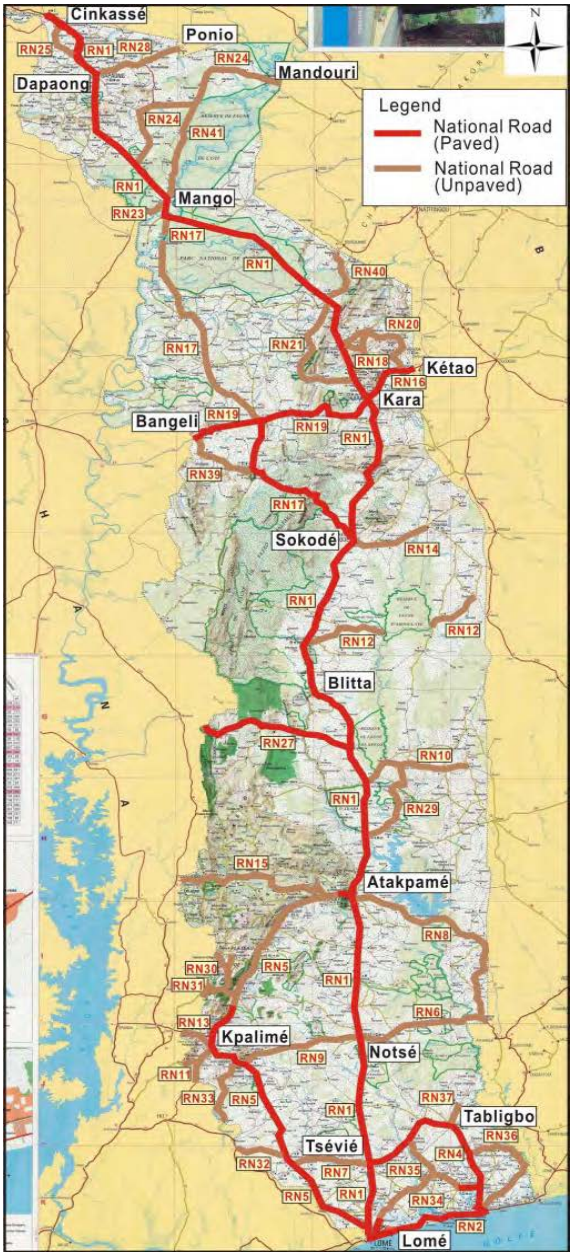
Source: DGPW, MPW

3.3.4 Network Condition

The state of infrastructure in Togo is a major cause for concern. Togo went through some socio-political crises in the early 1990s which led to the suspension of international aid. There was therefore no investment in new construction for over a decade. Furthermore, inadequate road maintenance due to the lack of government resources and a road management system, and the increased use of international corridors by heavy traffic as a result of the socio-political crisis in Côte d'Ivoire have negatively affected the condition of the network.

With a substantial portion of the network being unpaved and the lack of timely and adequate maintenance, the roads become dusty in the dry season and muddy in the rainy season and are frequently impassable due to washouts. The rural sector therefore has many inaccessible areas, including areas with high agricultural potential. The network condition in 2011 as reported by the DGPW is presented in Table 3.2.

An assessment in 2012 of the condition of the sections of the two regional transit corridors passing through Togo, the Abidjan – Accra – Lomé – Coutonou – Lagos and the Lomé – Cinkanssé – Ouagadougou - Bamako corridors, shows



Source: Study Team

Figure 3-2 National Road Network

that nearly 50% of the Togo portion of the Lomé – Bamako corridor and 11% of the Abidjan – Lagos corridor are in poor condition with only about 10% and 32%, respectively in good condition. The conditions of the Togo portions of the two corridors are summarised in Table 3-3.

Table 3-2 Road Network Condition (2011)

Road Classification	Length (km)	Portion of Network in Specified Condition (%)		
		Good	Fair	Poor
Paved National Roads	1,731.9	56	39	5
Unpaved National Roads	1,355.0	53	47	0
Classified Rural Roads	892.1	25	75	0
Unclassified Rural Roads	5,910.0	54	34	12
Urban Roads	1,783.0	56	25	19
Total	11,672.0	52	38	10

Source: DGPW, MPW

Table 3-3 Condition of Transit Corridors

Section of Corridor	Length (km)	Condition of Section (2012) (%)		
		Good	Fair	Poor
Kojdjoviakopé – Sanvé Condji Section: Abidjan – Accra – Lomé – Cotonou – Lagos Corridor	54	36.1	52.8	11.1
Lomé – Cinkassé Section	670	9.7	42.4	47.9
Total of Two Transit Corridors	724	45.2	43.2	11.7

Source: DGPW, MPW

The network condition as reported by the DGPW appears to be more favourable than the actual condition. The condition of the transit corridors also reported by the DGPW shows that the portion of the paved national roads cannot be only 5%. The condition also contradicts those reported under the AfDB sponsored study for the Rehabilitation and Modernisation of the Aflao – Sanvé – Condji Bénin Border Road (RN2). The study showed that in 2011 only 33% of the paved national roads were in good condition and that only 13% of the total network was in good condition.

3.3.5 Road Networks in Neighbouring Countries

One of the major objectives of the TLC Development is to improve sub-regional trade and encourage sub-regional integration. Therefore, an overview of the networks in Togo's neighbouring countries of Bénin, Burkina Faso, Ghana, Niger and Côte d'Ivoire is given below to show the road infrastructure over a sub-regional Study Area.

(1) Bénin

Bénin has a relatively well developed network with a total length of 15,500 km, of which 8,300 km are

Source: UN Cartographic Section

Figure 3-3 Road Network in Bénin

classified[4] and with 2,100 km are paved. Bénin's classified road density of 75 km/100 km^2 of land area is among the highest in the sub-region and comparable to the average of 88 km/100 km^2 for low-income countries. The Road Development Index[5] (RDI), which gives an indication of how well the population is served, is 0.26 for the classified network.

About 66% of the main road network is in good or fair condition, with 66% of the rural network in good or fair condition. The Bénin sections of the sub-regional transit corridors, however, would require some improvement with 68% of the country's portion of the Cotonou – Niamey Corridor in poor condition and 60% of the Abidjan – Lagos corridor in poor condition.

(2) Burkina Faso

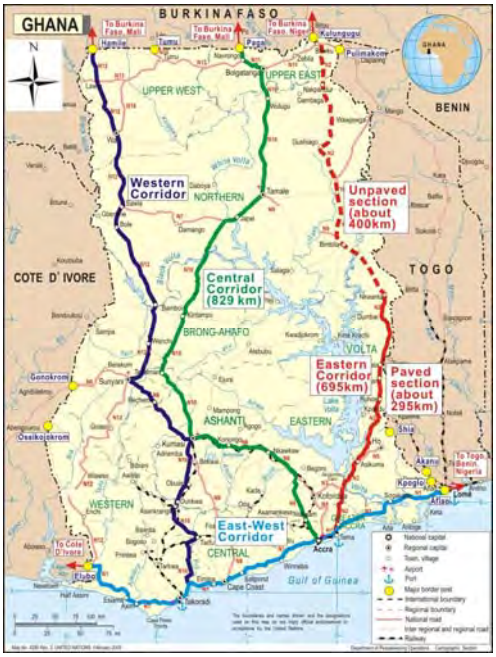
The country has a total network of 22,300 km out of which 15,200 km are classified, and 3,857 km are paved. Burkina Faso has a classified road density of 55.6 km/100 km^2 and a classified network RDI of 0.22. About 76% of the paved network is in good condition with over 93% of the classified unpaved network in good condition. With regard to the sub-regional corridors, the sections passing through the country are all paved with 58.2% in good condition, 33.6% in fair condition and 8.2% in poor condition.

Source: UN Cartographic Section

Figure 3-4 Road Network in Burkina Faso

(3) Ghana

Ghana has 109,515 km of roads out of which 67,450 km are classified and 12,442 km are paved. The classified road density is 28.3 km/100 km^2 with a classified RDI of 0.89. About 69% of the classified network is good or fair condition and the main network has 72% in good or fair condition. The Eastern Corridor in Ghana, the northern half of which is in poor condition, is actively being developed by Ghana as a shorter route to the northern part of the country. When completed, this corridor could act as a competitor to the Togo Logistics Corridor. The sections of the regional corridors passing through the country are all paved with 70.3% in good condition, 23.6% in fair condition and 6.1% in poor condition



Source: Final Report, Study on Eastern Corridor Development Project, January 2013, JICA.

Figure 3-5 Road Network in Ghana

(4) Niger

Niger's total network stands at 18,948 km, of which 14,000 km classified and 3,912 km are paved. With a classified road density of 11

[4] Classified roads are under the jurisdiction of the road authority and are maintained with public funds.
[5] The road development index is calculated as the road length divided by 1000 population.

km/100 km^2, and a total network density of 13 km/100 km^2, Niger has one of the lowest densities on the continent. The country's classified RDI is 0.10.

Source: UN Cartographic Section

Figure 3-6 Road Network in Niger

Approximately 67% of the paved network is in good condition while 58% of the classified unpaved network is in good condition. The sections of the regional corridors passing through Niger are in relatively better condition than those in the neighbouring countries. All sections of the regional corridors in the country are paved, with almost the entire section of the Lomé – Niamey corridor in good condition. The Cotonou – Niamey section has 78% in good condition with 22% in fair condition while the Nouakchott – Ndjamena corridor section has 66% in good condition and 4% in fair condition.

(4) Côte d'Ivoire

Côte d'Ivoire has a total network length of 81,996 km, of which about 6,200 km is classified and approximately 6,500 km or 7.9% is paved. The total road network density is 25.5 with a classified network density of 19.3 and a classified RDI of 0.74. About 80% of the main network is in good or fair condition while 60% of the rural network is in good or fair condition. With respect to the section of the regional network passing through Côte d'Ivoire, 90.3% is paved. About 16.1% of the regional network in the country is in good condition, 47.1% in fair condition, and 36% in poor condition.

Source: UN Cartographic Section

Figure 3-7 Road Network in Côte d'Ivoire

The network statistics are summarised in Table 3-4 and the RDI and Road Density (RD) for Togo are compared with those of neighbouring countries in Figures 3-8 and 3-9. The sub-regional corridors and their recent conditions are shown in Figure 3-10.

3.3.6 Road and Bridge Inventories and Condition Survey

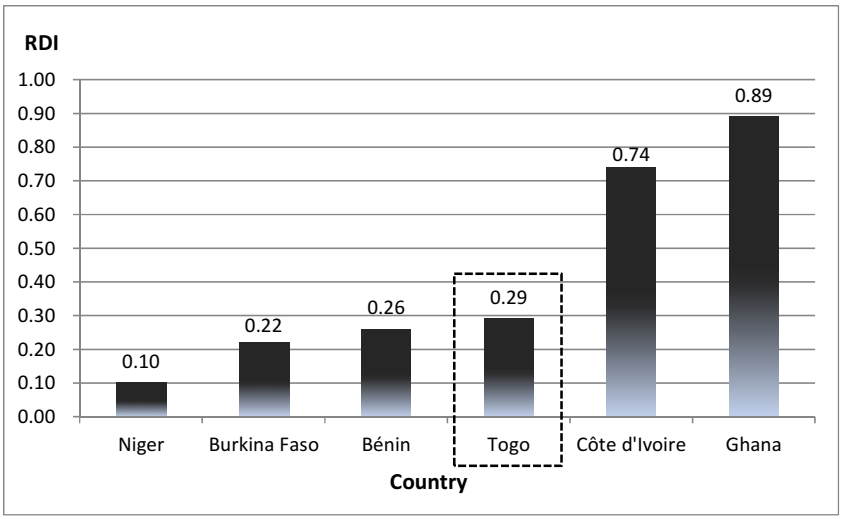
The TLC has significant potential for supporting the socioeconomic development not only of Togo but also the West Africa sub-region. To ensure optimisation of the Corridor's effectiveness, a total of 2 177 km of roads are being studied. The Study includes an inventory of approximately 800 km of mainly paved roads including the bridges on them.

Table 3-4 Network Statistics for Togo and its Neighbouring Countries

Country	Area (km^2)	Population (mill.)	Total Network Length (km)	Classified Network Length (km)	Paved Length (km)	Total Network Density*	Classified Network Density*	Classified RDI**	Main Network in Good or Fair Condition (%)	Rural Network in Good or Fair Condition (%)
Bénin	112,620	9.1	15,500	8,300	2,100	14.2	7.5	0.26	69	66
Burkina Faso	274,200	17.7	22,300	15,200	3,857	8.2	5.6	0.22	96.1+	90.3++
Ghana	238,533	24.0	109,515	67,450	12,442	45.9	28.3	0.89	72	65
Niger	1,226,700	16.4	18,948	14,000	3,912	1.3	1.1	0.10	67+	58++
Côte d'Ivoire	322,463	22.0	81,996	62,000	6,500	25.5	19.3	0.74	80	60
Togo	56,785	7.0	11,672	5,762	1,732	20.6	10.1	0.29	97.2	89.6

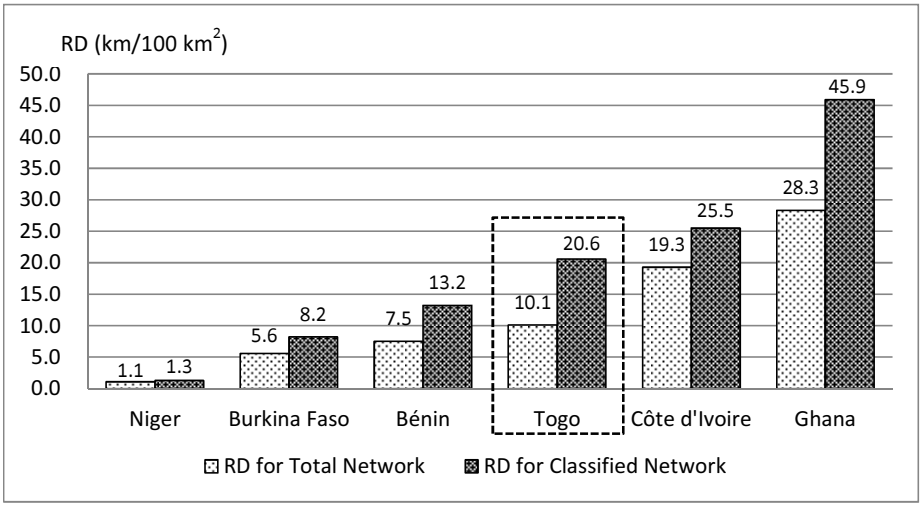
Note: +Paved Network, ++Unpaved Network, *km/100 km^2,
** Road Length (km)/{Area(km^2) x Population (1000 persons)}$^{0.5}$

Sources: Africa Infrastructure Country Diagnostic (AICD), Ministry of Roads and Highways (MRH, Ghana)



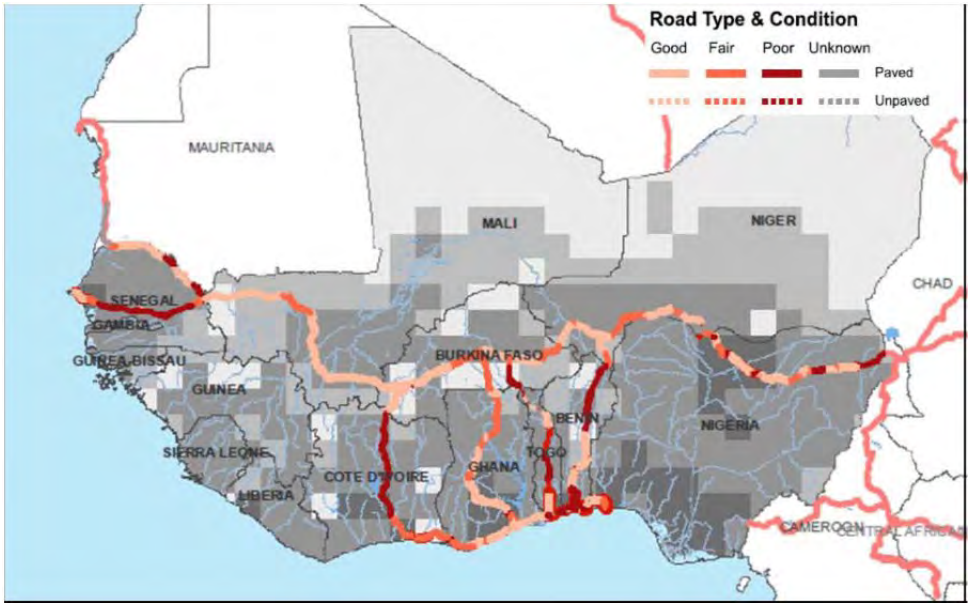
Sources: AICD, MRH (Ghana)

Figure 3-8 Comparison of Road Development Index for Togo and Neighbouring Countries



Sources: AICD, MRH (Ghana)

Figure 3-9 Comparison of Road Density for Togo and Neighbouring Countries



Source: After AICD

Figure 3-10 Conditions of Transit Corridors in West Africa

(1) Road Inventory and Condition Survey

For the inventory and condition survey of the roads, each identified road was divided into homogenous sections based on the current condition of the road, with each homogeneous section being not less than 10 km. Information obtained included the width of the carriageway and shoulder of the road, and the type of road: whether paved, gravel or earth. For paved roads, the type of surfacing is also indicated. Other information collected was the width, the extent of potholing (slight, moderate or severe), the degree of longitudinal, transverse or alligator cracking, and the degree of rutting and/or raveling, with the extent of each type of distress indicated as slight, moderate or severe. Other types of distress such as shoving and their severity, and the extent of patching were also noted.

The condition of each homogeneous section was noted as good, fair or poor. For paved roads, good sections were those without substantial distress with estimated roughness of less than 4 on the International Roughness Index[6] (IRI). For the fair sections, distress was moderate with IRI estimated between 4 and 6. Severely distressed sections had an estimated roughness of higher than 6 IRI.

From a strategic point of view, and to quickly assess the interventions required for the network to provide an acceptable level of service, good sections would require predominantly routine and recurrent maintenance within the medium term of 3–5 years. The fair sections would require periodic maintenance (including spot repairs) in the medium term or would fall into poor condition while the poor sections would require immediate rehabilitation or reconstruction.

For the unpaved roads, travel speed was used as a measure of the condition. Sections with average travel speeds higher than 60 km/hr were regarded as good, those between 40 and 60 km/hr as fair, and those below 40 km/hr as poor.

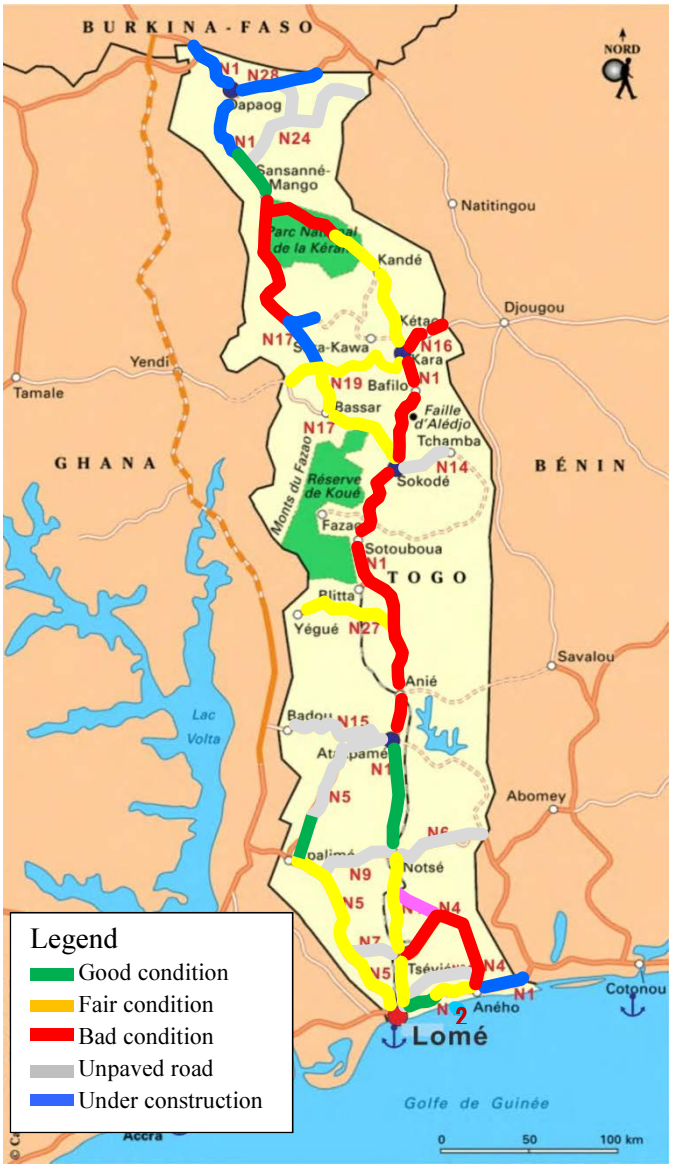
[6] The International Roughness Index (IRI) is the roughness index most commonly obtained from measured longitudinal road profiles. It is calculated using a quarter-car vehicle math model, whose response is accumulated to yield a roughness index with units of slope (in/mi, m/km, etc.).

Figure 3-11 summarises the condition, and the inventory and condition survey results are presented in Appendix 2.

(2) Bridge Inventory and Condition Survey

The bridge inventory and condition survey is ongoing. Information being collected for each structure includes the location identified with appropriate Global Positioning System (GPS) equipment, the width, length, type of bridge, whether or not there are sidewalks, and their width where they exist. Other information being collected includes any visible cracks in the abutments, piers and deck indicating the extent and orientation of such distress. Information on accessories such as railings and the state of such accessories is also recorded.

In general, the structures appear to be sound. A number of them seem to have been replaced relatively recently (within the last 15 years). However, bridge accessories, such as guard rails appear to be absent or in a poor state of disrepair for most of the structure, due to inadequate or no maintenance



Source: Study Team

Figure 3-11 Current Conditions of Major National Roads

3.3.7 Traffic Accidents

Table 3-5 shows number of traffic accidents, fatality and injury in 2011 for Lomé and outside Lomé. Since accidents in Lomé took places with rather slower speed of vehicles/motorcycle than the other areas of the country, their severity are lower than the other areas of the country, by referring number of casualties against number of accidents are lower.

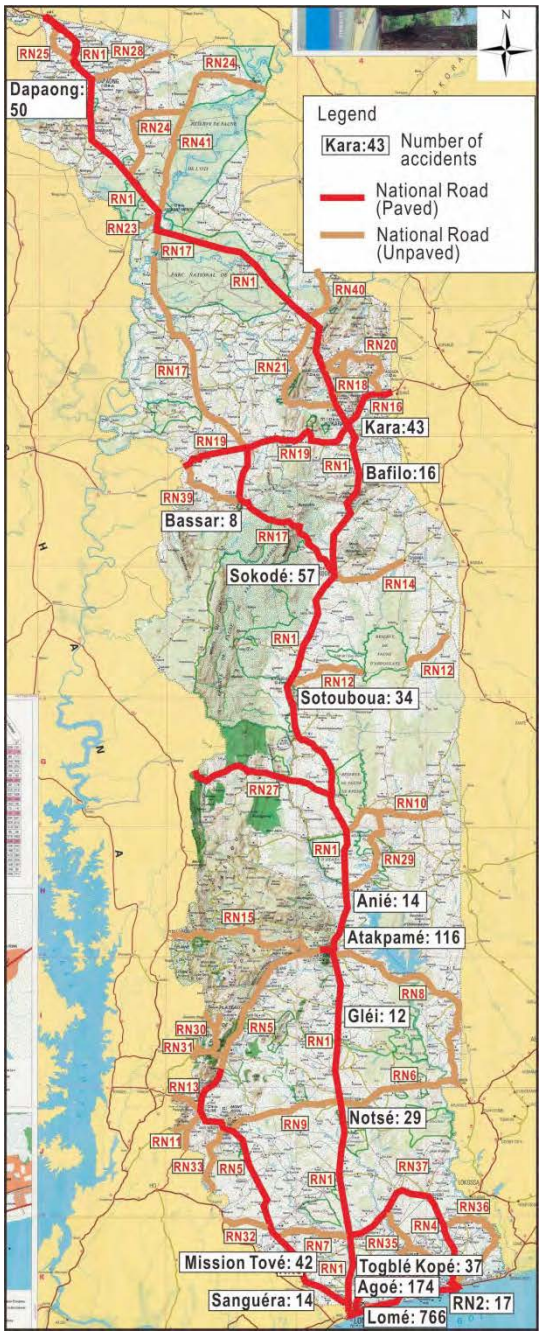
Table 3-5 Number of Traffic Accidents and Casualties

Place	No. of Accident	No. of Fatality	No. of Injury
Lóme	1,784	106	3,058
Outside Lóme	700	216	1,624
Total	2,484	322	4,682

Source: National Police Department

Figure 3-12 shows major location of accident with number of accident in 2011. Since traffic

volume in and adjacent to Lomé is much higher than the other area of the country, major black-spots are also concentrated in and adjacent to Lomé. However, many accidents also occurred in major cities along RN1.



Source: Study Team

Figure 3-12 Major Location of Traffic Accident

3.3.8 Road Financing in Togo

For the road network in any country to be able to provide an acceptable level of service and thus support socioeconomic growth, investment is required for rehabilitation, reconstruction and upgrading as well as funding for maintenance. This is particularly true for the immature networks that exist in most developing countries.

Road investment financing, that is, for rehabilitation, upgrading and reconstruction has mainly come from development partners in the form of loans and/or grants with Government contributions in the form of counterpart funding and the waiver of taxes. The level of counterpart funding varies by development partner. The active development partners for the road sub-sector are the AfDB (through the African Development Fund (ADF)), the BOAD, China's EXIM Bank, the WB (through the International Development Association (IDA)), the Islamic Development Bank (IDB), the European Union (EU) and the WAEMU. The current plans for the short to medium term, however indicate that the GoT's contribution towards financing road investments may be increasing by directly financing projects or through pre-financing by contractors. There are also indications that China's Export and Import Bank (EXIM Bank) has begun playing a significant role in financing road investments in Togo. Table 3-6 shows the contributions from external sources for investment financing over the last five years, while Table 3-7 shows Togo's contributions and sources of investment funding over the same period.

Maintenance funding has largely come from contributions from road users through some form of road fund and at times supported through the consolidated fund. Funding for maintenance and the sources of funding over the last five budget years are shown in Table 3-8.

Table 3-6 External Contributions to Road Sub-Sector Budget (2007 – 2011)

(Unit: FCFA million)

Year	Financial Source							Total
	BOAD	IDB	WB (IDA)	EXIM Bank	AfDB (ADF)	Grants	Kuwait Fund	
2008	2,243	-	-	235	-	40	-	2,518
2009	4,900	3,540	6,195	-	-	-	-	14,635
2010	6,778	3,998	6,130	-	15,257	-	-	32,164
2011	27,370	-	-	-	-	9,253	9,123	45,746

Source: DGPW, MPW

Table 3-7 Government of Togo Contributions to Road Sub-Sector Budget (2007 – 2011)

(Unit: FCFA million)

Year	Financial Source				Total
	Consolidated Fund	FER	RF	CAPER	
2007	1,017	-	-	-	1,017
2008	177	248	-	-	426
2009	4,114	-	-	-	4,114
2010	1,554	93	26,876	449	28,973
2011	67,498	-	-	-	69,366

Notes: FER – Road Maintenance Fund, RF – Road Fund, CAPER – Autonomous Company for Tolls and Road Maintenance
Source: DGPW, MPW

Table 3-8 Road Maintenance Funding (2007 – 2011)

(Unit: FCFA million)

Year	Proposed Budget	Approved Budget	Source of Fund	Expenditure on Main Roads	Expenditure on All Roads	Note
2011	46,750	8,076	CAPER	5,868	-	
2010	39,738	7,800	Consolidated Fund	832	5,313	
2009	33,777	8,700	Consolidated Fund	4,358	-	
2008	26,678	5,687	Consolidated Fund	1,283	-	FER Dissolved
2007	21,401	9,039	FER	2,192	7,483	

Source: DGPW, MPW

3.3.9 The Road Fund in Togo

(1) Necessity of Road Fund

For most countries in Sub-Saharan Africa in the early 1990s, more than 50% of their road networks were in poor condition. Transport costs were thus high due to high vehicle operating costs, and the road networks had become obstacles to the economic recovery on which most of these countries had embarked. Various studies indicated that the main cause of this state of affairs was inadequate financing and management of roads.

In particular, it was agreed by all major stakeholders that funding for road maintenance needed to be increased and to be predictable for effective planning. This was to be achieved by setting up “Road Fund” (RF).

It must be noted that road fund was not entirely new to Sub-Saharan Africa; such fund had been set up earlier in some countries. These “first generation” funds however suffered from poor financial management, the absence of independent audits, the use of funds for unauthorised

expenditures, diversion of funds and weak oversight.

The new or "second generation" road fund that were being advocated had to have:

- A strong legal basis to ensure a separate road fund administration with clear rules and regulations.
- Strong oversight with a broad-based management board, with members drawn from both the private and public sectors.
- Sound financial management systems and lean but efficient administrative structures.
- Regular technical and financial audits
- Revenues that are incremental to the budget and derived from user charges.

(2) Road Fund in Togo

In 1997 Togo set up a Road Fund that was expected to finance road maintenance. Revenue for the fund came mainly from a levy on petroleum products. Road tolls were introduced later and the proceeds committed to the funds, boosting the fund's revenues. However, although the funding from the RF improved, the condition of the network itself stagnated since the fund was not always used for maintenance but diverted into rehabilitation and upgrading and other activities not originally envisaged.

The RF was dissolved in 2008 and replaced with two funds: an Autonomous Company in charge of Road Financing (SAFER: *Société Autonome de Financement de l'Entretien Routier*) which was to receive revenues from road tolls and use them for road maintenance, and a new RF with revenues from a levy on petroleum products to be used for road investment or development.

In 2010, the two funds were merged to form, an Autonomous Company for Tolls and Road Maintenance (CAPER: *la Compagnie Autonome des Péages et de l'Entretien Routier*). CAPER derives its revenues from a levy on petrol and diesel fuel which now stands at FCFA 35 (approximately US 7 cents) per litre and road tolls.

CAPER started operations in August 2010 with income for the year of FCFA 732 million from only tolls. In 2011 CAPER mobilised FCFA 1,881 million from only tolls. The revenue for 2012 is projected to be in the order of FCFA 8,200 million from tolls and levies on fuel.

CAPER has largely the characteristics of a "second-generation" road fund. It has a sound legal basis, and also has strong oversight by a Board and Administrative Council. The law setting up the Board and the Council does not, however, include private-sector members in these bodies. About 95% of CAPER's revenue goes into works with only 5% going into administration and for paying the toll operating companies.

At current annual revenues of around FCFA 8,500 million, CAPER's revenues do not appear to be able to meet the maintenance needs of the network, estimated to be in the order of FCFA 25,000 million per annum.

(3) Road Funds in Neighboring Countries

The countries in the sub-region, and in fact sub-Sahara Africa (SSA), have been encouraged or have found the need to set up Road Funds due to problems with financing road maintenance with the result that by the mid-80s very high proportions of roads in SSA were in poor condition retarding economic growth. The setting up of the funds was part of reforms embarked on in the road sectors of SSA countries. The other major component of the reforms was the setting up of

autonomous agencies for the management of roads. Earlier funds set up have now been encouraged to upgrade to what is termed a Second Generation (2G) Fund while those which have been set up recently or are yet to be set up have been encouraged to use the 2G model.

The key characteristics of 2G Funds are**:**

- Sound legal basis – separate road fund administration, clear rules and regulations.
- Agency which is a purchaser not a provider of road maintenance services.
- Strong oversight – broad based private/public board.
- Revenues incremental to the budget, coming from charges related to road use and channeled directly to the Road Fund bank account.
- Sound financial management systems, lean efficient administrative structure.
- Regular technical and financial audits.

None of the funds set up in the sub-region fully meets the foregoing criteria in its entirety. Road funds are not always used for maintenance and in some cases politics has been made to play a significant role in fund disbursement. Revenues to the funds are also unable to meet the maintenance requirements of any of the countries. There is nevertheless the recognition that the setting up of the funds has improved road maintenance funding and consequently the condition of road networks in the sub-region.

a) Road Funds in Ghana

Ghana has been operating a dedicated road fund since 1985. The road fund derived its revenue from a levy on fuel, vehicle examination fees and bridge tolls. The fuel levy contributed about 95% of the road fund revenue. The road fund, when set up contributed approximately 25% of the periodic maintenance needs of the network. Despite inflation, the fuel levy remained constant and by 1995, the road fund was only contributing about 10% of actual periodic maintenance requirements.

In 1997 the fund was transformed through an Act of Parliament to the current form which though aims at a 2G fund does not meet all the criteria. A board of thirteen members supervises the operations of the fund. Eight members of the board are from the private sector with five from the public sector. The minister of Roads and Highways chairs the board.

The current fuel levy is approximately 6cents. The fund's income is now around USD 140 million per annum with fuel levy contributing about 90%, road and bridge tolls – 3%, vehicle licensing fees - 4%, and international transit fees – 1%. The fund is currently able to cover about 60% of the maintenance needs.

The inflows to the fund are estimated to cover about 60% of Ghana's road maintenance needs.

b) Road Funds in Benin

Benin's Road Fund was set up in 1996 by law. The fund's revenue comes from fuel levy road tolls and international transit fees. Fuel levy contributes about 53% of the funds income while road and bridge tolls contribute 23% with the remaining 5% coming from international transit fees. The current fuel levy is 8 US Cents for gasoline and 6 cents for diesel.

The operations of the fund are supervised by a Board of 9 persons. Five of the board members are from the private sector with the other four from the public sector. The minister of Public Works chairs the board.

The fund's income is estimated to fully cover routine maintenance and 60% of periodic maintenance of the classified network.

c) Road Funds in Niger

Niger set up is road fund in November 1999 and it is under the supervision of the Ministry of Public Works. Revenue for the fund is made up of levy on fuel, road tolls and vehicle overload fees. Fuel levy which is around 6 US cents for both gasoline and diesel accounts for approximately 93% of the revenue with road tolls contributing around 6% and loading fees contributing less than 1%. Current annual revenues are around FCFA 5 billion or USD 100 million which covers about 90% of routine maintenance and 40% of periodic maintenance requirements.

d) Road Funds in Cote d'Ivoire

Cote d'Ivoire's road fund derives its revenue sole from fuel levy which stands at approximately 8 US Cents per liter for gasoline and 2 cents for diesel. The fund which was set up around year 2000 has no clear legal basis, nor is there provision for direct transfer of Road Fund resources to the Road Agency. In contrast to many other African countries that spread Road Fund resources across the main, rural, and urban networks, Côte d'Ivoire allocates 90% of Road Fund resources to the main road network and the balance to urban roads. The rural network does not benefit from the Road Fund.

The fund currently mobilizes about USD 30 million per annum which is only about 40% of the country's maintenance needs.

e) Road Funds in Burkina Faso

An autonomous road fund in Burkina Faso was set up in 2007 and started operations in January 2008.

The fund has no clear legal backing. Revenue for the fund is from fuel levy and road tolls. Current inflows are around USD 180 million which covers approximately 60% of the needs. Plans are ongoing to transform the fund into a second generation fund, expected to be completed in 2013.

3.3.10 Major Findings and Problems of the Road Sub-Sector

A number of observations have been made on the road sub-sector. The Study Team's observations indicate that despite some progress made in recent years a number of challenges confront the sub-sector. These include inadequate funds for investment and maintenance, the lack of a road management system, lack of controls on axle loads, inadequate attention to road safety, and the lack of viable alternative routes to the main north-south corridor. It is also necessary to develop capacity within the sector. These challenges need to be systematically tackled if the sector is to be able to support socio-economic growth. The issues and challenges are discussed below.

(1) Inadequate Financing

The current condition of the network is a major impediment to the socio-economic growth of the country and an obstacle to trade between Togo and its neighbouring countries. This means that considerable investment needs to be sunk into the road sub-sector if it is to act as a catalyst for growth. A number of factors have contributed to the current network condition with nearly 50% of the main network in poor condition, such as deferred investments as a consequence of

the disengagement of the development partner community over a decade and the lack of adequate and sustained maintenance.

(2) Lack of a Road Management System

Road management requires decisions to be taken regularly on the network with far-reaching consequences. It is important that such decisions are rational and cost-effective and ultimately provide the best service to road users within the available financial constraints. A road management system ensures that the development and maintenance of the network provides value-for-money for taxpayers and/or road users. However, this kind of road management system has not been constructed in the DGPW.

(3) Lack of Control on Axle Load and Oversized Vehicles

Road infrastructure represents, by far, the single largest investment for any country and Road Traffic Acts have been introduced in most countries stipulating permissible axle loads, axle group combinations and vehicle dimensions to ensure that roads attain their full design lives under normal maintenance. Even though there is a WAEMU Regulation (Reglement No. 14/2995/CM/UEMOA) that controls the single axle load (11.5 tonnes) and gross weight of freight vehicles, as well as the maximum size of a vehicle, and the GoT ratified this regulation, there is currently no effective axle load control or control of oversized vehicles in Togo.

(4) Inadequate Attention to Road Safety

Road accidents have serious socio-economic consequences. Apart from the pain associated with losing close relatives, the economic cost can also be quite substantial. It is estimated that developing countries such as Togo lose approximately 2% of GDP annually through road accidents. Accidents in the country will increase as motorisation progresses, unless a coordinated approach is taken to manage road safety. The Study Team's observations suggest that there are a number of situations which do not promote road safety. These include the lack of by-passes for heavily populated settlements along the transit corridors including the TLC; the high proportion of old vehicles in the traffic stream leading to the preponderance of broken-down vehicles along the major routes; the numerous at-grade railway crossings on the road network, and oversized freight vehicles, which are unstable for manoeuvring.

(5) Lack of Suitable Alternative Routes to the North-South Transit Corridor RN1

There are no suitable alternative routes to the main north-south route from Lomé to Cinkanssé. This is the only route that serves all five regions of Togo, and is also extremely important for sub-regional trade and integration since it serves the landlocked countries of Burkina Faso, Mali, and Niger; and the northern part of Bénin. Any disruption to the route could have serious consequences for the economies of Togo and the surrounding countries. Three incidents related to washed away or damaged bridges on RN1 in the last 10 years caused much inconvenience for people in Togo as well as transit transportation to/from landlocked countries.

(6) Issues related to the Organisation of Road Sub-Sector Management

The DGPW is currently embedded within the MPW. This type of organisation in charge of not only road administration but also building and repair works does not allow for effective management since it is not subject to any rigorous managerial discipline. Such a system of road management of roads does not allow the clear definition of responsibilities, and hence management structures tend to be weak and ineffective. There also tends to be a lack of

managerial accountability.

(7) Insufficient Capacity in the Road Sub-Sector

An assessment of the contract costs and construction periods for completed and ongoing works indicates time and cost overruns for a number of them. This, coupled with the lack of a road/maintenance management system, suggests that there are capacity issues with planning and contract management in the road sub-sector.

3.3.11 Present Situation of Road Transportation

(1) Present Status of Road Transportation

At present, road transportation is the only mode or transporting general cargo and a part of minerals, since railway transportation by the three concessionaires is limited to certain types of minerals and their products.

(2) Jurisdiction of Land Transportation

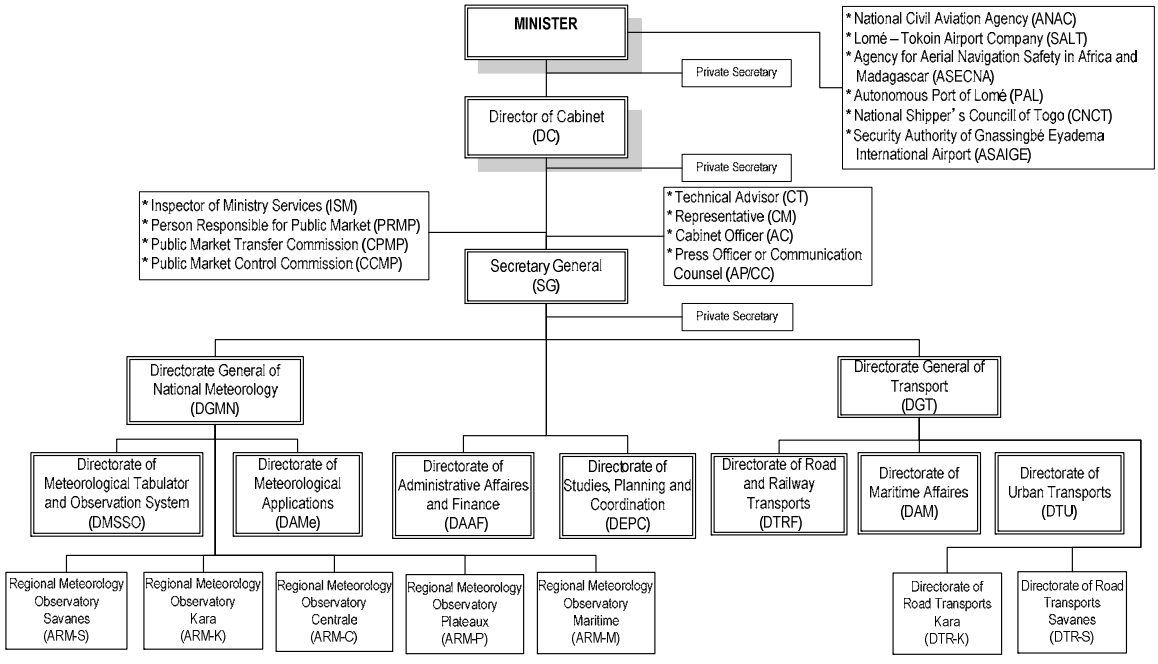
Figure 3-13 shows the organisation chart of the MT. The Directorate General of Transport (DGT) is in charge of road transport, railway transport and maritime transport and the Directorate of Road and Railway Transport (DTRF) under the DGT is directly in charge of road and railway transportation.

The DTRF is in charge of the following functions related to road transportation:

- Issuing licenses for cargo vehicle operators.
- Issuing licenses for intercity passenger transport operators.
- Vehicle inspection and registration (only carried out in Lomé).

(3) Current Situation of Logistics

As described in Section 2.4.3, the trade balance in Togo has been negative. In addition, the trade balances with landlocked countries via Lomé Port are also negative. Thus, the major requirement for logistics in Togo is to transport cargo arriving at Lomé Port (both import and transit to landlocked countries).



Source: MT

Figure 3-13 Organisation Chart of the MT

In the West Africa sub-region, organisations such as shipper's councils of each country play the major role for the import and export of cargos and their transportation, not freight forwarders as in other sub-regions. The shipper's councils of Togo and related landlocked countries are as follows:

- National Shipper's Council of Togo (*Conseil National des Chargeurs Togolais* (CNCT)), under the MT.
- Burkina Shipper's Council (*Conseil Burkinabe des Chargeurs* (CBC)).
- Niger Public Transport Utilisation Concil (*Conseil Nigerien des Utilisateurs des Transport Publics* (UNUT)).
- Mali Warehouse in Togo (*Entrepôts Maliens au Togo* (EMATO)).

The majority (60 to 70%) of unloaded containers at Lomé Port to landlocked countries are devanning in the port area, because shippers of landlocked countries do not want to pay the high deposit cost of a container charged by shipping companies.

3.4 Present Situation of Railway Sub-sector

3.4.1 Policy and Programmes of the Railway Sub-sector

(1) Development Policy for the Railway Sub-sector

As to the development of the railway network, the Togolese railway network is composed of 519 km of metre gauge track, of which 160 km are completely out of order or partially dismantled (the lines of Lomé – Kpalimé and of Lomé – Aného). The present state of the railway facilities can no longer provide the quality of service required by the African Railway Union. The central line (Lomé – Blitta, 276 km), which should be the main route of servicing Togo toward landlocked countries such as Burkina Faso, Mali, and Niger will become an important link in the intra-community links of ECOWAS countries.

The GoT is conscious that development of the railway network is indispensable to facilitate the transit and export of mining and industrial products of Togo. Since it would be more cost competitive than the roads and offer greater transport capacity, a good railway network would considerably improve the mobility of goods and people throughout the country.

Togo plans to increase the railway traffic considerably by 2020. To achieve this, the rehabilitation and construction of the Lomé – Cinkassé line and the rehabilitation of the existing network are required. The project priorities will be decided in the next year. These projects should anticipate future growth in traffic, from both internal and external sources. The annual volume of internal products that could be transported by rail is projected to rise from 2.3 million tonnes in 2013, to 10 million tonnes by 2016 and close to 13 million tonnes in 2017. The Lomé–Cinkassé railway line, designated in the common project of the WAEMU, will connect Lomé Port to the border with Burkina Faso to provide railway transportation services to Burkina Faso, Mali and Niger, and will encourage greater commercial trade between Togo and these countries.

(2) Division of Road and Railway Transportation

To introduce the SCAPE strategies on the railway transportation smoothly, the Railway Division was incorporated in the DTRF in 2011 as an administrative department for the concession and administration of the railway. It is functioning under the control of the DGT as shown in Figure 3-13. In addition to the registration and control of road vehicles, DTRF is

responsible for ensuring a safe, efficient and reliable railway transport system to assist the movement of goods, people and services.

Though the division is responsible for railway concession contracts, the following responsibilities are not fulfilled:

- Proper supervision and management of railway transport operation.
- Regulation of the railway transport system.
- Planning of railway infrastructure development.

In addition, the division should have the following functions in future:

- To be the executing organisation for rehabilitating and constructing the Lomé – Cinkassé railway line.
- To promote railway safety and environmental protection.
- To establish the Railway Act, construction standards and operation regulations and laws.
- To monitor the operational efficiency and commercial viability of railway companies.
- To prevent adverse environmental effects of railway construction and ensure that the infrastructure is environmentally friendly.
- To provide a long-distance passenger transport service at an affordable cost as a Public Service Obligation (PSO).

3.4.2 Present Status of the Railway Network in Togo

(1) History

The railways of Togo are the result of cooperation between Togo and Germany and between Togo and France. Construction was started in January 1904 with the construction of Lomé Port by Germany. The Togo Railway (CFT: *Chemins de Fer du Togo*) was started by Germany in 1905, and proceeded as follows:

Lomé – Aného line	:	Opened in 1905 and closed in 1987.
Lomé – Kpalimé line	:	Constructed in 1907 and closed in 1996.
Lomé – Agbonou line	:	The last line constructed by Germany in 1911. The section of Agbonou – Blitta was completed in 1933.
Lomé – Tabligbo line	:	The most recent line constructed by the GoT in 1978.
SNPT[7] line	:	A private line constructed in 1968 to transport phosphate from the mines at Aveta and Dagbati to the Kpémé Jetty.

The services operated by the German colony were organised by a French decree of 9th May, 1939 while Togo was placed under French tutelage. With the Togolese decree of 9th June, 1954, the CFT was reorganised under the Ministry of the Public Works, Mines, Transportation, Stations and Telecommunications. On 13th October, 1995 the National Society of the Railways of Togo (SNCT: *Nouvelle Société Cotonnière du Togo*) was created to replace the CFT. In 2002, Togo Rail S.A. (Togo Rail) succeeded the SNCT.

In 2008, concessions for the railway in Togo were awarded to two companies:

- Togo Rail, which is responsible for the Tabligbo line.
- M.M. Mining S.A. (M.M. Mining), which is responsible for the Lomé – Blitta line and the Lomé – Kpalimé line.

[7] *Societe Nouvelle des Phosphates of Togo* (New Phosphates Society of Togo)

(2) Outline of the Current Concession

The concession agreement with Togo Rail was exchanged in May 2002 and is valid for 25 years, while that with M.M. Mining for the Blitta line was exchanged in July 2009. At the same time, the right of using Lomé – Blitta line, Aného line and Kpalimé line was transferred from Togo Rail to M.M. Mining. However, the duration of the concession of Togo Rail remains unchanged.

There are no concession laws or regulations; instead, these concessions were defined in Government Decree No. 2008-145/PR and Decree No. 2008-146/PR. The two decrees are outlines below.

a) Decree No. 2008-145/PR

This decree defines the new policy for the management and rehabilitation of railway infrastructures and rolling stock as well as the extension of the railway lines in Togo, as follows:

- All railway transportation should be conducted according to the following new policy for the transportation sector, i.e. it should take account of the users' needs, the securing of safety, national development, regional economic integration, development of domestic and international transportation, financial cost, real economic costs, and social costs.
- According to the new policy, the Togolese railway network is divided into three axes:
  i. Line between Lomé – Blitta
  ii. Line between Lomé – Kpalimé
  iii. Lines between Lomé – Aného and Lomé – Tabligbo.

  During the rehabilitation and extension of the line between Lomé and Cinkassé, two freight handling facilities should be constructed at Blitta and Cinkassé based on the master plan studies.
- The concession company should fulfil the following conditions:
  i. Have sufficient financial capacity to invest and execute the concession.
  ii. Have experience of railway freight transportation.
  iii. Employ railway management staff with experience.

b) Decree No. 2008-146/PR

This decree defines the conditions of railway exploitation by Togo Rail and M.M. Mining as shown below:

- The lines of the railway network as well as real estates and facilities belong in the public domain and remain the property of the State. All extension and renewal lines of the railway, real estate and facilities will be integrated into the property of the State.
- The exploitation of the lines between Lomé and Blitta and between Lomé and Kpalimé is commissioned to M.M. Mining, not exclusively for the transportation of its products. This concession also covers the rehabilitation of the existing railway facilities and all extensions necessary for such exploitation.
- The exploitation of the line between Lomé and Tabligbo is commissioned to the Togo Rail not exclusively for the transportation of its products. This concession also covers the rehabilitation of the existing railway facilities and all extensions necessary for such exploitation. Consequently, Togo Rail shall complete the branch line between Lomé and

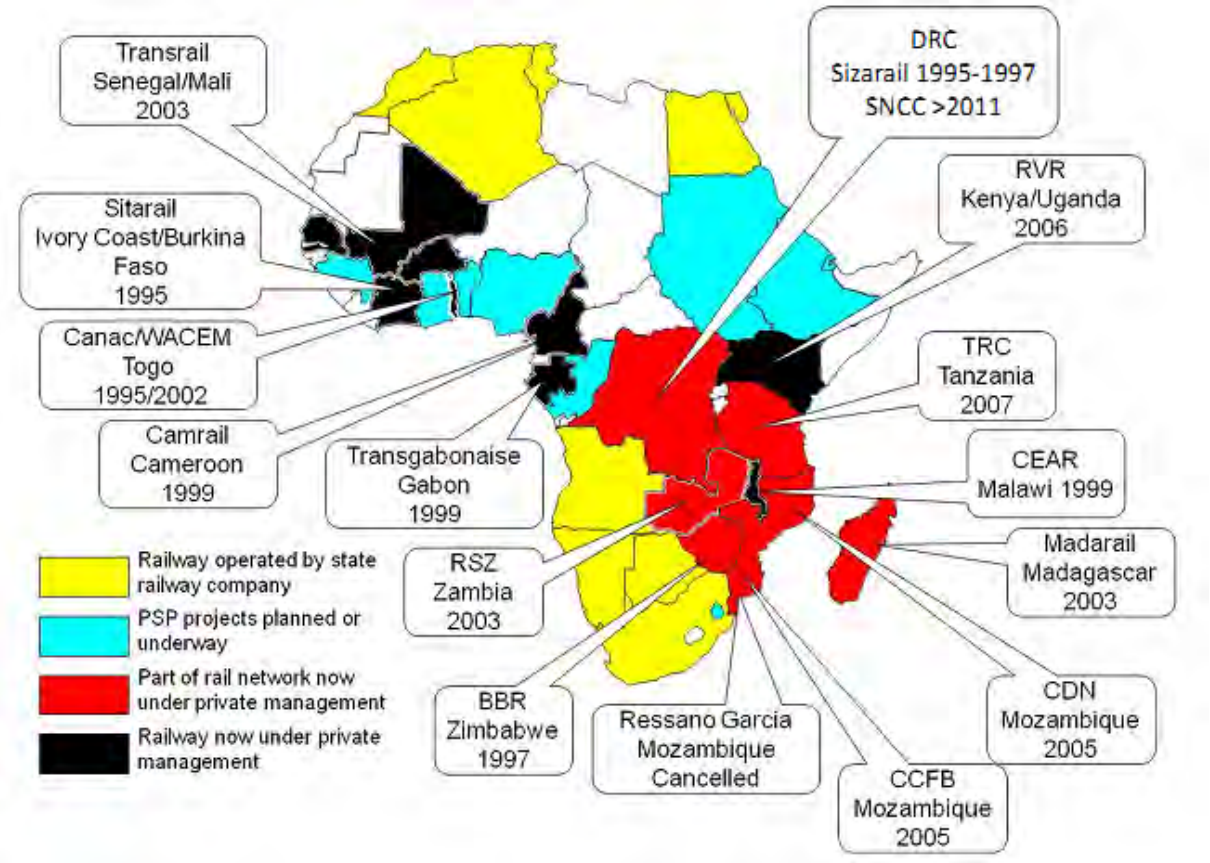
Aflao in Ghana within one year from the date of signing of this decree.

- A commission presided over the MT will proceed to arrange the distribution and possession of rolling stock, real estate and other facilities between the two parties by mutual consent. In the case of disputes between the two parties, the Minister shall resolve them.

(3) Overview of Railway Concessions in Sub-Saharan Africa (SSA)

This section gives an overview of the railway concessions in SSA other than in Togo.

In the past, many railways in SSA carried a high proportion of their country's traffic. However, their shares became smaller in line with economic liberalisation and improvements to road infrastructure. Under these circumstances, the railway concessions in SSA began in 1995 as shown in Figure 3-14. They account for more than 45% of the total rail freight volume in SSA excluding South Africa.



Source: Africa Railway Concessions Lessons Learned and Potential Solutions for a Revival of the Sector, 2011 WB

Figure 3-14 Railway Concessions in Sub-Saharan Africa

Regarding the operational performance of rail concessions in SSA, almost all concessions achieve an above average performance as shown in Table 3-9. On the contrary, more than 58% of them have negative cash flow due to low traffic volumes. The key issues of the current railway concessions in SSA are summarised in the "Off Track: Sub-Saharan African Railways, 2009, WB" as follows.

Table 3-9 Current Performance of Railway Concessions in SSA

Concession	Countries	Year of concession	Network length (km)	Total support in USD million		Current Performance		Investment responsibility		Remarks
				IDA[1]	IFC[2]	Operational[3]	Financial[4]	Infrastructure	Rolling Stock	
Togo Rail	Togo	2002	77	n.a.	n.a.	n.a.	n.a.	Public	Private	CANAC was awarded an initial concession in 1995.
M.M. Mining		2009	276	n.a.	n.a.	n.a.	n.a.	Public	Private	The concession of Blitta line was transferred to M.M. Mining in July 2009
Sitarail	Côte d'Ivoire, Burkina Faso	1995	1,245	21	none	A	C	Public	Private	
Camrail	Cameroon	1999	1,104	113	none	B	A	Public	Private	
CEAR	Malawi	1999	797	10	none	D	D	Private	Private	Railroad Development Corporation (RDC), the original lead shareholder, sold to the Mozambican investor group INSITEC in 2008 and INSITEC's equity was transferred to VALE, Brazilian mining company in 2012.
RSZ	Zambia	2002	1,273	35	none	C	C	Private	Private	
Madarail	Madagascar	2003	681	65	none	B	C	Public	Private	
Transrail	Senegal, Mali	2003	1,546	45	none	C	D	Private	Private	
CCFB (Beira)	Mozambique	2005	725	110	none	C	D	Private	Private	
TransGabonais	Gabon	2005	814	0	none	B	C	Public	Private	
CDN (Nacala)	Mozambique	2005	600	20	none	C	D	Private	Private	
KRC-URC	Kenya-Uganda	2006	2,454	74	32	C	D	Private	Private	
TRC	Tanzania	2007	2,722	35	44	D	D	Private	Private	
TAZARA[5]	Tanzania/Zambia	-	1,860	n.a.	n.a.	n.a.	n.a.	Public	Public	
SNCC	DR Congo	2011	3,641	219	none	D	D	Public	Private/Public	
Total				747	76					

Notes: 1: International Development Association
2: International Finance Corporation
3: It provides a combined measure of rolling reliability, track incidents and quality and personnel productivity.
A = best in class, B = above average performance, C = average performance and D = below average performance.
4: It provides a combined measure of net cash flow generation capacity, net income level and level of indebtedness.
A = strong positive cash flow and net income (>5% of turnover) and sustainable debt load, B = positive cash flow and net income (<5% of turnover) and average debt load, C = positive cash flow (<5% of turnover), negative net income and higher than average debt load, and D = negative cash flow and net income and high debt load.
5: Tanzania has two rail networks of Tanzania Railways Corporation (TRC) and Tanzania Zambia Railway Authority (TAZARA). TAZARA, which is a statutory institution owned by the two governments of the United Republic of Tanzania and the Republic of Zambia, has not been privatised and is at an early review stage of privatisation.

Source: Africa Railway Concessions Lessons Learned and Potential Solutions for a Revival of the Sector, 2011 WB

a) Passenger Services

Governments that require concessionaires to offer passenger services should set up clear compensation arrangements with timely and easily monitored payments. This should enable the concessionaire to focus on freight services, the improvement of which is of economic importance to most countries.

b) Capacity/Willingness of Private Operators for Infrastructure Renewal

Almost all concessionaires cannot generate significant profits by their operation to secure the funds for long-term renewal of their infrastructure. If the government wants a railway transport service because of the external benefits of rail transport, it should contribute grant funds on a regular basis. One option is to finance infrastructure renewal partially, independently from the concessionaire, through a road transport renewal fund.

c) Effective and Efficient Regulation of Private Rail Operators

Governments should monitor concessionaires' operation performance. The monitoring and supervision of many concessions has been insufficient, and regulatory bodies should be established and their funding assured.

d) Consistent Government Approach to Infrastructure Cost Recovery

Governments should develop a coherent and realistic policy on recovering the infrastructure cost. A railways fund is required for long-term maintenance and upgrades. High maintenance costs and overloading of arterial routes is a handicap for roads, but most general freight railways will not be able to overcome the competition against road transportation in the medium and long term. Governments should consider that well-run railways could still offer the most economical way of transporting non-time-sensitive general freight on major corridors for distances over 500 km and shorter distances for bulk freight.

(4) Railway Network in Togo

The railways of Togo are non-electrified single-track lines of metre gauge (1000 mm) with a total length of 575 km (including the urban sections) as shown in Table 3-10.

Table 3-10 Summary of Railway Lines in Togo

Line	Year	Constructed by	Route Length (km)	Operation
Lomé – Aného	1905	Germany	47	Closed in February 1987
Lomé – Kpalimé	1907	Germany	119	Discontinued in September 1995
Lomé – Blitta	1933	Germany and France	276	In service
Lomé – Tabligbo	1978	Togo	77	Closed in April 1984, but partially in service
SNPT	1968	SNPT	36	In service
Total			575	including sidings

Source: MT

a) Lomé – Aného Line to the East

This was constructed and opened in July 1905. The route length is 47 km, and it was mainly used to transport copra and cassava. It was extended from Akodésséwa to the port of Cimao. In February 1987, freight and passenger transport services were discontinued due to wear of the rails and the lack of rolling stock.

b) Lomé – Blitta line or Main Line

The section between Lomé and Agbonou was constructed by Germany in 1911 and the section between Agbonou and Atakpamé in 1913. The section between Agbonou and Blitta was constructed by France in 1933. The route length between Lomé and Blitta is 276 km, and forms

the backbone of the CFT network. Until 1984, the line connected Lomé with major cities inside the country as an important infrastructure. It transported about 80% of Togolese transport demand for products of economic activities.

c) Lomé–Kpalimé Line to the West

This line was constructed by Germany in 1907 and has a route length of 119 km. It has brought prosperity by transporting millions of tonnes of coffee and cacao from Kloto. The line connects to the urban area and port at Lomé. In September 1995, the service was discontinued.

d) Lomé–Tabligbo line

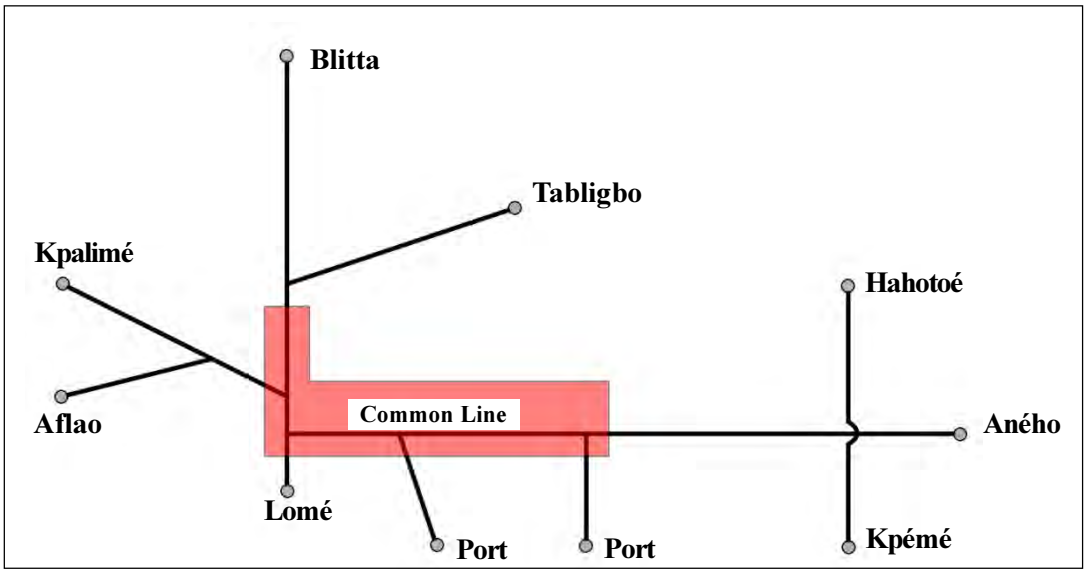
This 77 km line was constructed in 1978 to transport clinker from Tabligbo. With the resumption of clinker production, the line was reopened in 1997.

e) SNPT line

This has a length of 30 km from the mines at Dagbati to the port and a 6 km branch serving the mines at Aveta. It is a dedicated line for SNPT.

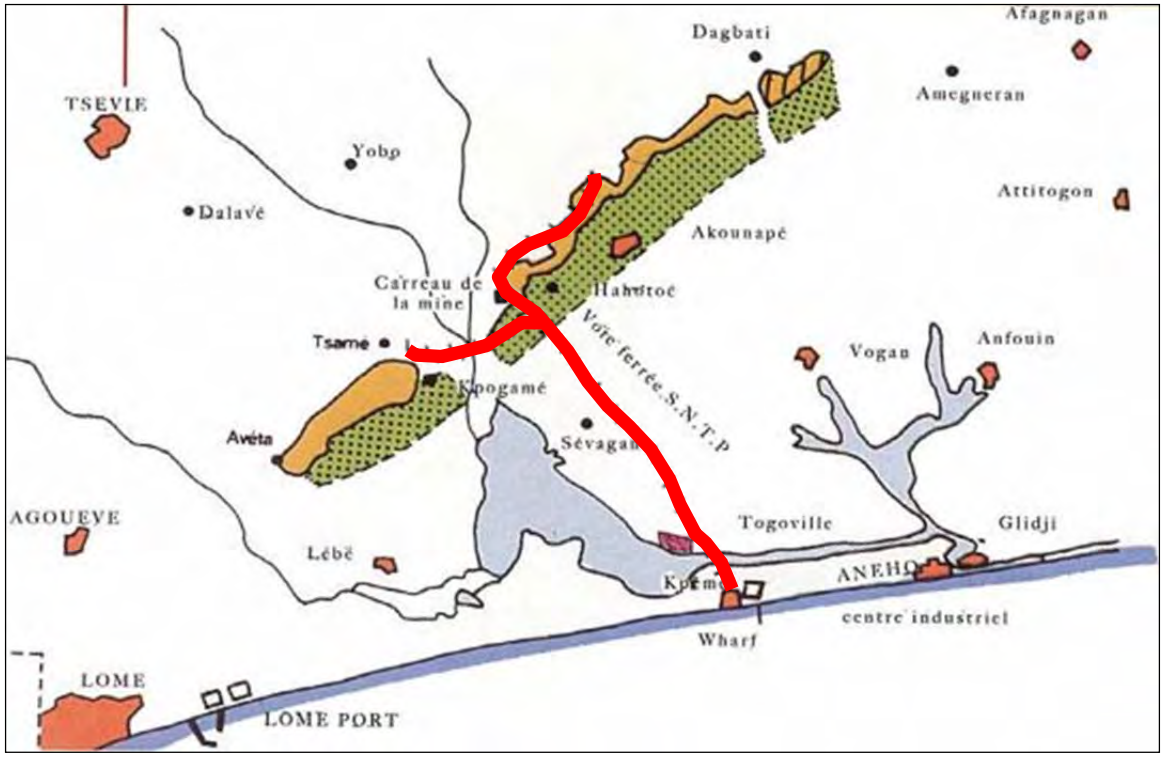
Source: Togo Rail and Study Team

Figure 3-15 Railway Route Map of Togo



Source: Study Team

Figure 3-16 Route Map of Common Line



Source: SNPT

Figure 3-17 Route Map of SNPT Line

Source: Study Team

Figure 3-18 Longitudinal Section of Railway in Togo (Lomé–Blitta)

3.4.3 Railway Operation in Togo

(1) Railway Operator

There are three railway operators as follows.

a) M.M. Mining

M.M. Mining is a mining company registered in the Republic of Togo and is owned by its holding company, M.M. Investment Holding Ltd. based in the Bahamas. They have exclusive mining rights for iron, manganese, chrome and bauxite ore in a vast mineralised zone stretching across the country from the north- east to the south-west.

They have acquired from the GoT a 276 km metre gauge railway line running from the mineral port of Lomé to the central region. This railway has been rehabilitated by them and is presently functional.

An iron ore mine with an initial production capacity of about 0.3-0.5 million tonnes per year in 2011 has already been commissioned, with road transportation by truck for a distance of 256 km from the mine to the Blitta railway yard and then by railway to Lomé Port. This railway operation, however, had to stopped since January 2012, because of bridge construction works, which required the temporary installation of supports along the mid-section of the railway branch line to the mineral quay, and the Greater Ring Road construction works, which required changing of vertical alignment of railway line at a level crossing with the Greater Ring Road, north of Lomé Port.

According to the latest information from the GoT, M.M. Mining has carried out rehabilitation along most of the railway line between Lomé and Blitta ready for reopening operations oon the line.

M.M. Mining owns three Canadian diesel locomotives (DL) and 64 iron ore hoppers. The rolling stock is maintained at the depot at Lomé. The main line is laid with 26 kg/m light rail on steel sleepers on crushed stone ballast, which is insufficient.

b) Togo Rail

Togo Rail is a rail transport company registered in the republic of Togo and established in December 2002, after obtaining the railways in Togo under a concession for 25 years from the GoT. Togo Rail rehabilitated the Tabligbo line and Blitta line and recommenced transport operations on these lines. The main commodities transported were clinker, limestone, gypsum, coal, fuel and cotton. In 2008, by a decree, the GoT gave the Blitta line and Kpalimé line to M.M. Mining, since which Togo Rail operates only the Tabligbo line. Presently, Togo Rail transports products from Tabligbo to Dalave. Due to the difficulties in transporting in the common zone of Lomé area, transport to and from the port has stopped. Togo Rail has nine Indian-made Alco locomotives. The Tabligbo line is laid with 36kg rail. A new railway line is being laid from Lomé to Aflao in Ghana with 36 kg rail and concrete sleepers. Togo Rail has a concrete sleeper manufacturing plant in Lomé.

c) SNPT

SNPT was created as a state company in 2007 after the dissolution of Togolese Phosphates Office (OTP: *Office Togolais des Phosphates*) and International Fertilizers Group-Togo (IFG-TG). Its mission is the extraction, processing and marketing of phosphate in Togo. Its headquarters, as well as plant and administrative services, are located at Kpémé and its plant and administrative services. It has two mining sites located at Hahotoé.

It operates freight trains over a distance of 30 km from mines at Hahotoé to the jetty at Kpémé and on a 6 km branch serving mines at Kpogamé. Loaded trains to Kpémé are run approximately hourly around the clock, transporting most of the mines' output. SNPT owns six Alstom DLs, and around 120 self-discharging phosphate hoppers. Maintenance of the DLs and wagons is conducted at the depot at Kpémé. The main running lines are laid with 36 kg/m rail on steel sleepers on crushed stone ballast and are well maintained.

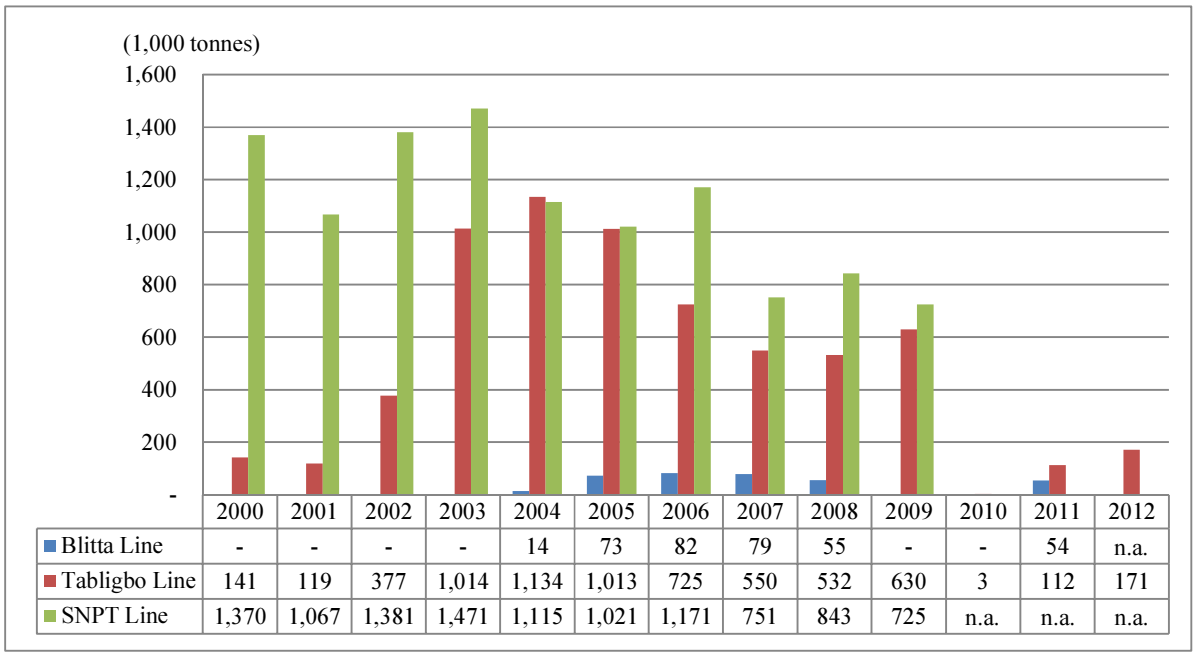
(2) Train Operation

a) Freight Transport

On the Blitta line, since the concession between GoT and M.M. Mining was signed in 2009, M.M. Mining transported 54,000 tonnes of iron ore from January 2011 to January 2012. However, their trains have been stopped since the beginning of 2012.

On the Tabligbo Line, after reaching a peak of 1,148 thousand tonnes in 2004, the freight transport volume has gradually decreased, falling to 2,979 tonnes in 2010. The situation has been improving since 2011.

On the SNPT line, the transportation of phosphate has gradually decreased after reaching a peak of 3,356 thousand tonnes in 1989, falling to 725 thousand tonnes by 2009 with the depletion of mineral resources.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Blitta Line	-	-	-	-	14	73	82	79	55	-	-	54	n.a.
Tabligbo Line	141	119	377	1,014	1,134	1,013	725	550	532	630	3	112	171
SNPT Line	1,370	1,067	1,381	1,471	1,115	1,021	1,171	751	843	725	n.a.	n.a.	n.a.

Note: *The number in 2012 is data until August 2012, *In 2010, M.M. Mining took over the Blitta Line.
*SNPT line data after 2010 is not available.
Source: MT, SNPT

Figure 3-19 Railway Freight Transport

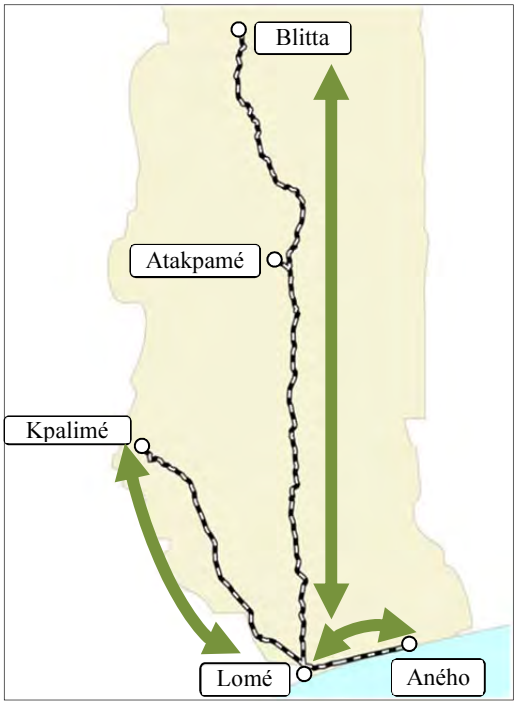
b) Passenger Transport

Passenger trains were operated on three routes: Lomé – Anecho, Lomé – Blitta and Lomé – Kpalimé. Passenger transport service has never been provided on the Tabligbo and SNPT lines because they are dedicated lines for clinker or phosphate.

Passenger transport fell from 628.2 thousand passengers in 1990 to 229.3 thousand in 1995. All passenger transport services were suspended in 1996, and there is no plan to resume.

(3) Revenue and Expenditure

The main businesses of the three railway companies are ore mining, production of cement, and phosphate mining. As railway transportation is not their main business and they do not provide freight transportation services for other companies, they do not earn revenues from



Source: Study Team

Figure 3-20 Route Map of Passenger Train Operation in the Past

railway transport. Therefore, their financial statements including expenditures on their railway operations are prepared only for internal use and are not made public.

(4) Current Situation of Railway Facilities

a) Rolling Stock

M.M. Mining owns three DLs that have just undergone maintenance. Besides these DLs, there are several DLs left by Togo Rail, but their electrical equipment has been detached, and it is very difficult to rehabilitate them. Two of the three DLs are used for freight transport and the other is a standby locomotive. As to wagons, they own 50 hopper wagons, 14 side dump wagons, 12 to 13 container cars and 25 covered wagons.

The three operators own a total of 18 DLs and 393 wagons of various categories comprising hopper, side dump, container and covered wagons as shown in Table 3-11. About one third of the DLs are allocated as spares for standby and maintenance work.

Table 3-11 Types of Rolling Stock

Operator	Type	Model	Number of Cars	Remarks
M.M. Mining	DL	Canadian	3	One locomotive is a reserved for maintenance.
	Hopper Car	TBC	50	
	Side Dump Car		14	
	Container Car		12–13	
	Covered Wagon		25	
Togo Rail	DL	Alco Indian	9	Three locomotives are operated on the Tabligbo line; another three DLs on Aflao line and the rest are reserved for maintenance.
	Hopper Car	TBC	53	29 plus 24 given by the GoT
SNPT	DL	Alstom BB-9	6	Four locomotives are operated on the line and the rest are reserved for standby and maintenance.
	Hopper Car		238	

Source: M.M. Mining, Togo Rail, SNPT

b) Depot/Workshop

M.M. Mining has a depot/workshop in Lomé where they conduct inspection and repair of DLs and wagons by themselves. There are two separate workshop buildings, one for DLs and the other for wagons.

Togo Rail has a simple workshop in Tabligbo where they conduct maintenance of their DLs and wagons. They have no plans for heavy maintenance, but could conduct such heavy maintenance by themselves.

SNPT owns a depot/workshop in Aného where they can conduct heavy maintenance; however the diesel engines have to be maintained by the branch of Wartsila in France. Heavy maintenance is carried out every 16,000 hours of operation.

c) Maintenance of Tracks

M.M. Mining has currently ceased train operation, but they have 21 gangs for track maintenance. Each gang of six to seven workers periodically inspects and maintains roughly 15 km of track to resume train operation quickly.

Togo Rail runs trains around the clock, and regularly inspects and maintains the tracks. One team works on the tracks every day. If major attention is required, then the track team will advise and trains will be regulated so that track repairs can be performed. The team walks

several kilometres every day attending to the track as and where required.

	
Exterior of the Workshop	**Interior of the Workshop**

Photos by the Study Team, September 2012

Photos 3-1 Workshop (M.M. Mining)

	
Exterior of the Workshop	**Interior of the Workshop**

Photos by the Study Team, September 2012

Photos 3-2 Workshop (SNPT)

SNPT also provides around the clock train operation. Their track maintenance is conducted intensively once a week on Wednesday or Friday by the phosphate mine.

d) Signalling and Telecommunication

The trains are operated without a signalling system, but dedicated mobile phones (Green Line) are used between the drivers, station staff and security guards at level crossings for the safety of train operations.

e) Track

The rail tracks in Togo consist of 20, 26 and 36 kg/m rail on steel or prestressed concrete (PC) sleepers. Different types of rails are used depending on the line and construction period. The rail size is 20 kg/m for the Aného and Kpalimé lines, 26 kg/m for the Blitta line and 36 kg/m for Tabligbo line. The SNPT line uses 36 kg/m.

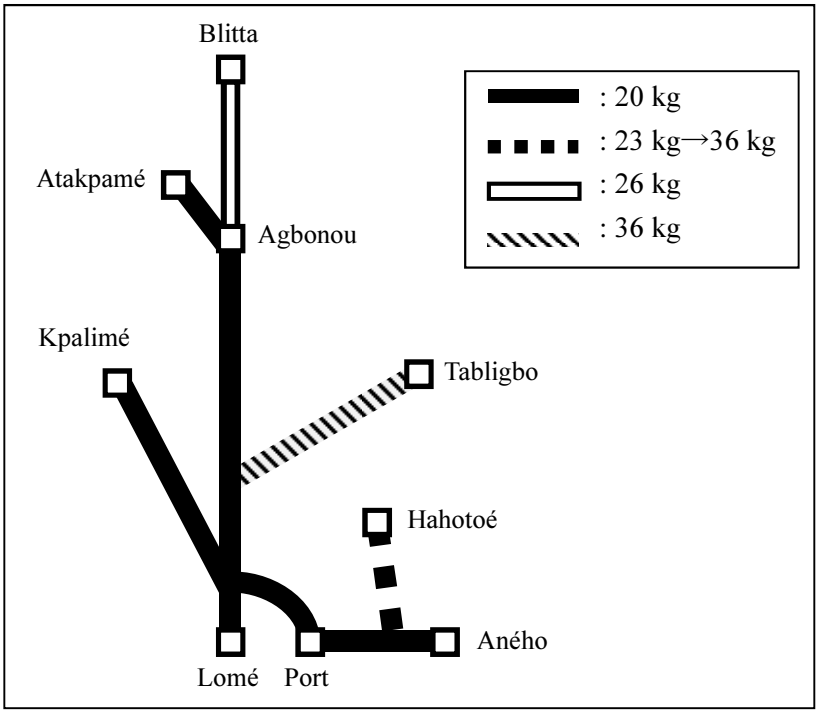
There are two ballast types, earth and stone. The ballast for 20 and 26 kg/m rail sections is mostly earth with steel sleepers, and the ballast for 36 kg/m rail sections is stone. The new Aflao line and SNPT lines adopt stone ballast with PC sleepers. The spacing of sleepers is about 700 mm. Rail fasteners are the screw type or clip directly welded on the sleeper. Pandrol fasteners are used on the new Aflao line and SNPT lines.

The track details are summarised in Table 3-12.

Table 3-12 Summary of Tracks

Line (Section)	Rail (kg/m)	Sleeper	Fastener	Ballast	Remarks
Lomé–Aného	20	Steel	Screw/clip	Earth	
Lomé–Kpalimé	20	Steel	Screw/clip	Earth	
Lomé–Blitta	26	Steel	Screw/clip	Earth	At bridges, wooden sleepers are installed. At rehabilitated sections, stone ballast is used.
Lomé–Tabligbo	36	PC	Pandrol	Stone	
Lomé–Aflao	36	PC	Pandrol	Stone	
SNPT	36	PC	Pandrol	Stone	

Source: Study Team



Source: Togo Rail

Figure 3-21 Track Type by Line

f) Design Standards

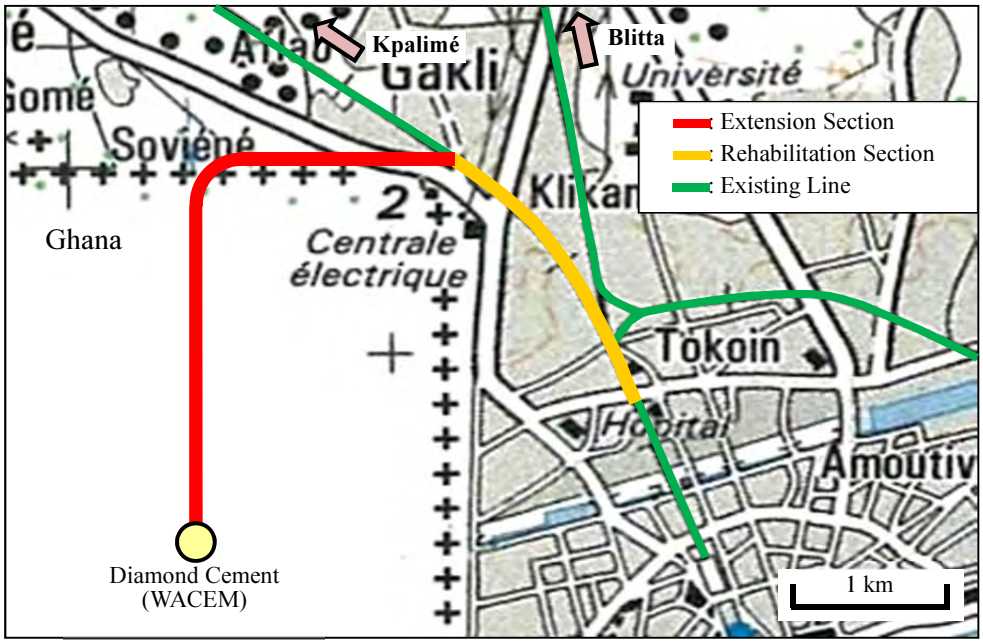
The axle load of 15 tonnes/axle is currently applied. There is no plan to increase the axle load to 20 or 25 tonnes/axle due to the current rail type (26 kg/m) of the central line. On the other hand, the ECOWAS railway network master plan recommends the adoption of 25 tonnes/axle for new lines.

g) New Line Construction Plan

At present, Togo Rail is extending the Kpalimé line to Aflao in Ghana. It intends to transport clinker from Tablibo and Lomé Port to Diamond Cement Ghana Limited (DCGL) owned by West African Cement S.A. (WACEM), located in Aflao of Ghana. This project also requires the rehabilitation of the Lomé–Kpalimé line linking the Tokoin water tower and the Totsi/Djidjole junction (about 3 km). The new line length in Togo is 2 km, that in Ghana is 2 km and the total including sidings in Aflao is 8 km. The cost is estimated at FCFA 1,300 million.

Another line extension project connecting Blitta to Ouagadougou under the Africarail project is planned, aiming at constructing 761 km of new railway lines to interconnect their existing

networks.



Source: Study Team

Figure 3-22 Kpalimé Line Extension Plan

3.4.4 Results of Railway Inventory Survey

The study team conducted a railway inventory survey to assess the present condition of the 276 km section between Lomé and Blitta as follows.

(1) Track Condition (see Photos 3-3)

The track conditions were surveyed around major stations, and the results are summarised as follows.

a) Insufficient Track Maintenance on Four Aspects (gauge, cross level, longitudinal level and alignment)

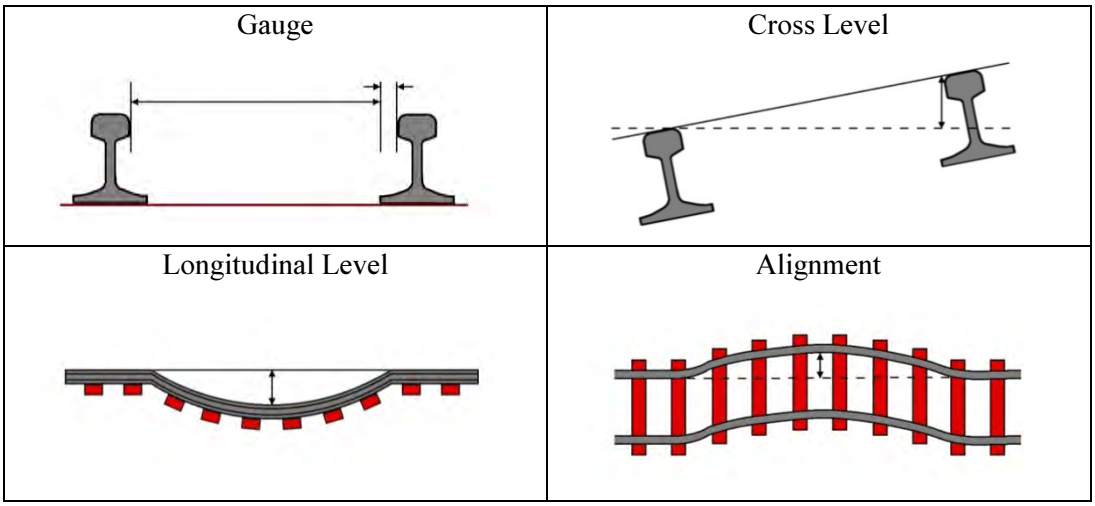
The four aspects (gauge, cross level, longitudinal level and alignment) of track maintenance have not been conducted properly. Track maintenance particularly for cross level, longitudinal level and alignment has not been performed sufficiently. However, the gauge is kept reasonably well thanks to the recent rehabilitation work by M.M. Mining.

Track in Good Condition

Track in Bad Condition

Photos by the Study Team, September 2012

Photos 3-3 Track Condition



Source: Study Team

Figure 3-23 Four Factors Aspects of Track Maintenance

b) Poor maintenance of Rail Fastenings

Screw spikes are used to fix the rail on the sleeper, but some brims do not fix the bottom flange of the rail. Some bolts of rail joints were found to be missing.

c) Non-uniform Sleeper Spacing

The spacing of sleepers is not uniform. The typical spacing is 700 mm, but some sleepers are spaced at up to 900 mm. There are many sections where the inter-angle between rail and sleeper is not kept at a right angle.

d) Insufficient Ballast

There are many sections where the ballast is insufficient. Since the sections with 20 or 26 kg/m rail adopted earth ballast originally, no stone ballast has been laid. Generally, stone ballast is provided to give support, load transfer and drainage to the track and thereby keep water away from the rails and sleepers. However, there are many places where the drainage is poor due to the earth ballast.

e) Track Condition on and around Bridges

At steel bridges, bridge (wooden) sleepers are used to support the rail, however, there are many points where the bridge sleepers are not fixed well on the top of the flange with hook bolts. The alignment on the bridges is not kept well due to rotten sleepers. There are some points where fastening bolts do not fix the rail on the top of the flange sufficiently.

f) Roadbed Condition

There are some sections where the formation width of the roadbed has not been secured.

g) Track Condition in Station Yards

At almost all station yards, the ballast is not maintained sufficiently. There are some places where the drainage of water between tracks is poor and the track condition is generally poor. The turnout condition is also poor, but it will not be used for train operation at present. The turnouts not used for train operation should be removed.

The track condition was surveyed at five stations and four bridges, taking note of the condition of the rail and ballast, and the type and condition of sleepers and fasteners.

The survey found that the rail itself was in relatively fair condition. However, ballast needs to be supplied along almost the whole length of the railway, because earth ballast is widely used.

Regarding the sleepers, most of them are made of steel and wood on the bridges. The steel ones are rusty, but still usable. Since they have deteriorated in the environment of Togo, it may not make sense to replace the steel sleepers with new ones which are difficult to procure; PC sleepers would be the logical choice to upgrade the railway line. At bridges, it is necessary to replace the sleepers with wooden or synthetic sleepers. Fasteners were generally in bad condition where they existed, and should be replaced with clip type fasteners on PC sleepers.

(2) Structures

The structures of the railway are composed of bridges, culverts, etc. According to the inventory database prepared by Togo Rail, there are 27 steel bridges and 69 concrete bridges on the main line and Tabligbo line. In the Study, the Study Team did not conduct the site survey on all of them. Instead, but instead conducted visual checks for some typical bridges on the main line. Most of the bridges are in relatively fair condition, but they have rusted slightly and require proper maintenance.

Table 3-13 Summary of Structures

Type	Number of Structures	Total Length (m)	Remarks
Steel Bridge	27	547	
Concrete Bridge and Culverts	69	406	

Source: Togo Rail

a) Haho River Bridge (St. 76.03 km)

This is a simple steel truss bridge with a length of 40 m. The condition of the structure is fair, but it should be repainted. The condition of the abutments is fair without scouring. The number of sleepers on the bridge is given as 76 in the database. The condition of the sleepers on the bridge could not be confirmed due to the steel plate on the deck.

A footpath with a width of 1.2 m has been added to the bridge, but it is seldom used by pedestrians at present. When the Haho Road Bridge on RN1 was washed away, the railway bridge was converted to a rail-road bridge by laying steel plate on the deck. To enable cars to access the bridge easily, both access and egress sections with a length of about 100 m were reconstructed as a level crossing. Mud pumping on the ballast is not found to be remarkable. It is recommended to conduct ballasting on the track.

Hao River Bridge 1

Hao River Bridge 2

Photos by the Study Team, September 2012

Photo 3-4 Hao River Bridge

b) Wahara Bridge (St. 122.78 km)

This is a simple steel truss bridge with a length of 40 m over the Wahara River. The condition of the structure is fair, but it should be repainted. The condition of the abutments is fair without scouring. The number of sleepers is given as 62 in the database. The spacing of sleepers was measured as about 700 mm. These sleepers are considered to be replaced periodically. Some sleepers are rotten. The tracks in the access and egress sections of the bridge are constructed with steel sleepers on earth ballast, which should be improved by applying stone ballast.

	
Wahara River Bridge 1	**Wahara River Bridge 2**

Photos by Study Team, September 2012

Photo 3-5 Wahara River Bridge

c) Anié Bridge (St. 191.00 km)

This is a two-span steel pony truss bridge over the Anié River with a length of 52 m. The condition of the structure is fair, but it needs to be repainted. The condition of the abutments and pier is fair and without scouring. The embankment at the approach section is fair. The number of sleepers on the deck is given as 96 in the database. Though a few sleepers are rotten, other sleepers are maintained in good condition. The tracks in the access and egress sections of the bridge are constructed with PC sleepers on stone ballast.

	
Anié River Bridge 1	**Anié River Bridge 2**

Photos by the Study Team, September 2012

Photos 3-6 Anié River Bridge

(3) Embankment and Cutting Slopes (see Photos 3-7)

There are no major embankments except at the approach section of bridges. There are cutting slopes on the common line in the Lomé City. No major collapse or deterioration on the

embankment and cutting slopes was identified. New cutting slopes can be seen at the construction site of the new line to Aflao. There is no protection work on the slope; such protection work is required.

	
Embankment Section	**Cutting Slope Section**

Photos by the Study Team, September 2012

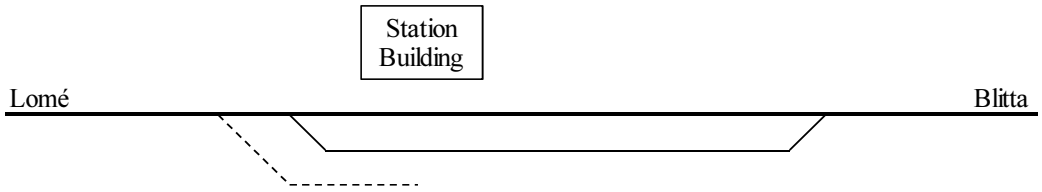
Photos 3-7 Embankment and Cutting Slope Sections

(4) Stations

Typical stations between Lomé and Blitta, including buildings and sidings, were investigated. The main facilities, track layout and pictures of each station are shown below.

a) Tsévié Station (St. 35 km)

Main facilities are a station building, a main line and two sidings. However, the two sidings are not used at present, and the track of one siding has been removed. The station is secured by live-in guards and other stations are secured as well. Passenger trains were operated until the early 1990s.



Source: Study Team

Figure 3-24 Track Layout at Tsévié Station

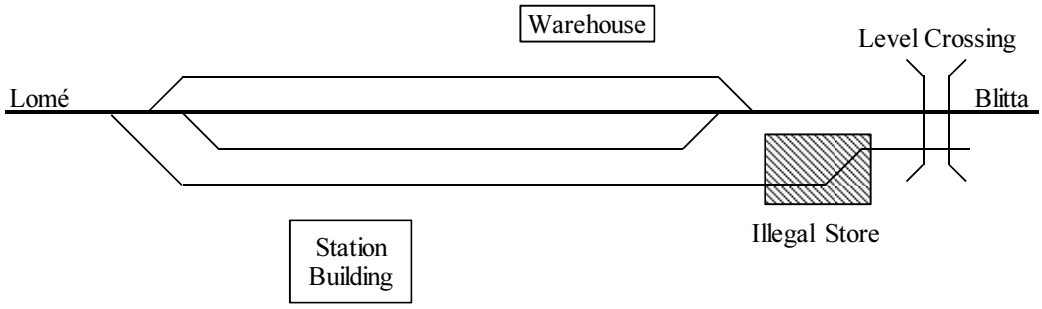
	
Station Building	**Main Line and Siding**

Photos by the Study Team, September 2012

Photo 3-8 Tsévié Station

b) Notsé Station (St. 97 km)

Main facilities are a station building, a warehouse, a main line and three sidings. The three sidings are not used; only the main line is used. There are temporary stores run by illegal occupants on one of the sidings. Previously, cotton and maize were transported from this station.



Source: Study Team

Figure 3-25 Track Layout at Notsé Station

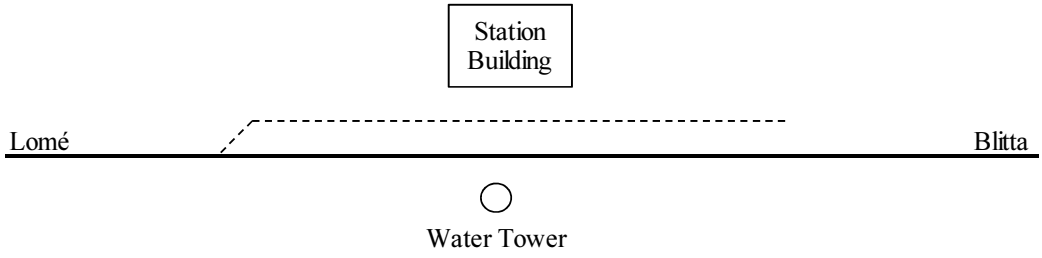
c) Wahala Station (St. 124 km)

Main facilities are a station building, a main line, a siding and a water tower. The siding has been removed and only the main line remains. The railway track is barely visible because of overgrown grass. There is a simple truss bridge at about 300 m toward Lomé from this station.

	
Station Building	**Warehouse**

Photos by the Study Team, September 2012

Photos 3-9 Notsé Station



Source: Study Team

Figure 3-26 Track Layout at Wahala Station

Station Building

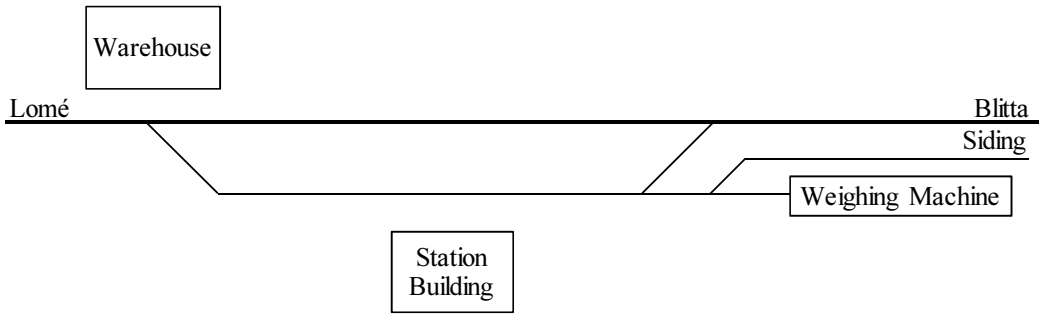
Grassy Track

Photos by the Study Team, September 2012

Photo 3-10 Wahala Station

d) Agbonou Station (St. 163 km)

Agbonou station is a junction station bound for Atakpamé station, which is located 4 km away, and Blitta station. Main facilities are a station building, a main line, a siding and a stabling track, a warehouse and a weighbridge track. Tracks except the main line and the siding are not used at present.



Source: Study Team

Figure 3-27 Track Layout at Agbonou Station

Station Building

Weighbridge

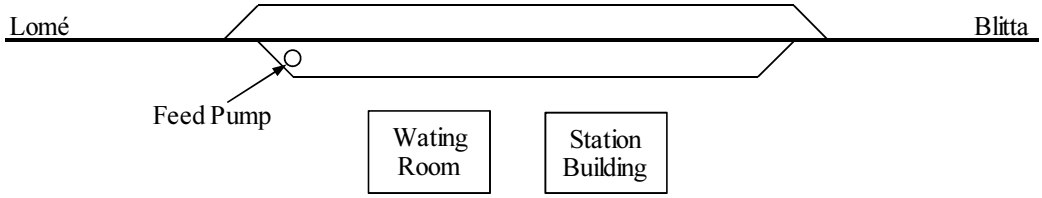
Photos by Study Team, September 2012

Photo 3-11 Agbonou Station

e) Anié Station (St. 194 km)

Main facilities are a station building, a waiting room, a main line two sidings and a feed

pump. The siding has been removed and only the main line remains. Tracks other than the main line are not used at present. There were few passengers when passenger trains were operated.



Source: Study Team

Figure 3-28 Track Layout at Anié Station

f) Pagala Station (St. 258 km)

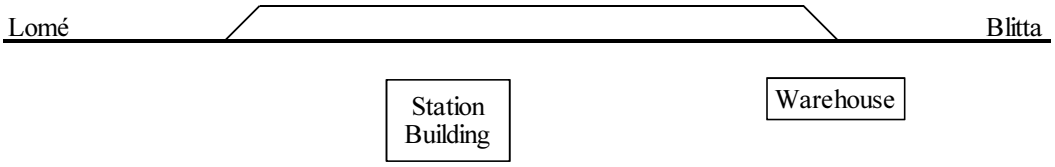
Main facilities are a station building, a main line, two sidings, a warehouse and a feed pump. However, the two sidings are not used at present, and the track of one siding has been removed. Three freight trains were operated per day until the end of last year, handling the freight of three companies, M.M. Mining, CIM Togo and another company.

Station Building

Main Line and Sidings

Photos by the Study Team, September 2012

Photo 3-12 Anié Station



Source: Study Team

Figure 3-29 Track Layout at Pagala Station

Station Building

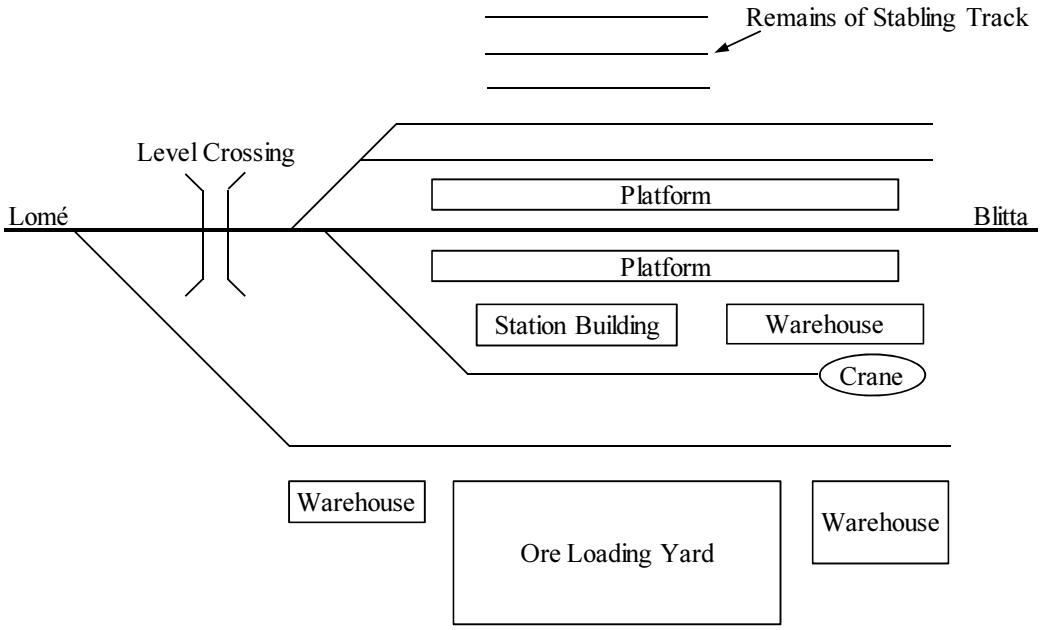
Main Line

Photos by the Study Team, September 2012

Photo 3-13 Pagala Station

g) Blitta Station (St. 276 km)

Main facilities are a station building, two platforms, a main line, four sidings, three warehouses and crane facilities. There are two warehouses in the ore loading yard. It seems that the bucket cars were used to load ore into wagons. Previously, passenger trains were operated and the passenger fare from here to Lomé at that time was around FCFA 3,000. For reference, the current mini-bus fare to Lomé is FCFA 4,500.



Source: Study Team

Figure 3-30 Track Layout at Blitta Station

	
Station Building	**Remains of Stabling Track**
	
Ore Loading Yard	**Crane and Warehouses**

Photos by Study Team, September 2012

Photos 3-14 Blitta Station

(5) Level Crossings (see Photos 3-15)

The width, date installed if known, and name of principal user were investigated for almost all level crossings. A total of 38 unprotected level crossings were found.

	
Level Crossing 1	**Level Crossing 2**

Photos by the Study Team, September 2012

Photos 3-15 Level Crossings

(6) Illegal Occupation (see Photos 3-16)

The surroundings of almost all station yards on the line are illegally occupied, and are being used for markets and cultivated lands by neighbouring residents. Those illegal occupiers can be

removed with proper compensation, because no permanent structures have been built. However, a humane way to handle this situation is required.

At each station building and crossing watchman's box, a security guard is posted to prevent illegal occupation and to prepare for the resumption of train operation on the Blitta line.

Markets on the Track

Cultivated Land on the Right-of-Way

Photos by the Study Team, September 2012

Photos 3-16 Illegal Occupation

3.2.5 Major Findings and Problems of the Railway Sub-sector

There are many problems concerning the railway development policy, regulations, facilities, train operation and maintenance, as summarised in Table 3-14.

Table 3-14 Major Findings and Problems of the Railway Sub-sector on General Matters

Item	Findings and Problems
Railway development policy	There is a development policy for the main line between Lomé and Blitta, but it has not materialised.
Railway acts and regulations	Railway acts and regulations for the construction and operation of railways have not been established.
Concession	The MT has an administrative department for railways, but it has not functioned, in particular the supervision of the railway concession companies. There are no rules for the operation and maintenance of the common line.
Railway facilities	Proper maintenance on the foundations and superstructures has not been conducted. Maintenance criteria and inspection procedures to maintain and inspect civil structures have not been established.
Tracks	There are track irregularities, insufficient ballast, deteriorated rail joints, deteriorated point machines and lack of maintenance equipment.
Signalling & telecommunication system	Trains are operated without signalling system. There is no dedicated telecommunication system; mobile phones are used instead.
Stations	Passing tracks are not properly set up at each station. There are no safety facilities for residents such as fences around the stations.
Level crossing	Level crossings are poorly constructed. The safety facilities at level crossings are insufficient. There is no interface with road construction works.
Rolling stock	The rolling stock has deteriorated. The number of rolling stock is insufficient.
Depot/workshop	The maintenance facilities of the depot/workshop are old types and deteriorated.
Train operation	The train operation control system is insufficient. Regulations for train operation regulations are not established.
Facility maintenance	Maintenance equipment for structures and track is insufficient. Maintenance criteria and manuals are not provided.

Source: Study Team

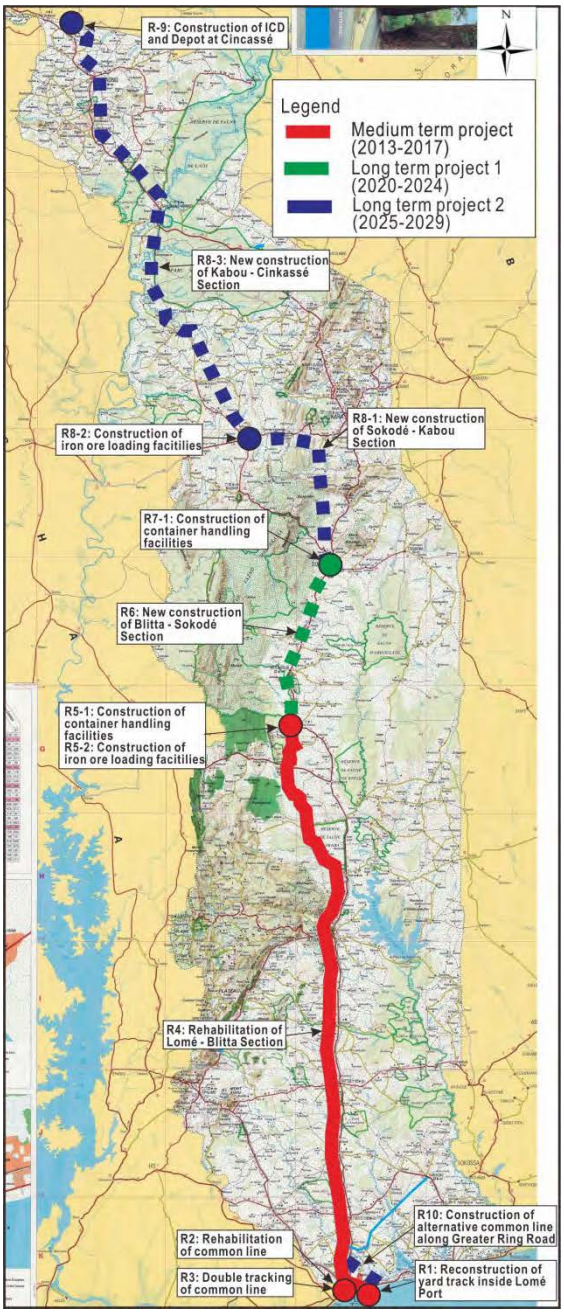
In addition to general matters, there are many physical problems on the lines. The physical problems for container transportation and iron ore transportation are summarised in Tables 3-15

and 3-16, respectively. The locations are shown in Figure 3-31.

Table 3-15 Summary of Major Physical Problems of Railway for Container Transportation

Location	Major Problem	Remarks
Lomé Port	▪ No railway transportation service for containers due to the nonfunctional yard tracks inside Lomé Port	Lomé Port Master Plan recommends that container transportation service between Lomé Port and Blitta by rail should be started.
Common Line	▪ Difficulty of stable train operation due to the deteriorated railway tracks ▪ No interface with the road development project at the level crossings	ditto
Main Line between Lomé and Blitta	▪ Difficulty of stable train operation due to the deteriorated railway facilities	ditto
Blitta	▪ Difficulty of providing local container transportation service for Blitta area due to lack of container handling facilities	ditto
Main Line between Blitta and Sokodé	▪ No railway transportation service for Sokodé Region due to lack of railway line and container handling facilities	Railway Master Plan for ECOWAS sub-region recommends the construction of the missing link between Blitta and Burkina Faso to revitalize the sub-regional economy.
Main Line between Sokodé and Cinkassé	▪ No international railway transport service between Lomé Port and Burkina Faso due to missing link and insufficient customs clearance facilities	ditto

Source: Study Team



Source: Study Team

Figure 3-31 Location of Major Problems of Railway Sub-sector

Table 3-16 Summary of Major Physical Problems of Railway for Iron Ore Transportation

Location	Major Problem	Remarks
Common Line	▪ Difficulty of stable train operation due to the deteriorated railway tracks ▪ No interface with the road development project at the level crossings	Lomé Port Master Plan recommends that the container transportation service between Lomé Port and Blitta by rail should be started.
Main Line between Lomé and Blitta	▪ Difficulty of stable train operation due to the deteriorated railway facilities	Ditto
Blitta	▪ Inefficient iron ore loading due to the lack of ore loading facilities	
Main Line between Blitta and Bassar	▪ No railway transportation service for iron ore due to the lack of railway line and iron ore loading facilities at Bassar or Kabou	Railway Master Plan for ECOWAS sub-region recommends the construction of the missing link between Blitta and Burkina Faso to revitalize the sub-regional economy.

Source: Study Team

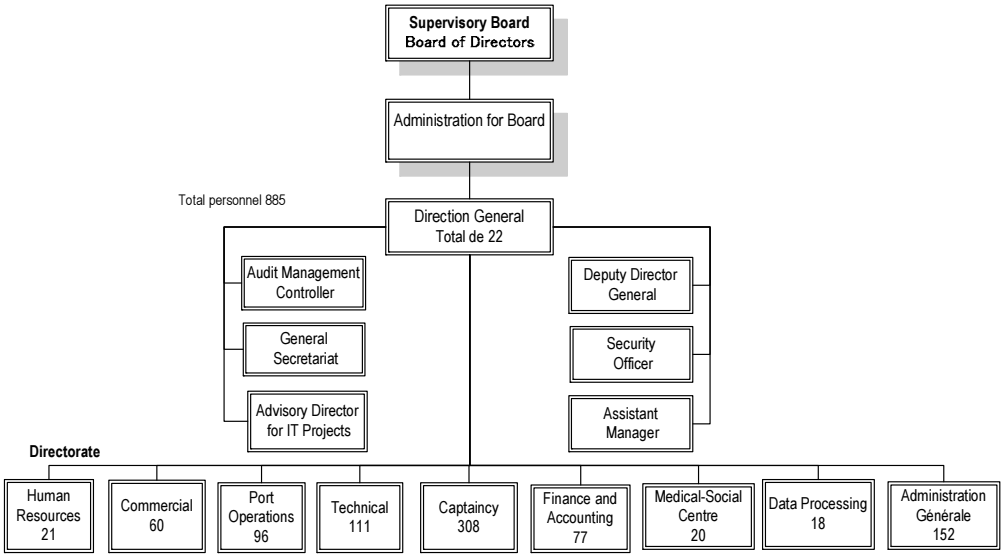
3.5 Present Situation of Port and Maritime Sub-sector

3.5.1 Policy and Programmes of the Port and Maritime Sub-sector

Lomé Port is located midway along the coast of West Africa. It is protected on the west side by the main breakwater (1,720 m) and on the east side by the counter breakwater (950 m), and so conditions in the port are always calm. It is also the deepest port in West Africa with a maximum depth of -14.5 m, and so can accept large vessels alongside its berths.

Lomé Port is the transit port for landlocked countries such as Burkina Faso, Mali and Niger, and neighbouring countries including Ghana, Côte d'Ivoire and Bénin. It is also an important transhipment port for West African countries such as Cameroon, Equatorial Guinea, Gabon, Mauritania, Nigeria, Senegal and other African countries facing the Atlantic Ocean. Therefore, the growth of Lomé Port will also be beneficial for the economic development of other countries.

Lomé Port has declared itself a "free port", and is an autonomous port controlled by Director-General, through the Autonomous Port of Lomé (PAL: *Port Autonome de Lomé*), under the control of the GoT. In 2011, Lomé Port announced its "Leading Plan for the Autonomous Port of Lomé" as a guideline for the port, with the consent of the GoT.



Source: PAL

Figure 3-32 Organisation Chart of the Autonomous Port of Lomé

Currently, the port has two main problems to be solved: the insufficient cargo handling capacity of the berths, and how to unload and deliver cargo to destinations faster and more cheaply. If Lomé Port is to become an advanced free port, it is necessary to solve not only the problems within the port, but also domestic problems outside the port, including domestic transportation costs, cargo security, road conditions, shortage of truck parking areas, overloading of trucks and associated troubles, which are serious problems affecting the distribution system in Togo. For the landlocked countries and neighbouring countries, if they can transport cargo safely, quickly, steadily and at low cost by choosing the Togo transportation route, the volume of transit trade of Togo will increase. This would benefit not only Togo but also the landlocked countries.

Although resolving such problems may cause some parties or organisations to lose their vested interests, the problems should be fixed for the sake of the people of Togo and for the development of the country.

To avoid dispute, the following sections describe only the situation within Lomé Port. The main challenges at Lomé Port are:

- To increase the handling capacity of the wharf in line with the increasing trade volume
- To rehabilitate the port in line with the increasing trade volume
- To speed up the system of carrying cargo out of the port

3.5.2 Present Status of Lomé Port Facilities

(1) The Present Status of Cargo Handling at Lomé Port

The volume of cargo handling at Lomé Port is increasing as living standards rise in Togo and neighbouring countries in West Africa. In particular, the volumes of transit trade and transhipment are increasing, because Lomé Port serves as a transit port for landlocked countries and as a transhipment port for countries in West Africa. Table 3-17 shows the steady increase in the volume of cargo handled at the port.

Table 3-17 The Trading Volumes Handled at Lomé Port

(Unit: tonne)

Year	Total	Import	Export	Transit	Transhipment
2000	2,643,470	1,734,858	363,506	561,360	13,746
2005	5,092,881	2,863,823	804,818	1,196,208	228,032
2010	8,018,357	3,298,733	1,501,476	2,447,489	770,659
2011	8,261,152	3,282,433	1,514,337	2,844,228	619,154

Source: Statistics Data of PAL

According to Table 3-17, the total cargo handling volume in 2000 was 2.64 million tonnes, which increased to 8.26 million tonnes in 2012. Lomé Port must adjust to this big increase in volume. Table 3-18 shows the vessels using the quays at Lomé Port and Table 3-19 shows the occupation percentage of ships at each quay of the port.

The total number of vessels increased little from 2000 to 2011. The number of general cargo ships decreased because of cargo containerisation, while cargo ships and Ro-Ro ships increased whereas general cargo ships decreased. Reefer ships appear to have been replaced by reefer containers. The decreased number of trawlers reflects the decline in deep-sea fishing off the coast of Africa. The small change in the number of passenger ships reflects the stable political situation and the development of tourist attractions in Togo and neighbouring countries.

Source: Leading Plan of the Autonomous Port of Lomé

Figure 3-33 The Plan of Lomé Port

Table 3-18 Number and Types of Vessels at Lomé Port (1990 to 2010)

No.	Type of Ship	1990	1995	2000	2005	2009	2010	2011
1	Barge and Deck Barge	0	0	0	4	1	1	3
2	**General Cargo Ship**	**227**	168	140	131	134	40	**51**
3	Trawler	**309**	96	46	42	44	43	**43**
4	Cereal Grower	7	4	7	13	12	11	15
5	**Reefer Cargo Ship**	**60**	58	47	22	27	39	**36**
6	**Ore (Mineral) Carrier**	**18**	28	39	39	36	45	**48**
7	NAV War ship	6	3	6	8	4	5	6
8	NAV Patrol Boat	3	0	3	4	4	10	16
9	Passenger Ship	1	2	4	1	3	9	5
10	**Oil Tanker**	**80**	109	108	104	110	85	**73**
11	Oil Tanker (Transhipment)	4	4	0	0	0	0	0
12	**Container Ship**	**118**	124	249	503	569	587	**454**
13	Tug boat	6	3	2	19	17	21	20
14	**Ro-Ro Ship**	**110**	99	177	134	178	190	**182**
15	Others	6	2	2	19	27	89	111
	Total	951	696	830	1,043	1,166	1,175	1,063

Source: Statistics Data of PAL

Table 3-19 Occupation Percentage of Ships at Each Quay

Year	PQ01	PQ02	PQ03	PQ04	PQ05	PQ06	PQ07	PQ09	PQ10
2001	52	69	59	54	58	55	34	50	37
2002	56	68	60	57	67	55	76	50	32
2003	61	53	6	59	76	70	18	86	44
2004	44	50	54	49	60	62	18	58	47
2005	53	48	71	60	73	72	20	79	43
2006	39	53.6	49.5	58	72	68.5	69	43.5	45
2007	35	58	57	38	73	72	10	80	42
2008	34	50	52	28	66	69	21	81	44
2009	40	53	60	54	65	75	85	67	38
2010	56.5	42	67	51	79.5	76.5	5.5	71	36

Source: Statistics Data of PAL

This table clearly reflects the process of cargo containerisation, and the number of container cargo ships will increase.

(2) The present Status of Berthing Facilities at Lomé Port

The vessel berthing facilities at Lomé Port are shown in Figure 3-34.

Source: Leading Plan of the Autonomous Port of Lomé

Figure 3-34 Berthing Facilities at Lomé Port

(3) Condition at Lomé Port

Sea current: Coastal current, about one knot west to east

Height of tide: H.W.L: +1.80 m
M.W.L: +1.01m
L.W.L: +0.32 m

Basic elevation of quay top: +4.50 m

a) Wharf No. 1: L300 m × W72 m, Water depth -8 m to -10 m

- Vessel: General cargo ship, trawler

- Quays: Q-1, Q-2, Q-3, Q-4, + Q-7
- Cargo: General cargo, bulk, clean bulk, frozen fish

b) Wharf No. 2: L150 m × W140 m, Water depth: -11 m to -12 m

- Vessels: Container cargo ship, Ro-Ro ship
- Quays: Q-5, Q-6,
- Cargo: Container, vehicles, packing cargo in Ro-Ro

c) Fishing Port: L = 60m, water depth -4.5 m

- Fishing boat

d) Turning Basin: R=180 m, 81hr, Q8

e) Ore Quay: L = 165 m, Water depth -14 m,

- Vessels: Bulk cargo carrier
- Q9
- Cargo: Clinker, gypsum, coal, industrial oil, asphalt, bitumen

f) Oil Jetty: L = 250 m, Water depth -14 m

- Vessels: Oil tanker
- Q10
- Cargo: Hydrocarbon

The average occupation percentage of ships at quays is 50% to 60%, but at quays Q-3, Q-5, Q-6, and Q-9, the percentage already exceeds 60%, which is too much.

(4) Wharf-1 (Q-1, 2, 3, 4, 7)

The cargo handling volume of this wharf was 1.12 million tonnes/year in 2011, and is estimated to increase to 1.83 million tonnes/year in 2025. The capacity is 1.63 million tonnes/year, which already includes the decreased cargo volume of cargo containerisation. The cargo handling volume of this wharf is expected to exceed its theoretical capacity in 2021.

At present, the ship occupation percentage of Q-3 is over 60%, but that of the other quays is under 60%, so there are no problems at present (until 2021).

(5) Wharf-2 (Q-5, Q-6)

The container handling volume was 340 thousand TEU/year in 2011, and is estimated to increase to 980 thousand TEU/year in 2025. At present, the ship occupation percentages of Q-5 and Q-6 are 79.5% and 76.5%. The theoretical capacity of the present wharf is 280 thousand TEU, so the container quay's capacity is too small.

The new Quay 3 started to be built in May 2012.

(6) Ore Quay,

Bulk carriers must wait for a berth, and unloading takes a long time. The estimated handling volume of 2.25 million tonnes/year in 2011 will increase to 5.5 million tonnes in 2025. At present, the ship occupation percentage of the Ore Quay (Q-9) is already 71%. The theoretical capacity of the present Ore Quay is 1.58 million tonnes/year, so its capacity is too small.

Appropriate relief measures must be taken for the Ore Quay.

(7) Oil Jetty

This jetty received 731 thousand tonnes of hydrocarbons in 2011, a figure which is predicted to increase to 984 thousand tonnes in 2025. At present, the ship occupation percentage of the Oil Jetty is 36%. The theoretical capacity of the jetty is 3.96 million tonnes/year, so there is no

problem now or in the future.

The berth-waiting data for vessels will be recorded by the shipping companies, which will provide fundamental data for estimating the unit cost of goods by adding the cost of berth-waiting to the unit price of the goods. This will increase the price of goods for everyone.

3.5.3 Present Status of Lomé Port Operation

Visible from Lomé City, there are usually about 30 large cargo vessels moored offshore of Lomé. These are not waiting for a berth at Lomé Port, but anchor in this offshore area for the security of the vessel as there are pirates in other area. The area offshore of Togo is kept safe by the Togo Navy. The port data shows that some bulk (mineral) carriers must wait for the Ore Quay.

(1) Ore Quay

a) Unloading Work

Cargos are usually dirty (solid) bulk such as clinker or gypsum, and are carried by bulk carriers of about 45,000 dead weight tonnes (DWT). The bulk cargo is unloaded by cargo crane or winch to the large cyclone-hopper on the quay. The bulk cargo is then dropped from the cyclone-hopper into dump trucks on the quay, which carry the cargo to the stock-yard in the factory. The transport distance from the quay to the stock-yard is about 1 km.

- Unloading capacity: 10,000 tonnes/day, (working time: 20 hours/day)
  e.g. 45,000 tonnes of clinker -> 5 days

b) Loading work

The main loading bulk cargo is iron ore. It is carried by belt conveyor from the stock-yard to the Ore Quay, then loaded into the bulk carrier by the loading belt conveyor.

- Loading capacity: 20,000 tonnes/day (1,000 tonnes/hour, working time: 20 hours/ day)
  e.g. 45,000 tonnes of Clinker -> 2 or 3 days

The PAL plans to extend the Ore Quay to more one berth to the north, but at present, they must adjust the schedule for the shipping and berthing to prevent ships having to wait for a berth. The cargo handling volume was 2.25 million tonnes in 2011, meaning that the theoretical handling capacity of 1.58 million tonnes is already exceeded. Berth-waiting repeatedly occurs, meaning that the handling capacity of the Ore Quay has reached its capacity.

If all necessary conditions concerning the railway, road network and industrial conditions are achieved, the handling volume of the Ore Quay is estimated to be 5.55 million tonnes in 2025. Therefore, it is necessary to consider not only extending one berth to the north but also building a new unloading system and extending the short berth to the south too. This is very important for Togo in order to boost revenues received from other countries for the exportation of minerals.

(2) Wharf No. 2 (Mole 2)

There are two quays, each of which can berth two container ships, one on either side of the wharf. This wharf has 10 **r**ubber tired gantry (RTG) cranes, each with a lifting capacity of 100 tonnes. Each quay is 150 m long. The water depth of the wharf is -11 m on the west side and -12 m on the east side. Berthing vessels are Ro-Ro ships and container cargo ships.

The water depth of -12 m is sufficient for the maximum 40,000 DWT of container cargo ships, but the quay is only 150 m long, so berthing container cargo ships must be less than

30,000 DWT.

The number of ships using this wharf was 587 container cargo ships and 190 roll-on/roll-off (Ro-Ro) ships (60% of the loaded cargo is containers) in 2011. The average cargo handling volume is about 500 TEU per vessel.

- Handling capacity: 550 TEU/day (25 TEU/hour x 22 hours/day)

However, 777 ships per year is too many, exceeding the handling capacity of the port. At present, two big container berth projects have already started, one by Bollore and the other by Lomé Container Terminal (LCT), so there will be no problem in future.

(3) Wharf No.1 (Mole 1)

There are two quays for the berthing of four general cargo ships, one on either side of the wharf (see Figure 3-23). Each quay is 300 m long and 72 m wide. There is one storage on the wharf. The general cargo ships range from several hundred DWT to 18,000 DWT. The water depth around wharf Q-1 is -8.0 m, Q-2 and Q-3 are -10 m and Q-4 is -9.5 m. If necessary, there is some open space for extension toward the top of the wharf. The handling capacity is sufficient at present.

(4) Cargo Flow of Lomé Port

a) Types of Vessel, Main Cargo and Handling Place of the Port

1) Bulk carrier

Solid bulk cargo: Ore Quay, Other bulk cargo: Wharf No.1 (General cargo wharf)

- Import solid bulk cargo: Clinker, gypsum, coal, etc.
- Export solid bulk cargo: Iron ore
- Grain bulk cargo: Wheat, rice, etc.

2) General cargo ship

General cargo: Wharf No.1 (General cargo wharf)

- Construction materials: Reinforced bar, steel wire, chloroethylene pipe, etc.
- Sacked goods: Farm products (rice, sugar), fertiliser, cement
- Goods in drums: Cooking oil, machine oil, asphalt, etc.
- Packed goods: Machine parts, electrical products, clothing, etc.

3) Container cargo ship

Container cargo: Wharf No. 2 (Container wharf)

- All goods put in a container 20 or 40 foot container
- Reefer container: Perishable foods, frozen fish, frozen meats, etc.
- Open container: Large plant parts, machines, etc.
- Vehicles, fuel tank containers

4) Ro-Ro ship

Cargo of Ro-Ro ship: Wharf No. 2 (Container wharf)

- Packed goods, vehicles
- Container

5) Oil tanker

Liquid bulk (hydrocarbon): Oil Jetty

- Petrol, aviation fuel, diesel, heavy oil, petroleum oil

6) Refrigerated carrier

Refrigerated goods in reefer container: Wharf No.2 (Container cargo wharf)

Refrigerated goods: Wharf No.1 (General cargo wharf)

b) Port Handling Efficiency and Stevedore

Table 3-20 Port Handling Efficiency

Handling Kind and Condition	Unit Capacity per Hour	Number of Team or Equipment	Capacity per Hour	Working Time	Capacity per Day
Container 20' & 40' (by Maersk)	15 nos.	2	30 nos.	22	660 nos.
Container 20' & 40' (by Manuport)	13 nos.	2	26 nos.	22	572 nos.
Container 20' & 40' (by others)	12.5 nos.	2	25 nos.	22	550 nos.
Vehicles	100 nos.	1	100 nos.	21	2,100 nos.
Packed goods by frame (Ro-Ro)	100 tonnes	2	200 tonnes	21	4,200 tonnes
Sacked Rice, Fertiliser, Wheat	35 tonnes	3	105 tonnes	21	2,205 tonnes
Cement bag (except by barge)	13 tonnes	1	13 tonnes	14	182 tonnes
Balles (Cotton)	40 tonnes	3	120 tonnes	14	1,680 tonnes
Iron, Reinforced-bar, Steel frame	16.5 tonnes	2	33 tonnes	14	462 tonnes
Frozen Goods (Fish, Meat, etc.)	9 tonnes	2.5	22.5 tonnes	14	315 tonnes
Manre in sack	15 tonnes	2	30 tonnes	14	420 tonnes
Clinker, Limestome, Gypsam (Import)	500 tonnes	1	500 tonnes	20	10,000 tonnes
Coal (Import)	350 tonnes	1	350 tonnes	21	7,350 tonnes
Clinker (Export)	1,000 tonnes	1	1,000 tonnes	20	20,000 tonnes
Bulk Wheat (Import)	37.5 tonnes	2	75 tonnes	21	1,575 tonnes
Hydrocarbon (Import/Export)	500 tonnes/arm	2	1,000 tonnes	22	22,000 tonnes
Bult Bitumen (Import)	50 tonnes	1	50 tonnes	22	1,100 tonnes
Hydrocarbon (Transhipment)	300 tonnes	1	300 tonnes	22	6,600 tonnes

Source: The Summary of the Leading Plan of Port of Lomé

Table 3-21 Stevedore List in Lomé Port

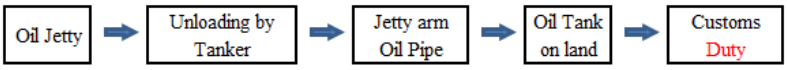
No	Company Name	Handling Godds	Remark
1	Togo Terminal	Containers	Mole-2
2	Manuport (Closed, no more activity)	Containers	Mole-2
3	Lomé Multipurpose Terminal	General Cargo	Mole-1
4	DOP-PAL	Solid bulk (Clinker, Gypsum, etc.)	Ore Quay
5	DOP-PAL	Bulk (Wheat, Wheat flour, Rice, etc.)	Mole-1
6	Togo SELL/Capitainerie	Liquid bulk (Hydrocarbons)	Oil Jetty

Source: PAL Operation Div.

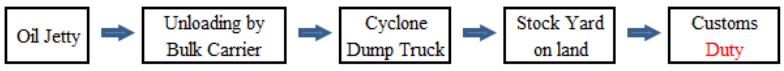
c) Main Cargo Flow

1) Bulk cargo (liquid bulk, solid bulk, clean bulk)

i) Liquid bulk at Oil Jetty (hydrocarbons)

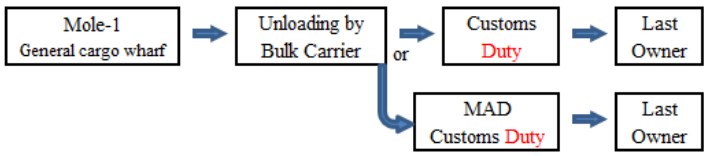


ii) Solid bulk at Ore Quay (clinker, gypsum)



iii) Clean bulk and bulk (rice, wheat flour) at General cargo wharf

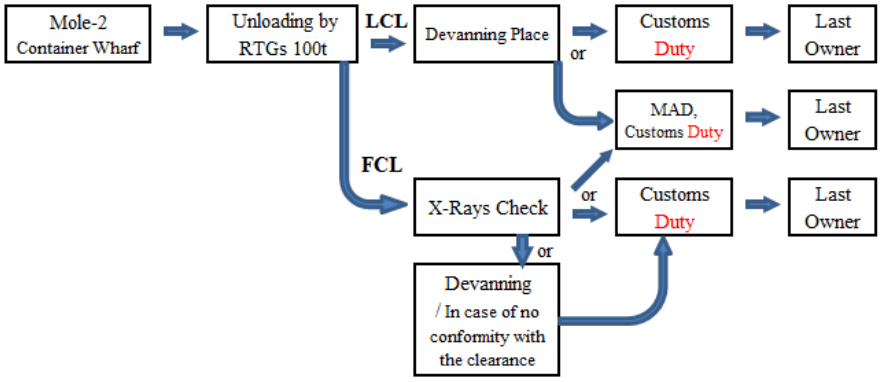
iii-1. For domestic



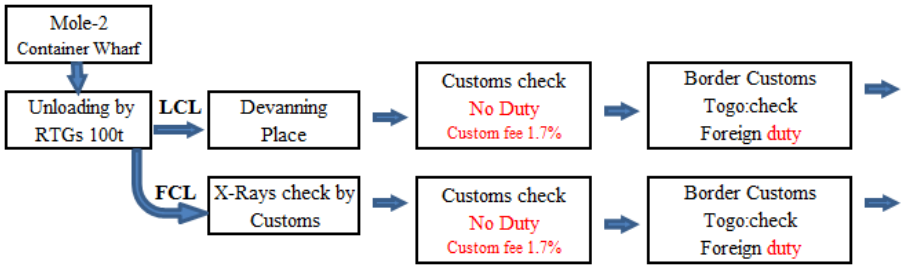
iii-2. For foreign country (transit Import)

2) Container cargo

i) For domestic

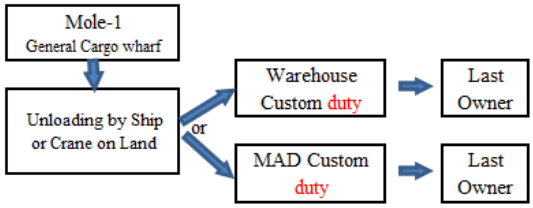


ii) For foreign country (transit Import)

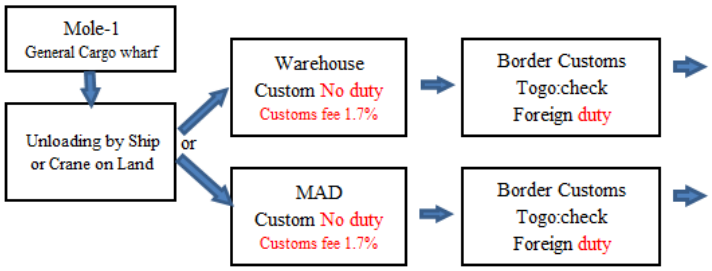


3) General cargo

i) For domestic



ii) For foreign country (transit import)



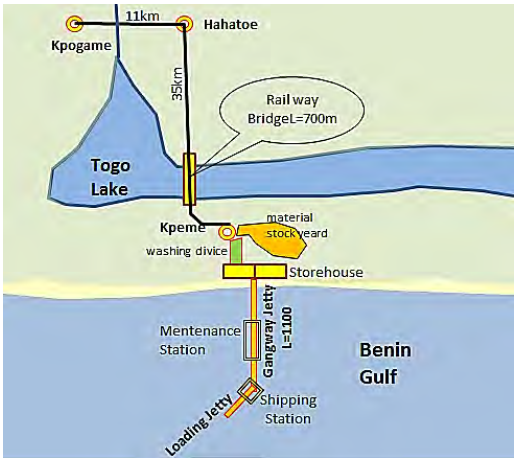
3.5.4 Present Status of Kpémé Jetty

(1) Outline of Kpémé Jetty

Kpémé Jetty is an important jetty for exporting phosphorus ore from Togo. The jetty is located about 40 km to the east of Lomé City, jutting out into the sea from the shoreline of

Kpémé. The jetty consists of an access jetty 1 100 m long and a phosphorus loading jetty 150 m long.

The GoT has been consigning the mining of phosphorus ore, transportation by railway, shipping, and all maintenance and management to private companies. The first consigned company was CPAN, but it has changed six times in total. The current (seventh) company is SNPT, to which the GoT has consigned all phosphorus business.

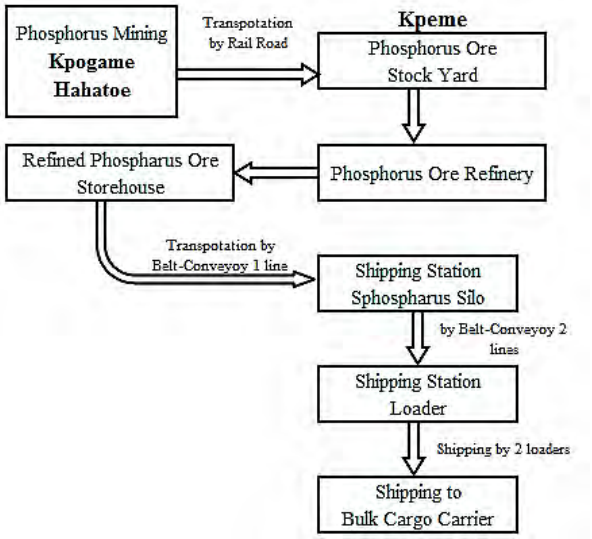


Source: Study Team

Figure 3-35 Location of Kpémé Jetty

The phosphorus mines are located at Hahatomé and Kpogamé. These mines were famous for 30 million tonnes of estimated deposits (of sandy phosphorus) and high content percentage of 35% to 36%. Several years ago during the golden age, Kpémé Jetty was shipping 3 million tonnes per year, but is now shipping only 1.2 million tonnes per year. According to an announcement by the Ministry of Mining, the entire deposit of sandy phosphorus of the mines will be depleted in 10 to 15 years. However, it is now widely known that carbonised phosphorus deposit exist near to the present mines. The phosphorus content is slightly lower at about 30%, but the mine looks promising. The factory refining system needs to be changed for shipping.

Hahatomé mine lies 46 km and Kpogamé mine lies 35 km from Kpémé by railway. There is a 700 m long railway bridge cross Lake Togo just before Kpémé. The phosphorus ore is transported by railway and put in the stock-yard of the shipping factory. In the shipping factory, the phosphorus ore is washed by sea water and pure water and stocked in two large storehouses (180 thousand tonnes each). When an ore bulk carrier (40,000 to 60,000 DWT) comes alongside the loading jetty, the phosphorus ore is carried by belt conveyor through the access jetty (1,100 m) to the loading jetty (150 m) which has two loading outlet hoses. The loading work onto the ship is done non-stop until completed.



Source: Study Team

Figure 3-36 Process Flow (Mining to Shipping)

(2) Facilities

- Belt Conveyor + Loader (1,200 tonnes/hour x 2) = 2,400 tonnes/hour
  (Offshore side loader failed: 1,200 + 1,700 = 2,900 tonnes/hour)
- Working time of shipping: 24 hours
- Design vessel: Ore bulk carrier 60,000 DWT

- Actual: Ore bulk carrier 50,000–60,000 DWT, Oil Tanker 8,000 DWT
- Mooring Dolphin: 4
  - Steel pipe pile φ1,000 mm
  - Vertical piles (front: 3, behind: 2)
  - Depth of loading jetty: -15 m
  - East basin for oil tanker: -11.8 m
  - Shipping station (20 x 10 m) 2F
  - 1F: operation room, 2F: Stock bins
  - Total length: 150 m
  - Belt conveyor : 2 lines
  - Loader: 1,200 tonnes/hr, x 2
  - Steel gantry structure:
    Possible to movement: Horizontal
  - Rise and fall (offshore side trouble)
  - Delivery hoses: φ200 mm
  - Inlet of oil pipe (for the factory): φ200 mm

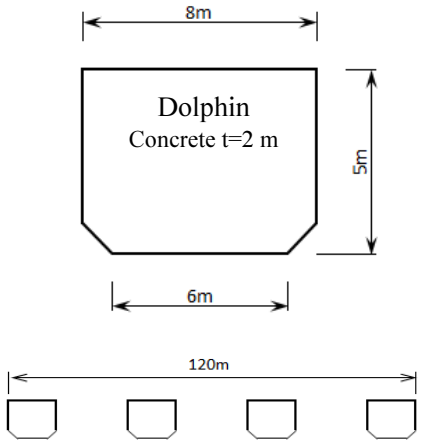


Figure 3-37 Mooring Dolphin

- Access Jetty (L = 1,150m)
  - Width: about 6 m
  - Passage: 3 m, Belt conveyor: 3 m
  - Orbital rail (centre of the passage) for the transportation of maintenance parts
  - Sea water steel pipe φ75 cm (for washing) (from maintenance station to factory)
- Maintenance Station
  - Site office, rest room, storehouse (machines, tools, spare parts, etc...)
  - Line boat x 2, crane (line boat lifting) x 2
  - Water pump x 3 (intake sea water for ore washing)
  - Hoist crane facility x 1 Ls (for pump maintenance)

Photo by the Study Team, September 2012

Photo 3-17 Overview of the Jetty

Photo by the Study Team, September 2012

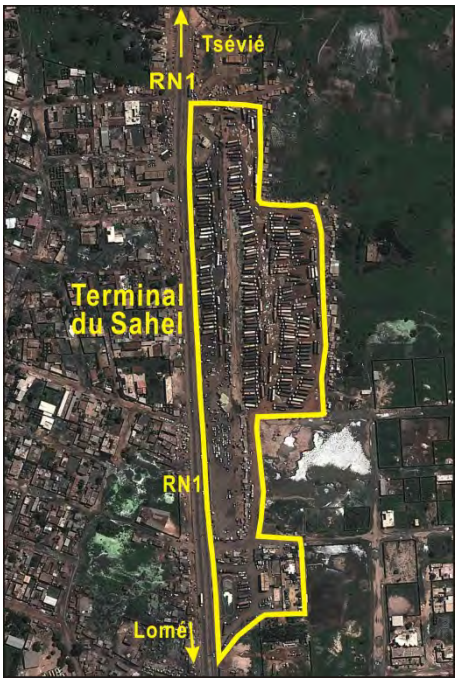
Photo 3-18 Loading Jetty

Photo by the Study Team, September 2012

Photo 3-19 Maintenance Station

3.5.5 Sahel Terminal

Sahel Terminal is located about 15 km north from Lomé Port along RN1. This terminal is operated by the PAL as a part of Lomé Port and land area is about 20,000 m^2 as shown in Figure 3-38.



Source : Study Team

Figure 3-38 Sahel Terminal

(1) Functions and roles of the Sahel Terminal

The Sahel Terminal was originally set up as a starting point for a special cargo escort service for its Sahel partners called "*Solidarite sur la Mer*", which has been a pioneer in the West African region. Later, as security was improved and the number of checkpoints decreased along the TLC and a GPS-based tracking system was introduced, the escort system conducted by customs officers was abolished in 2012. Currently, the Sahel Terminal functions as an area where transport operators wait until they receive approval for transit application forms that have already been submitted at the port.

a) Functions and Roles Prior to 2012

- Served as a base for transit cargoes moving to landlocked countries, "*Solidarite sur la Mer*".
- Served as a starting point for the escort service four times a week.
- Originally, it was established as an exit point along the outer edge of the urban area of Lomé for transit cargoes travelling to landlocked countries.

b) Current Functions and Roles

- Serves as a waiting area, where cargo vehicles with transit cargoes travelling to landlocked countries wait to receive approval and documents for transit, which have already been applied for at the port, because there is insufficient parking space in the port area. In principle, all cargo vehicles to landlocked countries, except tankers, are required to stop over at the Sahel Terminal.
- The Sahel Terminal serves as a bonded area for imported vehicles in the transit process.

- Since 2012, a tracking system has been in place after the escort service was abolished and GPS tracking equipment has been delivered.
- The tracking system was introduced to reduce various checkpoints up to the border made by the GoT, PAL and shippers' councils.

(2) Current issues

The current issues of the Sahel Terminal include long transit procedures at the port customs office and low quality of facilities. These issues are mainly due to the delays in the customs clearance process at the port.

1) Wasted time

Transit cargoes departing from the port have to wait at the Sahel Terminal until at least the next afternoon.

2) Delay in transit document processing

Documents often arrive late from the port customs clearance office. In addition, if there is a mistake on an application form or a missing document, a customs brokerage has to submit the application documents again and wait for approval from the customs office, causing further delays.

3) A shortage of parking space at peak time

The Sahel Terminal is closed on Sunday and public holidays. On weekends when business hours are short at the customs office, parking space becomes scarce. When this happens, many cargo vehicles park on the carriageway of RN1, causing traffic congestion along RN1.

4) Facility issues

Some drivers try not to park in the terminal because of unpaved parking lots, poor water supply, poorly maintained toilets and security concerns (disputes between drivers sometimes take place). A number of cargo vehicles park at nearby petrol kiosks and empty lots north of the terminal, however, it is not clear whether they have already obtained necessary transit permits and GPS tracking equipment.

5) Unclear parking fee payment

In principle, the parking fee at the terminal is FCFA 10,000 for loaded cargo vehicles, however, currently drivers refuse to pay the fee. When it is necessary to complete the procedures quickly in the terminal, drivers often offer bribes.

Various surveys have shown that transport operators are forced to wait for a long time due to delayed customs clearance, which is due to not only slow processing of paperwork at the customs office, but also inadequately prepared documents and inexperienced customs brokerages. In addition, transport operators often do not provide drivers with money to pay necessary costs for the return trip. During the on-site surveys at the Sahel Terminal, 2 out of 10 drivers were waiting at the terminal for their money to be transferred.

3.5.6 Major Findings and Problems of the Port and Maritime Sub-sector

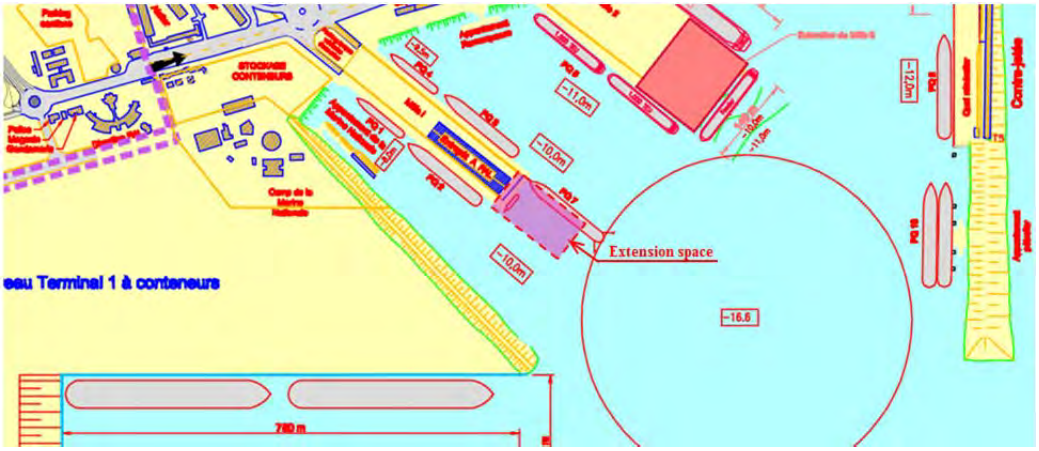
The main problems were described in Section 3.3.1, Policy and Programmes of Maritime Sub-Sector, and are reviewed again here.

(1) Shortage of the Quay Capacity due to Increasing Volume of Trade

a) Wharf No. 1 (general cargo ship, grain bulk carrier)

The number of vessels is decreasing year by year due to the growth of cargo containerisation. However, most of the goods handled are foods, daily necessities and construction materials that are essential for daily life for the people of Togo and landlocked countries. The imported goods include those that cannot be containerised. Small and medium sized cargo ships of neighbouring countries use this wharf. If Lomé Port becomes a hub port for West Africa, the trade volume between Togo and neighbouring countries will increase as those countries develop. Overall, the cargo handling volume at this wharf is likely to change slowly rather than abruptly.

If Togo and neighbouring countries develop dramatically, the trade volume at Lomé Port will increase and the wharf will become insufficient. In this case, extension of the wharf to the southeast should be examined, where there is enough space as shown in Figure 3-39.



Source: The Summary of the Leading Plan of Port of Lomé

Figure 3-39 Plan of the Wharf No. 1

b) Wharf No. 2 (container cargo ship, Ro-Ro ship)

The Wharf No. 2 is reaching its capacity, as is widely known by the GoT and the PAL. The Third Quay Project was started in May 2011. In addition, the Lomé Container Terminal Project was also started. Once the two projects are completed, the container handling capacity at Wharf No. 2 will be sufficient.

c) Ore Quay (mineral bulk carrier)

The main goods handled are clinker, cement, gypsum, limestone and coal. Clinker accounts for the biggest volume of imports at 74% (1.75 million tonnes) of the total volume (2.36 million tonnes) handled by this quay in 2011. The handling volume of the quay has already reached its limit, and ships must frequently wait for a berth.

Ore bulk carriers arriving range from 40,000 DWT to 50,000 DWT, with a length of 220 m. There is only one berth, with a length of 165 m, which is too short. The unloading capacity is 10,000 tonnes/day, because the ore is unloaded by cargo crane and transported by dump trucks. It takes six days to unload one ore bulk carrier of 50,000 DWT.

There are two big problems: extension of the Ore Quay, and improvement and speeding up of the unloading system.

d) Oil Jetty (oil tanker)

There are no problems at this jetty now or in the future.

(2) Land Facilities at the Port

There are many trucks parked along all roads in the port, and many empty trucks parked along the roads outside of the port.

According to a local rule at Lomé Port, trucks cannot stay in the port for longer than 48 hours, but this violates the International Ship and Port Facility Security (ISPS) standard, which is within 24 hours. If trucks go out of the port within 48 hours, the congestion caused by parked trucks will not happen. The wide road around the port is only 50% effective due to the parked trucks along the road.

Possible causes of the truck congestion in the port are:

a) Time for Devanning

There are many less than container load (LCL) containers but only one devanning place in the port because the port area is limited.

b) Time for X-rays Checking

X-ray checking takes about 20 minutes per container on the truck.

c) Time for Documentation Work of the Tariffs

Trucks often wait five days in the port to get the documents.

To solve the problem of trucks parking outside of the port, traffic rules and police control are necessary, as well as sufficient parking area. This problem should be considered in connection with other fields of this project. Unloaded cargo should be taken out of the port as soon as possible.

3.6 Present Situation of Air Transport Sub-sector

3.6.1 Airport

There are two international airports and six aerodromes in Togo. Only Lomé Gnassingbe Eyadéma International Airport is used for scheduled flights, while the domestic air route connecting Lomé and Niamutougou International Airport (Kara) ceased operation in 2004. As a result, all international flights use the Lomé International Airport. Table 3-22 lists the airports and aerodromes in Togo.

Table 3-22 Outline of Airports and Aerodromes in Togo

Type	Name	Runway Length (m)	Operation	Terminal Facility
International	Lomé Gnassingbe Eyadéma	3,500	24 hours	Yes
	Niamutougou (Kara)	2,500	12 hours	Yes
Aerodrome	Seazambiani (Dapaong)	2,600	-	No
	Sansané-Mango (Mango)	2,100	-	No
	Bethania (Agou)	2,100	-	No
	Katambara (Sokodé)	2,600	-	No
	Kolocopé (Elavagnon Est-Mono)	2,100	-	No
	Akpaka (Kamina Ogou)	2,100	-	No

Source: ANAC

The GoT started to construct a new international passenger terminal at Lomé International

Airport in August 2012, with financial assistance of the EXEM Bank of China, and it is expected to be completed by the middle of 2014. In addition, air terminal facilities at Niamutougou International Airport, including immigration and custom facilities, are ready to accept any flight.

3.6.2 Air Traffic

(1) Air Traffic at Lomé International Airport

Table 3-23 shows the air traffic at Lomé International Airport between 2002 and 2011. The number of passengers has drastically increased since 2010. This increase is considered to be the result of the establishment of ASKY Airlines, which is a purely private company with some support from Ethiopian Airlines.

Table 3-23 Air Traffic at Lomé International Airport

Item	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Passengers Arrived	74,933	82,966	90,815	76,267	95,467	97,221	103,358	99,341	159,293	229,167
Passengers Departed	81,990	88,140	95,806	80,152	95,752	99,534	104,972	102,315	159,182	241,817
Passengers in Transit	43,323	44,557	47,836	62,547	106,550	77,480	58,766	39,423	63,709	80,624
Air Cargo (tonne)	4,933	6,626	9,790	9,391	11,915	14,738	14,740	10,253	9,084	8,430
No. of Arrived Aircraft	3,053	2,962	3,418	2,977	3,801	3,777	3,588	3,139	4,961	5,484

Source: ANAC

(2) Air Transportation

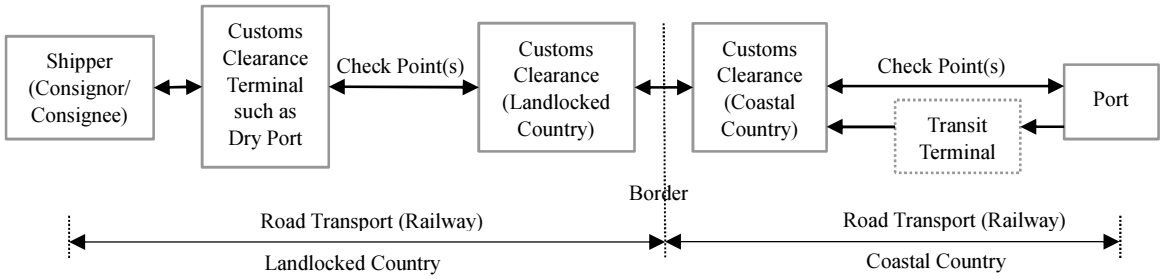
Seven airlines operate international flight to/from Lomé International Airport. Of these airlines, ASKY Airlines operates 43 flights per week and uses Lomé International Airport as its hub airport. ASKY Airlines is going to operate the Lomé – Rio de Janeiro route as a code share flight with Ethiopian Airlines from December 2012. Also, ASKY Airlines and Ethiopian Airlines have already studied Niamutougou Airport for the possible resumption of operation of the Lomé – Niamutougou sector.

3.7 Summary of Transit Transport on the TLC

3.7.1 Transit Transport System

Figure 3-40 illustrates the system of transit cargo transport on an international transport corridor, which connects a coastal country with a port and a landlocked country. Basically, this transit transport system starts from a port, utilises road transport (possibly the railway in some countries), involves cross-border formalities on both sides of the border, followed by road transport again and arrives at the final customs clearance terminal in the landlocked country. Hence, transit cargo transport related for a landlocked country requires crossing a border at least once to gain access to/from a port.

The current situation of transit cargo transport is described below based on the fact-finding survey by the Study Team along the TLC, which connects Lomé Port and Ouagadougou, the capital of Burkina Faso. The situations of transit cargo transport on other international corridors in the West African sub-region are considered to be similar to that on the TLC.



Source: Study Team

Figure 3-40 System of Transit Cargo Transport on International Corridor

3.7.2 Current Situation of Transit Cargo Transport on the TLC

(1) Cargo Handling Process at Ports

When a ship comes alongside the pier in Lomé Port, transit cargoes to landlocked countries are unloaded and customs brokerages submit application form to the customs office for the transit transport. At the customs office, the data of the application of the application forms are input into the customs information system and applications are examined by customs officers. At the same time, shippers of every transit cargo transported to Burkina Faso have to pay the obligatory nominal management fees charged by the warehouse to the Chamber of Commerce of the landlocked country, which is the Burkina Faso Chamber of Commerce (CCI-BF: *La chambre de Commerce et d'Industrie du Burkina Faso*) in the case of Burkina Faso, regardless of whether warehouses are used or not.

Meanwhile, it is necessary to select a transport operator to transport transit cargoes to a landlocked country. There is a bilateral agreement between Togo and Burkina Faso for the road transportation of transit cargoes (*Protocole d'accord de transports routiers*) which was ratified in 1984. In this agreement, two-thirds of the total volume of cargoes is allocated to transport operators registered in Burkina Faso and the remaining one-third is allocated to transport operators registered in Togo. The actual allocation of cargoes is determined by the shippers' council of a landlocked country, which is the CBC in the case of Burkina Faso. After the allocation of cargoes is determined, the road transport organisations of both the landlocked country, namely the Road Transport Organisation in Burkina Faso (OTRAF: *Organisation des Transporteurs Routiers du Faso*) in the case of Burkina Faso, and Togo select the transport operators to be hired. At this stage, selected transport operators have to pay membership fees and other fees of relevant organisations of a country, including the shippers' council, road transporter organisation and truck drivers' association. Formally, the selection of a transport operator is carried out on a first-applied, first-served basis, however, favourable considerations is often given to transport operators who offer bribes. In addition, the majority of transport operators both in Togo and landlocked countries are individual operators who do not belong to transport companies.

The selected transport operator then enters the port with the necessary application documents given by a customs brokerage to receive the cargoes. Note that about 80% of containers with cargoes to landlocked countries is devanned in the port area. This is mainly because: 1) container deposit fees charged by shipping companies are high (20 ft: FCFA 500,000, 40 ft:

FCFA 1,000,000 for 21 days); 2) other goods can be loaded additionally; and 3) there are shortages of container handling equipment and other tools at the destination terminal. Since the containerisation of many types of cargoes is very common in maritime transportation worldwide, this situation of vanning/devanning about 80% of containers in the port area is very inefficient and unreliable logistics.

After the cargoes have been loaded on vehicles of transport operators either by containers or by sacks/bulk/cartons, the loaded vehicles should leave the port area due to the limited parking space available, and they must wait to receive transit permission documents at the Sahel Terminal which usually takes one or two days. After receiving these documents, the transport operator has a tracking GPS attached, which is provided at the Sahel Terminal, and can then leave the Sahel Terminal to continue to the destination. Tankers that transport hydrocarbon receive the transit permission at the port and they do not need to stop-over at the Sahel Terminal.

In total, it takes at least seven days on average from when a ship comes alongside the pier to when the transport operator leaves the Sahel Terminal, mainly for documentation processing in the customs office.

(2) Present Situation of Road Transport between Lomé and Ouagadougou

During transportation of cargoes from Lomé Port to Ouagadougou, there are several issues that transport operators must deal with, such as checkpoints, deteriorated roads and vehicle breakdown.

There are several checkpoints operated by local police stations, local customs offices and forestry cooperatives along the TLC, where spot inspections of cargoes and transit documents are carried out. Even though the number of such checkpoints in Togo has drastically decreased compared with the past, there are still a number of checkpoints, such as every 50 km in Burkina Faso. The waiting time to receive such inspections between the Sahel Terminal and Ouagadougou is about three hours in total and the officers at checkpoints often request drivers to pay bribes to pass the checkpoints. According to the OTRAF, bribes requested at checkpoints as well as at port and border customs offices account for about 10% of the total transport cost, as shown in Table 3-24.

Table 3-24 Breakdown of Transport Costs

Item	Cost (FCFA)	Composition
Fuel	375,000	53.6%
Labour	20,000	2.9%
Other costs	45,000	6.4%
Bribes	60,000	8.6%
Overhead cost	200,000	28.6%
Total	700,000	100%

Note: Example of a 20-tonne truck travelling 950 km
Source: OTRAF

Many vehicles used for transit cargo transport are old, typically with an in-service period of 20 to 30 years, and the aged vehicles often break down on the corridor due to mechanical problems due to shortages of spare parts and inadequate maintenance. In addition, the poor road condition and steep gradient sections on RN1 in Togo are additional causes of break down.


Photos 3-20 Current Situation at Lomé Port


Photos 3-21 Devanning at Lomé Port

Photos 3-22 Selection of Transport Operator by the National Road Transporter Union of Togo at Lomé Port


Photos 3-23 Tracking GPS Receiver Provided at the Sahel Terminal

Photos by the Study Team, January 2013

In the case of the TLC, more than 40 cargo vehicles break down per day on average, particularly in Togo. In response, the CNCT allocates four wrecker trucks along RN1, but these

are insufficient to tow so many broken-down cargo vehicles each day. As a result, vehicle drivers have to repair their vehicles where they break down, which is usually on the carriageway.

After entering Burkina Faso, every vehicle carrying transit cargoes has to be escorted by customs officers, with the exception of specific cargoes such as container and emergency relief food. This escort by customs officers is obligatory for bonded transit cargoes. Customs officers carry lists of loaded cargos and travel along with the cargo vehicles from the Bittou Customs Office to the customs office at the destination. Usually, an escort of customs officers depart once a day from the Bittou Customs Office. Transport operators across the Cinkassé Border Post are required to clear documents at the Bittou Customs Office and are not permitted to follow the escort of customs officers on the same day. As a result, transport operators have to wait near the Bittou Customs Office until every cargo vehicle has been cleared by customs. This is a major cause of the bottleneck for cargo transport between Lomé Port and Burkina Faso.

Photo 3-24 Parking at Bittou Customs Office

Photo 3-25 Bittou Customs Office

Photos 3-26 Long Queue of Cargo Vehicles neat the Bittou Customs Office

Photos by the Study Team, January 2013

(3) Process of Border Crossing

For cross-border transport, transit cargoes are required to be cleared at customs offices in both coastal and landlocked countries. The joint agreement of ECOWAS and WAEMU for facilitating cross-border movement was ratified by member countries in 2003. Since then, ECOWAS and WAEMU have been working to establish OSBP in the West African region. The first OSBP was established at Cinkassé between Togo and Burkina Faso in 2011, followed by another at Paga between Ghana and Burkina Faso, and some other OSBPs are currently under construction. An office building with customs and immigration offices was built, and a weigh bridge and a container scanner were installed beside the office building on land acquired by

WAEMU in the territory of Burkina Faso. In addition, 20-year- concession agreement has already been signed with a private operator, Scanning Systems, to operate the OSBP.

However, the main functions of the Cinkassé OSBP, which are to facilitate customs clearance, have not yet started due to the following major issues:

- No bilateral agreement to simplify customs clearance for transit cargoes to avoid double clearance of cargoes at Lomé Port and the Cinkassé OSBP border post
- No bilateral agreement to avoid double charges for transit cargoes
- No bilateral agreement to exchange information on transit cargoes between the two countries
- The customs office on the Burkina side is located not at Cinkassé OSBP, but at Bittou
- The charge for using the OSBP levied by the operator (FCFA 50,000 per vehicle) is not acceptable to transport operators
- There is no enforcement of regulations on oversized vehicles, which cannot be scanned by the container scanner

In order to solve these major issues, the GoT and the Government of Burkina Faso, together with the OSBP operator, have been negotiating to normalise operation of the Cinkassé OSBP, under pressures from WAEMU and AfDB, who are applying pressure on both governments by adding conditions to approve the disbursement of loans for improving the Lomé corridor.

By the end of June 2013, both governments have been discussing how to solve these issues and some agreements have already been ratified, including lowering the usage charge levied by the OSBP operator.

Photo 3-27 Administration Office

Photo 3-28 Freight Vehicle Scanner

Photos by the Study Team, January 2013

(4) Final Customs Clearance Process in Burkina Faso

Transit cargoes across the border should be cleared at the destination of Burkina Faso. There are two dry ports, one at Ouagadougou and the other at Bobo Dioulasso, the second largest city. The functions of these dry ports are the final customs clearance of cargoes to Burkina Faso and transit hubs for cargoes being transported onto a third country. In the case of transit cargoes to a third country, the cargoes are transported to a customs office at the relevant border post under the escort of customs officers.

These dry ports are managed and operated by the Burkina Faso Chamber of Commerce, who manage and operate transport-related facilities, such as dry ports and warehouses. Container depots located in these dry ports are operated under concession agreements between local

companies

These ports function as customs clearance points for cargo transported to these cities or transit hubs for cargo transported to other areas of the country or third countries. If the cargo is to be transited to any other area or country, the port in Ouagadougou or Bobo Dioulasso becomes the starting point and the cargo will be transported to the relevant border customs office under the escort of customs officers. These dry ports are managed and operated by the CCI-BF in Burkina Faso. It is characteristic that the CCI-BF acts as the manager and operator of transport-related facilities such as terminals and warehouses. Container depots located in these inland ports are operated under concession agreements between local companies and leading freight forwarders.

The Study Team found that in one case, a transport operator was waiting for more than one week in the dry port to complete customs clearance procedure because the consignee did not have enough money to clear the cargoes.

(5) Bottleneck Factors for Transit Cargo Transport

The Study Team identified the following major bottleneck factors through the fact-finding survey in Togo and Burkina Faso.

a) Issues Related to Infrastructure

- Low level of maintenance at Lomé Port
- Deteriorated road condition on RN1 in Togo

b) Issues Related to Vehicles

- Aged freight vehicles and insufficient maintenance
- Many broken-down vehicles, which occupy the carriageway
- Many overloaded and oversized vehicles

c) Issues Related to Transit Cargo Transport Systems

- Complicated and inefficient customs clearance processes, which involve many parties
- Inappropriate and inexperienced customs brokerages, who prepare customs clearance documents
- Customs clearance documents forms and customs data systems are not interchangeable between Togo and Burkina Faso
- Customs clearance documents are not well maintained
- Transport operators are often requested to pay bribes at the port, the border and checkpoints in order to pass these points without delay or cargo inspection

Of these issues, a) issues related to infrastructures are caused by shortage of funds, while b) issues related to vehicles and c) issues related to transit cargo transport systems are key problems. In the case of Burkina Faso, because the income and corporate tax systems are not well established, import taxes and other levies on import/export cargoes are a stable source of income. Also, an increase of import/export cargoes can generate more job opportunities and higher income for private companies.

In conclusion, the transit cargo transport systems in Togo and Burkina Faso are still not efficient and must be improved as a manner of international logistics standard.

CHAPTER 4

OUTLINE OF EXISTING DEVELOPMENT PROJECTS/PLANS

Chapter 4 Outline of Existing Development Projects/Plans

4.1 Road Rehabilitation and Transport Facilitation on the Lomé – Ouagadogou CU9 Corridor

The Lomé – Cinkassé section of the Lomé – Ouagadougou Corridor CU9 is part of a very important international corridor. The road provides access to Lomé Port not only for internal commerce and distribution in Togo as it is the only road that traverses all five regions of the country, but also for the landlocked countries of Burkina Faso, Mali and Niger, and also for the northern part of Bénin.

The road, if kept in a reasonable condition, can therefore assist the socio-economic development of Togo and encourage regional trade and integration. It is important that this road be given as high priority in the MPW's investment programme as possible. Accordingly, the Government has continued to invest in rehabilitating the road after a period of inadequate attention due to various political and economic challenges.

A list of sections of the Lomé – Cinkanssé road which are currently undergoing rehabilitation or reconstruction, or for which funds for rehabilitation have been secured, is provided in Table 4-1. Juxtaposing this list of projects with the results of the condition survey of the Lomé – Cinkanssé road can reveal which sections require attention within the Master Plan development horizon. These sections could then be prioritised for attention using established economic analysis.

To improve the efficiency of the Lomé – Cinkanssé road, it would be prudent to improve other sections of roads within the Lomé – Cinkanssé corridor. These roads would not only serve as viable alternatives to RN1 but also provide easy and effective access to RN1. Some of these links are already receiving attention; these sections which have recently received attention or are currently receiving attention are shown in Table 4-2. Locations of these projects are shown in Figures 4-1 (by work status) and 4-2 (by financier(s)).

Table 4-1 Ongoing Projects and Sections on the Lomé – Cinkanssé Road Receiving Attention

Section	Route No.	Length (km)	Financier(s)	Remarks
1. Lomé (Golf Club) – Togblékopé	RN1	5.0	BOAD, GoT	Works in progress
2. Togblékopé – Davié	RN1	13.5	EXIM Bank	In preparation
3. Atakpamé – Blitta	RN1	102	AfDB, GoT	In preparation
4. Blitta – Aouda	RN1	48	BOAD, BIDC*, GoT	Works in progress
5. Alédjo Bypass 1 & 2	RN1	17.81	EXIM Bank, BOAD	Works in progress
6. Defalé Bypass	RN1	12.19	EXIM Bank, BOAD	Works in progress
7. Tandjouaré – Cinkanssé	RN1	65.5	GoT	Works in progress
8. Lomé – Cinkassé	RN1	689	WAEMU	Study for dualisation in progress

Note: * BIDC - Bank for Investment and Development of ECOWAS (*Banque d'Investissement et de Développement de la CEDEAO*)
Source: DGPW, MPW

Table 4-2 Sections of Road Expected to Impact Efficiency of Lomé – Cinkanssé Road Receiving Attention

Section	Route No.	Length (km)	Financier	Remarks
9. Aflao – Port Roundabout	RN2	9.3	BOAD, IDB*, BIDC	Completed (2010)
10. Port Roundabout – Avépozo	RN2	10.2	AfDB	Works in progress
11. Avépozo – Aného	RN2	28.5	EU (Study) AfDB (Project)	Completed In preparation
12. Aného – Sanvee-Condji	RN2	6	WB	Works in progress
13. Greater Ring Road Lomé Phase 1	-	13	EXIM Bank	Works in progress
14. Greater Ring Road Lomé Phase 2	-	19	EXIM Bank	To commence in 2013
15. Noépé OSBP	-	-	EU, BIDC	Works in progress
16. Sokodé – Bassar	RN17	57	-	Study completed (BOAD)
17. Bassar – Kabou	RN17	23	GoT	Completed (2012)
18. Kabou – Guérin Kouka	RN17	37	Kuwait Fund	Works in progress
19. Guérin Kouka – Katchamba	RN17	26	IDB, GoT	Works in progress
20. Katchamba – Sadori	RN17	58	-	Study in progress (GoT)
21. Aného – Tsévié	RN4	85	GoT	Study completed in 2010 To commence in 2013
22. Tsévié – Zolo	RN7/RN42	40	GoT	To commence in 2014
23. Notsé – Tohoun	RN6	57	GoT	To commence in 2014
24. Notsé – Kpalimé	RN9	68	GoT	To commence in 2014
25. Kpalimé – Adagali	RN5	22	GoT	Completed (2011)
26. Adagali – Kpélégovié	RN5	12	BOAD	Works in progress
27. Borgou – Mandouri	RN24	48	BOAD, GoT	To commence in 2013
28. Dapaong – Borgou	RN24/-	49	BOAD, GoT	Works in progress
29. Dapaong – Ponio	RN28	38	BOAD, GoT	Completed (2012)

Note: * IDB - Islamic Development Bank
Source: DGPW, MPW

4.2 Master Plan for Development of the Autonomous Port of Lomé

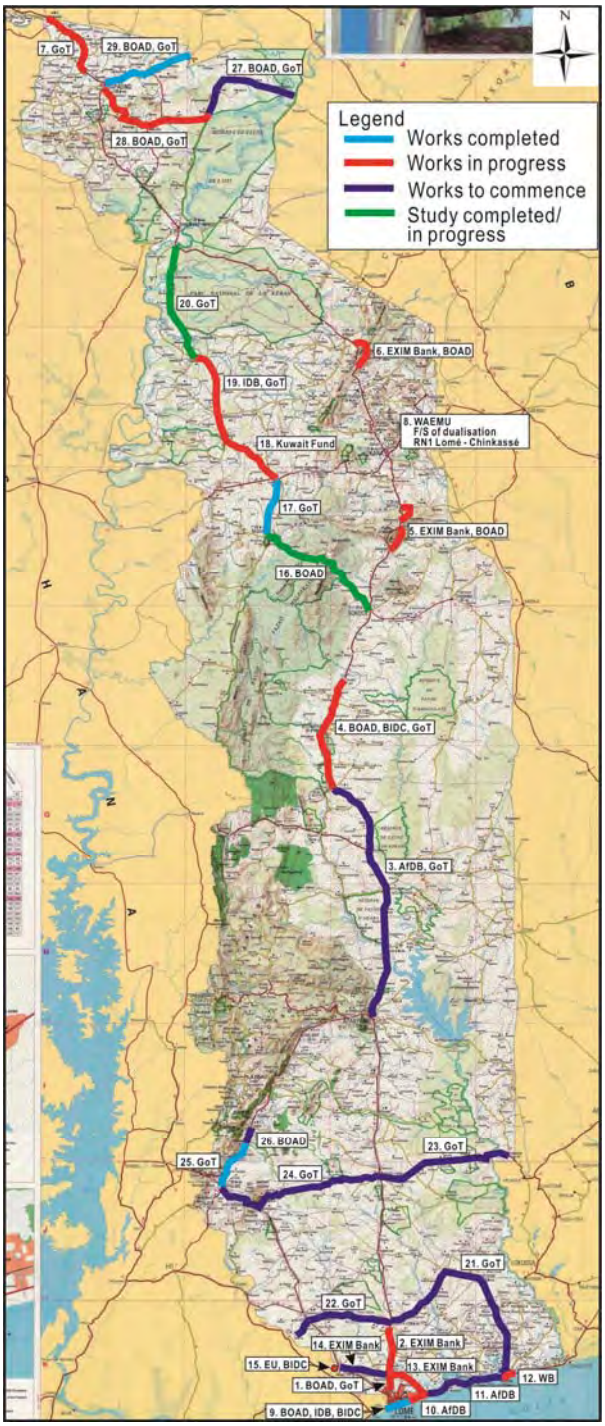
The GoT prepared the Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé (Port Master Plan, *Etude d'Actualisation approfondie du Plan Directeur du Port Autonome de Lomé)* in August 2011. The Port Master Plan includes the following four major components:

- Establish the New Lomé Container Terminal
- Establish the Third Quay (including dredging and extension of the existing container wharf)
- Extend the Ore Quay
- Introduce the "The Single Window System" to speed up the work flow of port and customs procedures

4.2.1 The New Quay-3 Project in Lomé Port

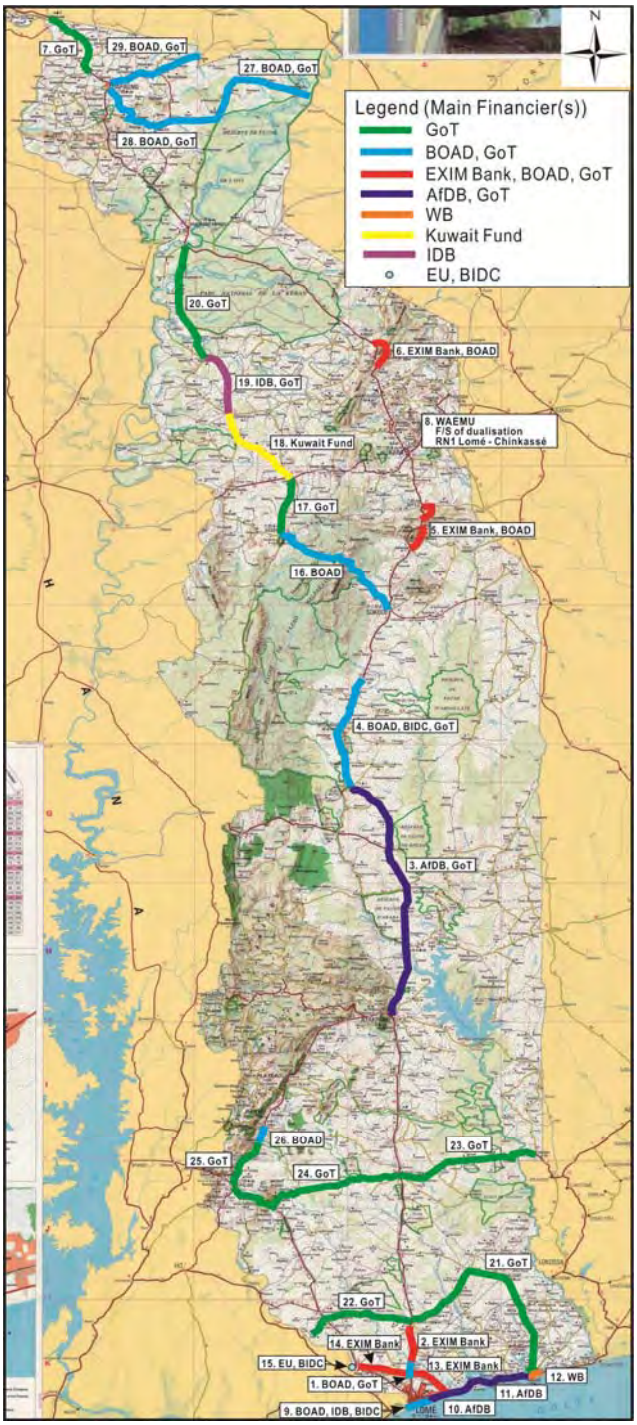
This project is a Build-Operate-Transfer (BOT) project by Bollore African Logistics Company. The project funds are the net worth and a group of financial institutions with the AfDB as one of the main co-financiers.

Bollore African Logistics awarded the contract to plan and build the project to Vinci. At present, three subsidiaries of Vinci are carrying out the project.



Source: Study Team

Figure 4-1 Locations of Projects by Work Status

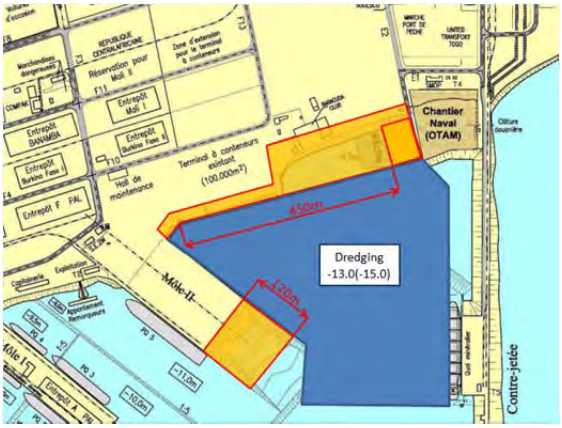


Source: Study Team

Figure 4-2 Locations of Projects by Financier(s)

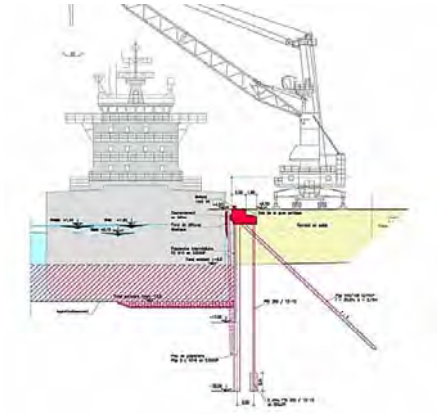
The contents of the project are as follows:

- Establish Quay No. 3: L = 450 m,
- Dredging work : -15 m, 1.9 million m^3
- Extension quay of wharf No. 2: L = 120 m
- Construction term: 18 months from May 2012.
- Type of structure: Combi-Wall method (steel pipes and steel sheet pile)



Source: Final Report, Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé, August 2011

Figure 4-3 Plan of the Quay 3 Project



Source: Final Report, Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé, August 2011

Figure 4-4 Image of Quay 3 Sections

The handling volume of trading containers of Wharf 2 was 254,000 TEU in 2011, including empty containers. After the completion of Quay 3, it will be possible to handle 1 million TEU per year. At present, the capacity of container cargo ships alongside Wharf 2 is 10,000 to 20,000 DWT; after completion of the third quay, it will be possible to accept larger ships of up to 100,000 DWT with a capacity of about 7,500 TEU. The extended Wharf 2 will be able to accept container cargo ships of up to 60,000 DWT, with a capacity of about 4,500 TEU. Thus, the port's capacity to accept container cargo will increase, as well as vessels carrying more cargo at one time, thus reducing transportation costs by vessels, which will be good for Togo and the landlocked countries. Table 4-3 shows the standard principal dimensions of container cargo ships.

Table 4-3 Standard Principal Dimensions of Container Cargo Ships

Dead Weight Tonnage (DWT)	Length Overall L m	Molded Breath B m	Full Load Draft d m	Containers Capacity TEU
10,000	139	22.0	7.9	500 – 890
20,000	177	27.1	9.9	1,300 – 1,600
40,000	241	32.3	12.1	2,800 – 3,200
60,000	294	35.9	13.4	4,300 – 4,700
100,000	350	42.8	14.7	6,300 – 8,000
110,000	366	42.8	15	9,000 – 10,000
156,907	397.6	56.0	16.5	11,000

Source : Technical Standards and Commentaries for Port and Harbour Facilities in Japan

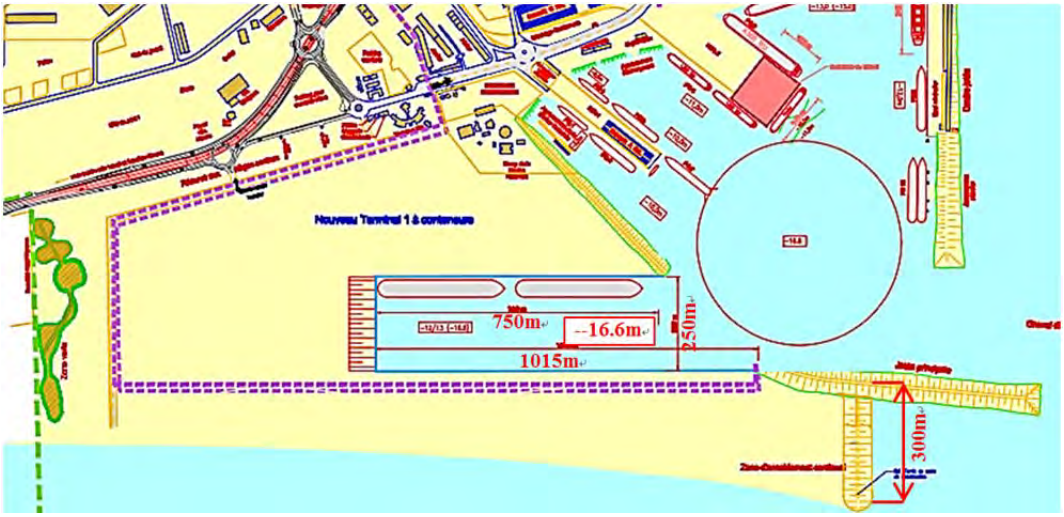
4.2.2 Lomé Container Terminal Project

This project is a private project. In December 2008, the port operator LCT signed a 35-year concession agreement, with a 10-year extension option, with the Government of Togo to build and operate a container terminal. The initial capacity is 900,000 TEUs and the final capacity is 1,500,000 TEUs. The total cost of the project is EUR 350 million, 27.6% of which is the net worth and 72.4% of which is senior debt. This budget will finance the civil engineering works, as well as the equipment required to obtain the terminal's initial capacity of 900,000 TEUs. The additional civil works and equipment to obtain the final capacity of 1.5 million TEUs will be financed by operating cash flow.

The aim of LCT is to make this container terminal a hub port for transhipment among all ports of West Africa (see Figures 4-5 to 4-7).

Source: Final Report, Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé, August 2011

Figure 4-5 Present Circumstances of the Project Site

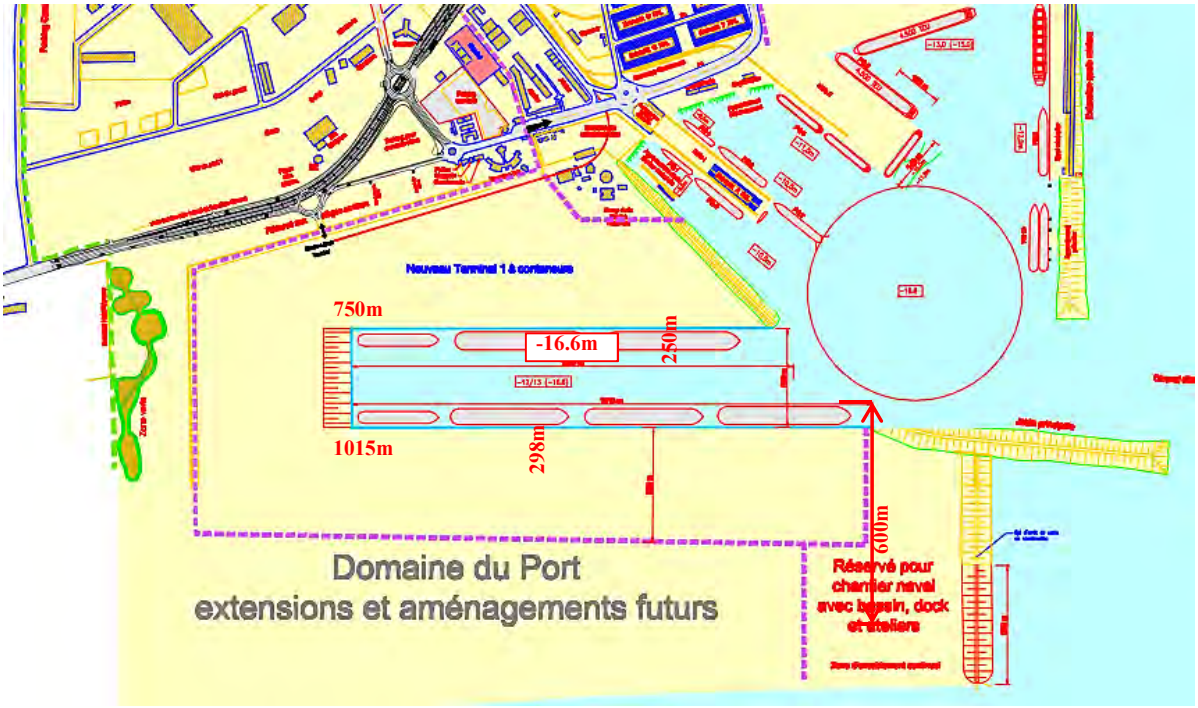


Source: Final Report, Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé, August 2011

Figure 4-6 The First Stage (Capacity: 900,000 TEU/year)

Project outline:

- Length of North quay: 750 m
- Length of South quay:1,015 m
- Basin area: (750+1,015)×250 / 2＝220,625 m^2
- Depth: -16.6 m
- The south container yard area will be created by piling up drifted sand and retaining it by building a rubble mound seawall. The sand pile will take 5 years for the area of the initial stage.
- 16.6 m over-Panamax size container cargo ships will be able to moor at this terminal.
- Main co-financiers: IFC (International Finance Corporation, arranger), AfDB, CDB (China Development Bank), FMO (Netherlands Development Finance Company) and DGE (German Investment and Development Corporation)



Source: Final Report, Study on Detailed Actualisation of Master Plan of the Autonomous Port of Lomé, August 2011

Figure 4-7 Final Stage (Capacity: 1,500,000 TEU/year)

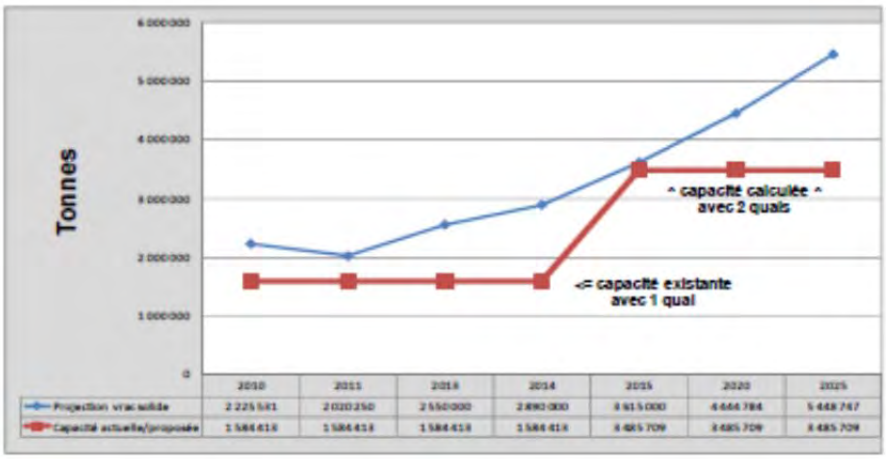
- Lome Port is a free port and the main function at this terminal is transhipment, which means that there are no import duties and the port procedures are simple. The smooth movement of containers will be made possible by centralised control and management of vessel assignment.
- This container terminal should serve not only as a transhipment port but also as an import and export port for Togo and the landlocked countries. Approximately 15 to 20% of all container handling volume at this terminal will be trading for Togo and landlocked countries. Therefore, the trading capacity of Lomé Port (import/export) will be increased.

Since the LCT will mainly be used by the Mediterranean Shipping Company S.A. (MSC) as transhipment for their operation as a hub port in the West Africa sub-region, the direct main liner services to/from Europe are expected to drastically increase. As a result, container services to Togo will also increase.

4.2.3 Extension of Ore Berth

According to the Port Master Plan, the demand for bulk cargoes in 2025 is projected to be 4.5 million tonnes. In contrast, the capacity of the existing mineral berth of 1.5 million tonnes per year was insufficient to cope with the increasing demand for dry bulk cargoes even in 2010. Hence, construction of a new berth to the north of the existing mineral berth was planned. However, even with these two berths, the demand for dry bulk cargoes is expected to exceed the capacity in 2015, as shown in Figure 4-8.

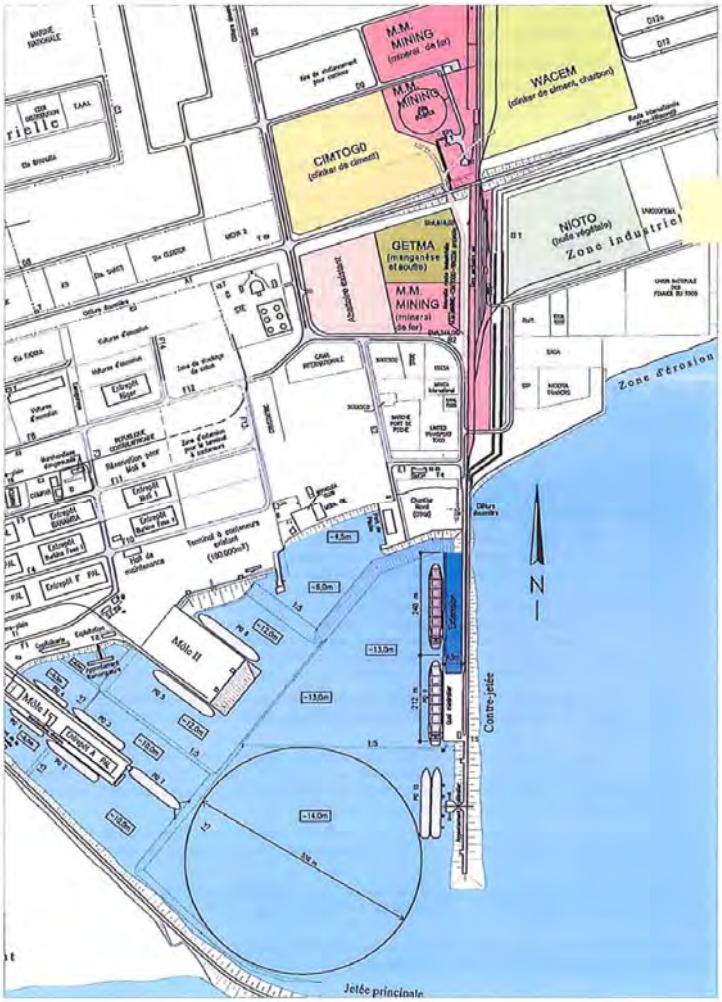
In order to solve the insufficient capacity of the mineral quay, the Port Master Plan Study recommended to extend the existing mineral berth to a handling capacity of about 3.5 million tonnes per year to the north side because there is an oil jetty to the south of it. Figures 4-9 and 4-10 show the mineral berth extension plan.



Source: Final Report, Study on Detailed Actualisation of the Master Plan for the Autonomous Port of Lomé, August 2011

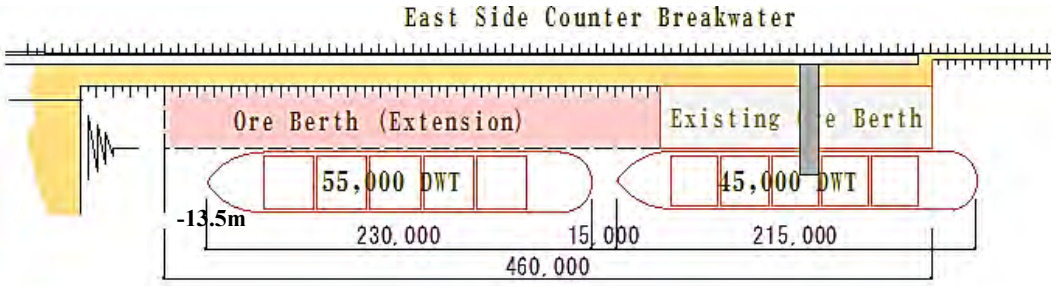
Figure 4-8 Projected Demand and Capacity of Mineral Berths

Even under this plan, however, the total capacity of the mineral berths will be insufficient after 2015, yet the Port Master Plan contains no measure.



Source: Final Report, Study on Detailed Actualisation of the Master Plan for the Autonomous Port of Lomé, August 2011

Figure 4-9 General Mineral Berth Extension Plan



Source: Final Report, Study on Detailed Actualisation of the Master Plan for the Autonomous Port of Lomé, August 2011

Figure 4-10 Details of Mineral Berth Extension Plan

CHAPTER 5

FUTURE TRAFFIC DEMAND FORECAST

Chapter 5 Future Traffic Demand Forecast

5.1 Analysis of Present Traffic Condition

In order to understand the present traffic conditions in Togo, the following traffic surveys have been carried out.

5.1.1 Contents of Traffic Surveys

(1) Traffic Count Survey

The objective of the traffic count survey is to understand the volume of traffic that passes through each survey point by type of vehicle. The survey was carried out as follows.

a) Survey Point

The 17 survey points shown in Figure 5-1 were used.

b) Survey Date and Duration

The survey was carried out for 24 hours on two weekdays, on the dates shown in Table 5-1.

Table 5-1 Dates of Traffic Survey

Survey Point	Survey Date
No. 1 - 6	20th (Thu) and 21st (Fri) September
No. 7 - 11	24th (Mon) and 25th (Tue) September
No. 12 - 17	1st (Mon) and 2nd (Tue) October

Source: Study Team

c) Vehicle Type Classification

The classification of vehicle types counted in the survey is shown in Appendix 3.

Survey Point No. 1

Survey Point No. 2

Photos by the Study Team, September 2012

Photo 5-1 Condition of Traffic Count Survey

(2) Roadside Origin-Destination Interview Survey

The objective of the roadside O/D interview survey is to understand the characteristics of traffic flow related to passenger trips and freight movements passing through the survey point. The survey was carried out as follows.

a) Survey Point

The same survey points as in the traffic count survey were used, except Point No. 1.

b) Survey Date and Duration

The survey was carried out for 16 hours (6:00-22:00) on the same dates as the traffic count survey.

Point No.	Location	Road No.
1	In front of Sahel Terminal	RN1
2	Kpémé	RN2
3	Tsévié	RN1
4	Sanguéra	RN5
5	Tsévié	RN4
6	Gadjagan	RN5
7	Atakpamé	RN1
8	Atakpamé	RN5
9	Anié	RN1
10	Sokodé -Tchamba	RN14
11	Sokodé - Bassar	RN17
12	Kara - Kabou	RN19
13	Border of Togo - Bénin	RN16
14	Niamtougou - Kandé	RN1
15	Katchamba	RN17
16	Kandé - Sansanné Mango	RN1
17	Dapaong	RN1

Source: Study Team

Figure 5-1 Traffic Count Survey Point

c) Interview Item

The interview items were designed not only to forecast future traffic demand but also to understand the present conditions of freight vehicle trips, and were as follows:

- Survey Date and Time
- Vehicle Registration Country
- Vehicle Type
- Origin of Trip
- Destination of Trip
- Driver's Residence
- Trip purpose
- Number of Passengers

The following items were surveyed for freight vehicles:

- Type of Goods
- Actual Load (tonne)
- Maximum load capacity (tonne)
- Year of vehicle manufacture
- Required travel days from origin to destination
- Accommodation city during the trip

Survey Point No. 3

Survey Point No. 9

Photos by the Study Team, September 2012

Photos 5-2 Condition of Roadside O/D Interview Survey

(3) Broken-Down Freight Vehicle Survey

Since many broken-down freight vehicles can be found along the roadside of RN1, a survey of broken-down freight vehicles was carried out to understand and analyse the present conditions and causes of these vehicles. The survey was carried out as follows.

a) Survey Method

The drivers were interviewed as follows when the surveyor found broken-down freight vehicles on the roadside while driving on one section.

b) Survey Section

The survey section was between Tsévié and Kara.

c) Survey Date

The survey was carried out on 25th September.

d) Interview Items

The interview items in the survey were as follows:

- Survey Date and Time
- Survey Location
- Vehicle Registration Country
- Vehicle Type
- Origin of Trip
- Destination of Trip
- Trip purpose
- Type of Goods
- Actual Load (ton)
- Maximum load capacity (ton)
- Year of vehicle manufacture
- Broken-down parts
- Cause of breakage

Photos by the Study Team, September 2012

Photos 5-3 Condition of Broken-down Freight Vehicle Survey

(4) Axle Load Survey

a) Objective of Axle Load survey

The objective of the axle load survey was to identify the actual situation of axle loads of freight vehicles transporting goods from Lomé Port to their destination. The total weight of the vehicle was calculated based on the axle load.

b) Survey Point

The axle load survey was conducted at the same point as Point No. 7 of the traffic survey at Atakpamé.

c) Survey Date

The survey was conducted on 25 (Tuesday) and 26 (Wednesday) September 2012.

d) Survey Item

The actual load of each axle of freight vehicles was measured by using a portable axle load measurement device, and the drivers were interviewed about the following:

- Origin of trip

- Destination of trip
- Type of cargo

Photos by the Study Team, September 2012.

Photos 5-4 Conditions of Axle Load Survey

5.1.2 Zoning

In order to analyse the present traffic distribution and forecast the future distribution, O/D zones are determined as shown in Table 5-2.

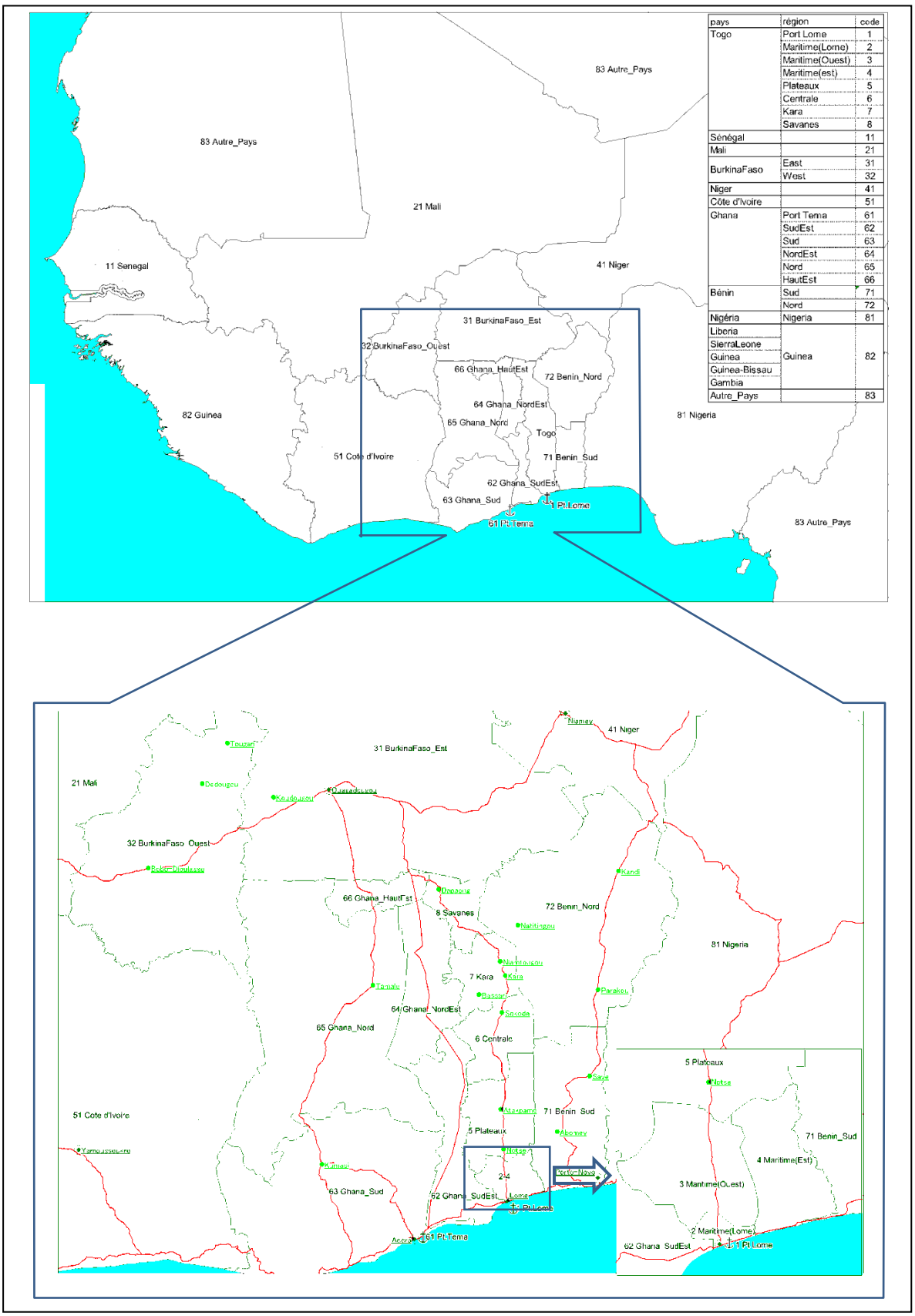
The zones of Lomé are basically divided by region. However, since Lomé Port is a very significant facility for domestic and international logistics in Togo, and as the Lomé City Area attracts and generates much traffic, these areas are divided individually.

The neighbouring countries of Ghana, Benin and Burkina Faso are divided by general land area. However, Tema Port is divided individually, since the future traffic demand forecast for the "Eastern Corridor Development Project in Ghana" will be used in this project, which is carried out by JICA, and it is considered that the Eastern Corridor in Ghana will compete with TLC in the future.

Table 5-2 O/D Zone

Code No.	Country	Zone Name	Code No.	Country	Zone Name
1	Togo	Lomé Port	61	Ghana	Tema Port
2		Maritime Region (Lomé)	62		Ghana (Southeast)
3		Maritime Region (West)	63		Ghana (South)
4		Maritime Region (East)	64		Ghana (Northeast)
5		Plateaux Region	65		Ghana (North)
6		Centrale Region	66		Ghana (High East)
7		Kara Region	71	Bènin	Bènin (South)
8		Savanes Region	72		Bènin (North)
11	Sénégal	Sénégal	81	Nigéria	Nigéria
21	Mali	Mali	82	Liberia	Guinea
31	Burkina Faso	Burkina Faso (East)		Sierra Leone	
32		Burkina Faso (West)		Guinea	
41	Niger	Niger		Guinea-Bissau	
51	Côte d'Ivoire	Côte d'Ivoire		Gambia	
			83	Other Countries	Other Countries

Source: Study Team



pays	région	code
Togo	Port Lome	1
	Maritime(Lome)	2
	Maritime(Ouest)	3
	Maritime(est)	4
	Plateaux	5
	Centrale	6
	Kara	7
	Savanes	8
Sénégal		11
Mali		21
BurkinaFaso	East	31
	West	32
Niger		41
Côte d'Ivoire		51
Ghana	Port Tema	61
	SudEst	62
	Sud	63
	NordEst	64
	Nord	65
	HautEst	66
Bénin	Sud	71
	Nord	72
Nigéria	Nigeria	81
Liberia	Guinea	82
SierraLeone		
Guinea		
Guinea-Bissau		
Gambia		
Autre_Pays		83

Source: Study Team

Figure 5-2 O/D Zone Map

5.1.3 Results of Traffic Surveys

(1) Traffic Count Survey

Figure 5-3 shows the average daily traffic (ADT) and Figure 5-4 shows the ratio of each vehicle type at each survey point. The traffic volume and share ratio shown in both figures are the average for two weekdays. A summary of the results of the traffic count survey is as follows.

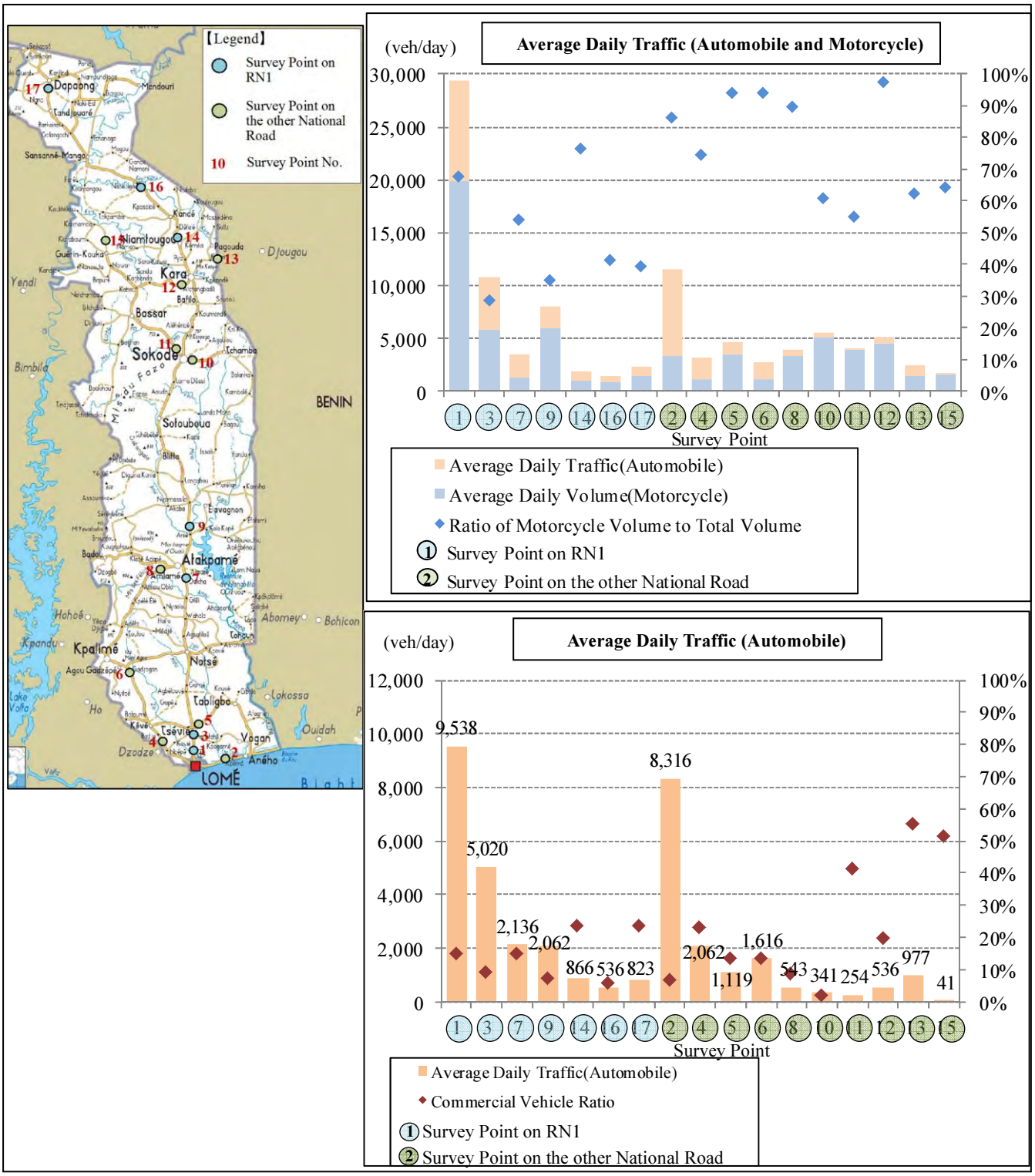
a) Average Daily Traffic

- Motorcycles account for more than 50% of the total volume at most survey points.
- ADT in the northern area tends to be lower than that in the southern area.
- The highest traffic volume, 9,538 vehicles per day (veh./day), was counted at survey point No. 1, which was located in front of Sahel Terminal on RN1.
- The second-highest traffic volume, 8,316 veh./day, was counted at survey point No. 2 on RN2 which links Lomé and Benin.
- The result at survey point No. 3 shows that approximately 5,000 veh./day passed the toll station in Tsévié.
- The traffic volume on RN1 tends to be higher than that on other roads. However, the traffic volume at survey point No. 13 located near the border between Togo and Benin was higher than that in the northern survey point on RN1.

b) Traffic Ratio by Vehicle Type

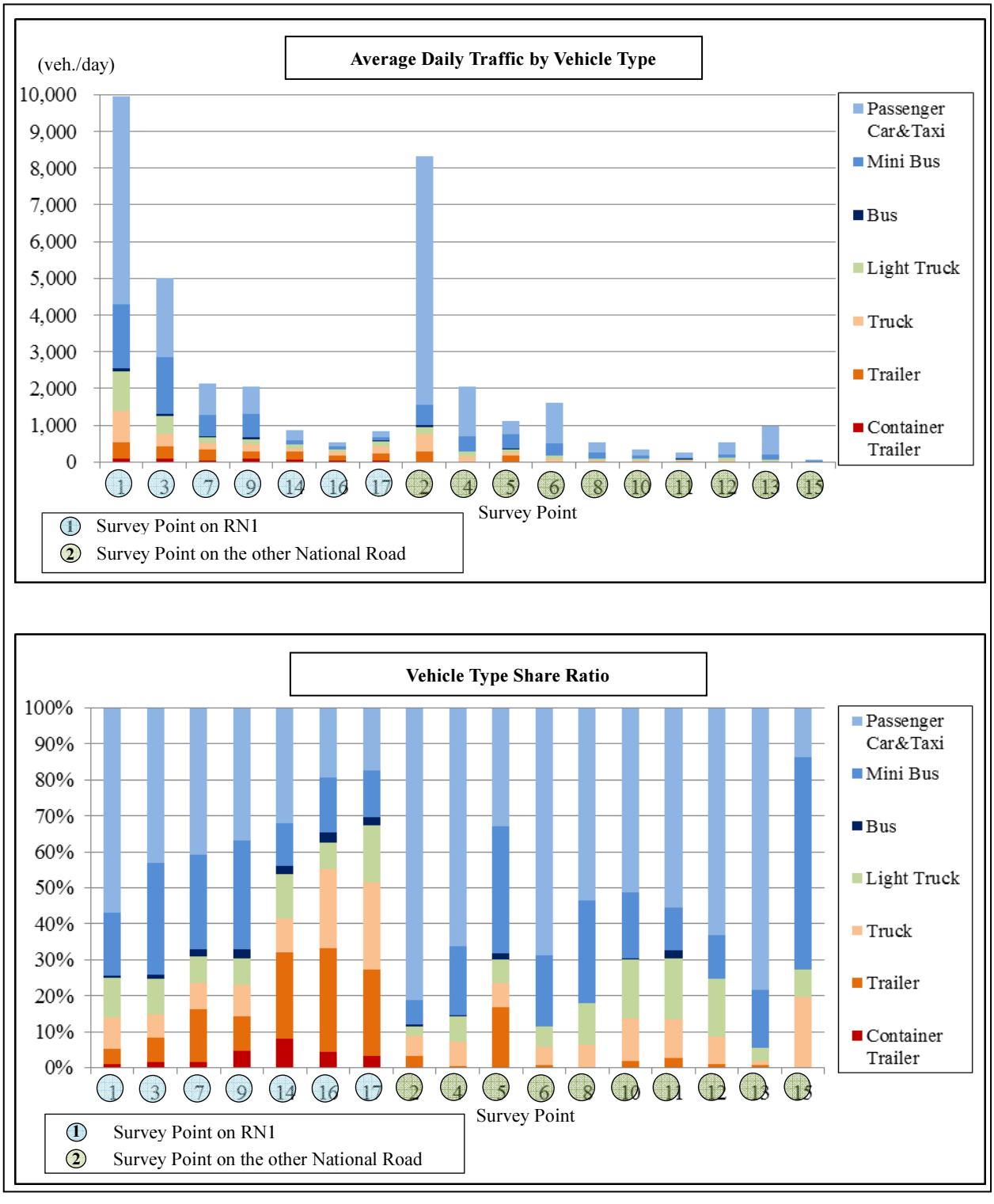
- The ratio of commercial vehicles in the northern area tends to be higher than that in the southern area.
- The ratio of commercial vehicles on RN1 was generally higher than that on other roads, particularly in the northern area at points No. 14, 16 and 17.
- There was a high ratio of passenger cars, taxis and mini buses at most survey points.
- Regarding public transport, the ratio of buses was very low; mainly mini buses are used.
- Regarding commercial vehicles, the ratio of container trailers was less than 10% at all survey points, lower than that of trucks and trailers.

(Unit: veh./day)



Note: Commercial vehicle ratio means the ratio of trucks, trailers and container trailers to all vehicles
Source: Study Team

Figure 5-3 Average Daily Traffic



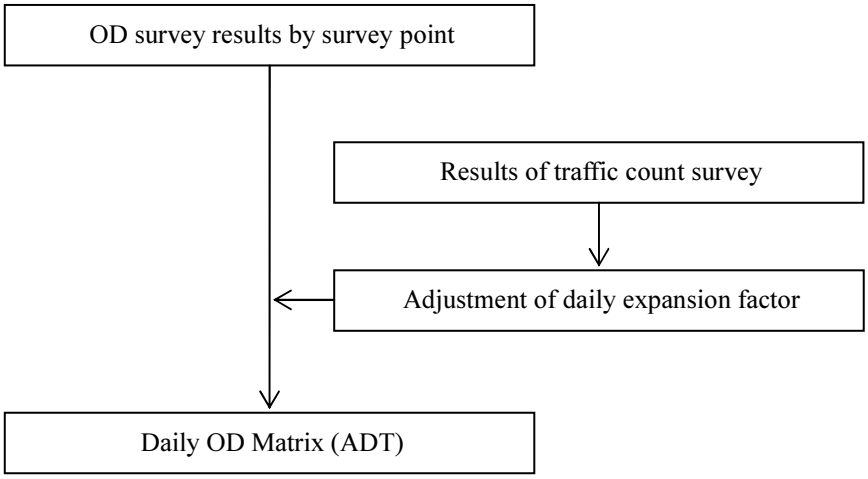
Source: Study Team

Figure 5-4 Traffic Ratio by Vehicle Type

(2) Results of Roadside O/D Interview Survey

a) Concept of Preparing the Daily O/D Matrix

As the data collected by the O/D survey is sampled data, the Study Team extrapolated the results using the daily traffic volume based on the results of the traffic count survey. Figure 5-5 shows the extrapolation procedure.



Source: Study Team

Figure 5-5 Steps for preparing the Daily O/D Matrix

b) Trip Distribution (desire line diagram)

Figures 5-6 shows the O/D distribution at survey point No. 3 on RN1, while the O/D distribution of other survey points are attached in Appendix 4. The O/D flows shown in the following figures are the average for two weekdays for all vehicle types. A summary of the results is as follows

1) RN1

- All highest flows at each southern survey point (No. 3, 7, and 9) were between Maritime (Lomé) and the zone to the north of the survey point.
- The highest flow at survey point No. 3 was 1,848 veh./day between Maritime (Lomé) and Maritime (West).
- All highest flows in any northern survey point (No. 14, 16, and 17) were between the north side and the south side where the survey point was located.
- The highest flow at survey point No. 16 was 121 veh./day between Kara and Savanes.
- The flows between Maritime (Lomé) and inland countries such as Mali, Burkina Faso, and Niger were not low at each southern survey point.
- The highest flow at survey point No. 3 was 184 vehicles per day between Maritime (Lomé) and Burkina Faso (East).

2) RN2

- The flow in the east-west direction was high at survey point No. 2.
- The highest flow was 3,767 veh./day between Maritime (Lomé) and Maritime (East).
- The flows related to Niger and Benin (north) were not low.

3) RN4

- The flows between Maritime(East) and nearby zones were high.
- The highest flow was 566 veh./day between Maritime (Lomé) and Maritime(East).
- The flow was 65 veh./day between Maritime(East) and Burkina Faso (East).

4) RN5

- The flows were approximately related with Plateaux at all survey points.
- The highest flow was 1,309 veh./day between Maritime (Lomé) and Plateaux at survey point No. 6.
- There was no flow related to the inland countries.

5) RN14

- The flows were approximately related with Plateaux at all survey points.
- The highest flow was 32 veh./day between Maritime (Lomé) and Centrale.
- In the flow related to the inland countries, the highest flow was less than 5 vehicles per day between Centrale and Niger.

6) RN16

- The flows were approximately related with Bénin (North) at all survey points.
- The highest flow was 934 veh./day between Kara and Benin (North).
- In the flow related to the inland countries, the highest flow was less than 5 vehicles per day between Maritime (Lomé) and Niger.

7) RN17

- There was almost no flow at survey point No. 15.
- The flows were approximately related with Kara at survey point No. 11.
- The highest flow was 124 veh./day between Centrale and Kara.

8) RN19

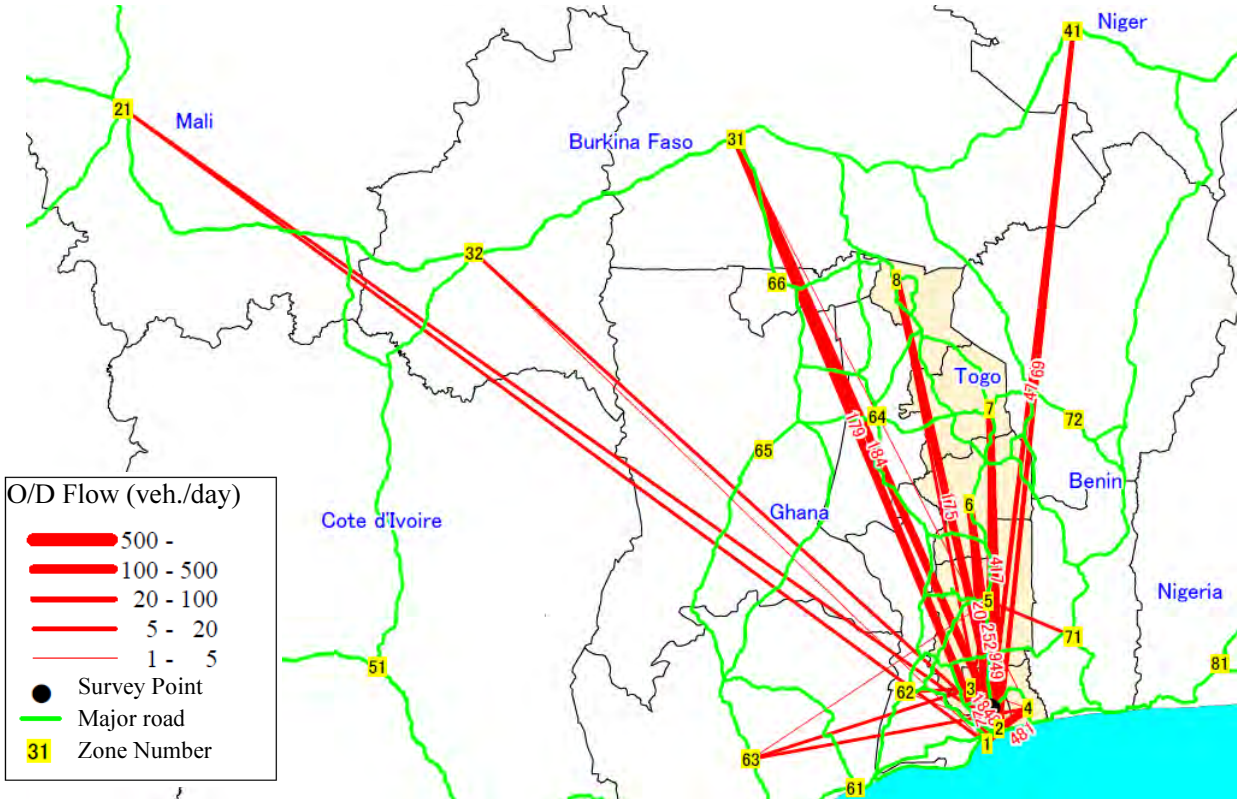
- The flows were approximately related with Kara.
- The highest flow was 10 veh./day between Kara and Burkina Faso (East).

c) Number of Passengers and Average Number of Passengers per Vehicle

Figure 5-7 shows the number of passengers and Figure 5-8 shows the average number of passengers per vehicle at each survey point. The numbers shown are the average for two weekdays for passenger cars & taxis and buses. A summary of the results is as follows.

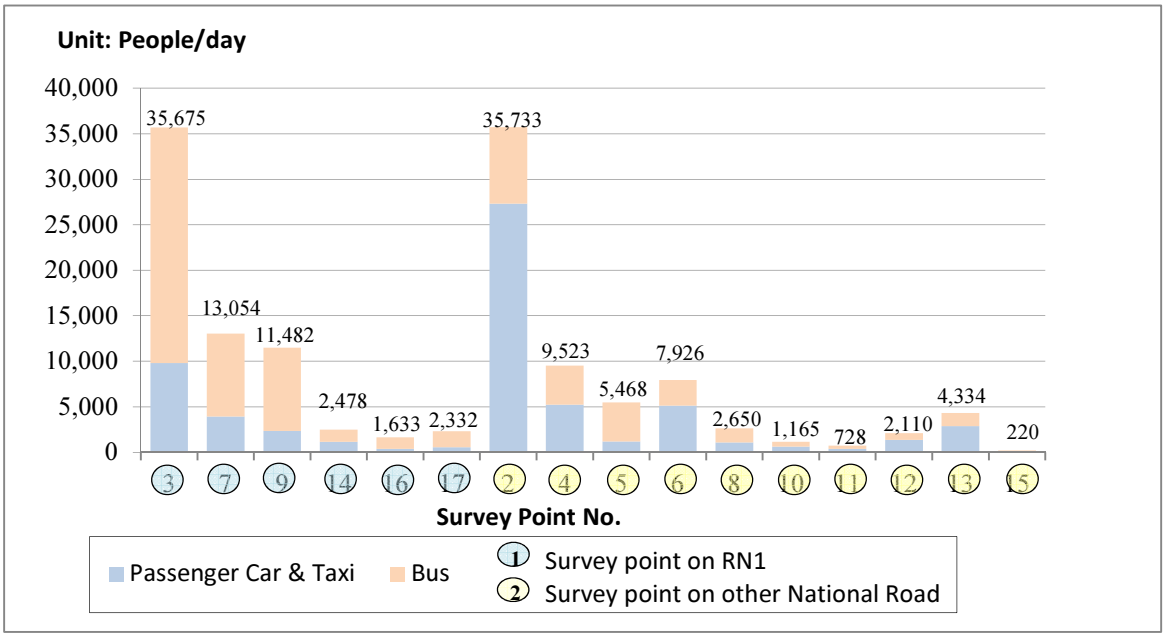
1) Number of passengers

- The number of passengers in the northern area tends to be lower than that in the southern area.
- The highest number of passengers was 35,733 people per day at survey point No. 2 which was located near Kpémé on RN2.
- The second-highest number of passengers was 35,675 people per day at survey point No. 3 which was located near Tsévié on RN1.
- As a whole, the ratio of buses was high on RN1, and the ratio of passenger cars & taxis was high on other national roads.



Note: O/D volumes of 20 or more are displayed.
Source: Study Team

Figure 5-6 O/D Distribution at Point No. 3 Tsévié (RN1)



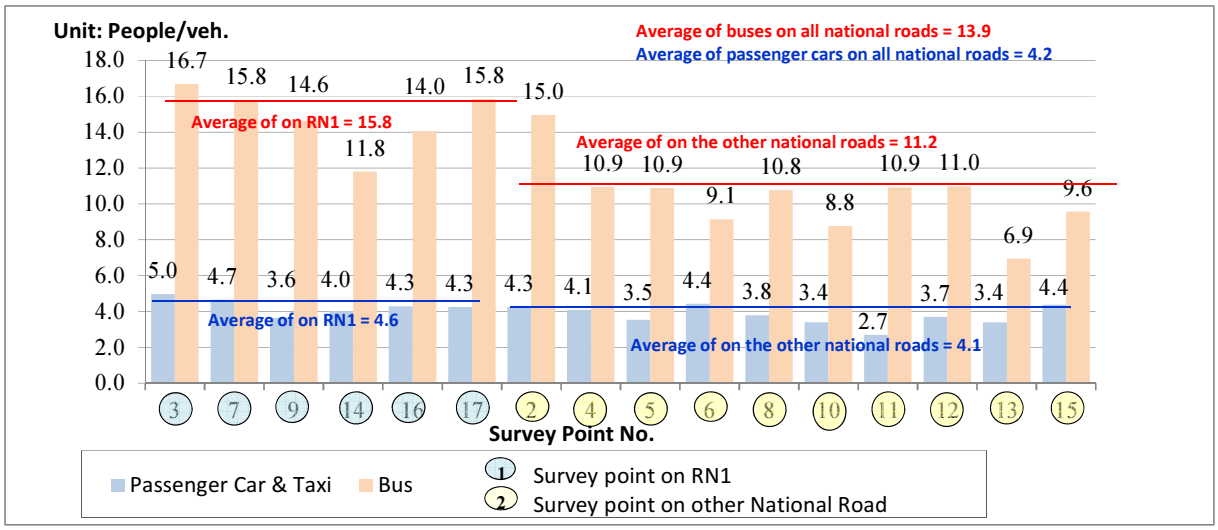
Source: Study Team

Figure 5-7 Number of Passengers

2) Average number of passengers per vehicle

- The average number of passengers of buses was higher on RN1 than other national roads.
- The results were similar for passenger cars & taxis.

- The highest average number of passengers of buses was 16.7 people per vehicle at survey point No. 2 which was located near Kpémé on RN2.
- The highest average number of passengers of passenger cars & taxis was 5.0 people per vehicle at survey point No. 2 which was located near Kpémé on RN2.
- The average number of passengers of buses on all national roads was 13.9 people per vehicle.
- The average number of passengers of passenger cars & taxis on all national roads was 4.2 people per vehicle.



Source: Study Team

Figure 5-8 Average Number of Passengers per Vehicle

d) Trip Purpose of Passenger Cars & Taxis and Buses

Figure 5-9 shows the trip purpose of passenger cars & taxis and buses at each survey point. The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

- As a whole, the ratio of business was high.
- "To Work" and "Private" were high at survey point No. 5.
- "Others" was high at survey points No. 7 and No. 6.

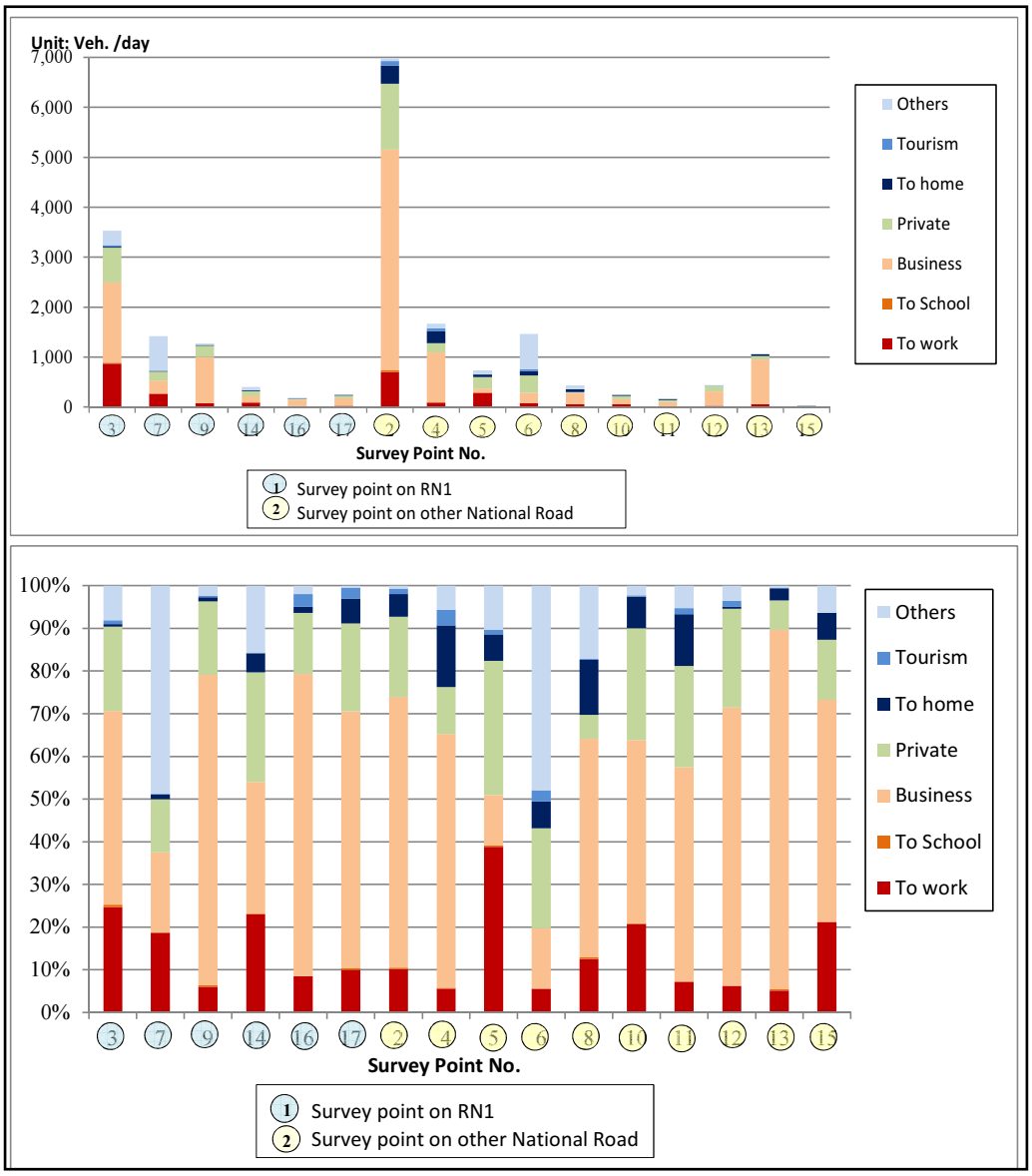
e) Transportation Freight Weight by Vehicle Type

Figure 5-10 shows the transportation freight weight by vehicle type at each survey point. The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

- The highest total weight volume was 15,983 tonnes per day at survey point No. 3 which was located near Tsévié on RN1.
- The second-highest total weight volume was 10,497 tonnes per day at survey point No. 3 which was located near Tsévié on RN1.
- As a whole, the weight volume of trailers was high.
- The tendency was especially strong at every survey point on RN1.

- The weight volume ratio of container trailers was approximately 10% to 20% at every survey point on RN1.



Source: Study Team

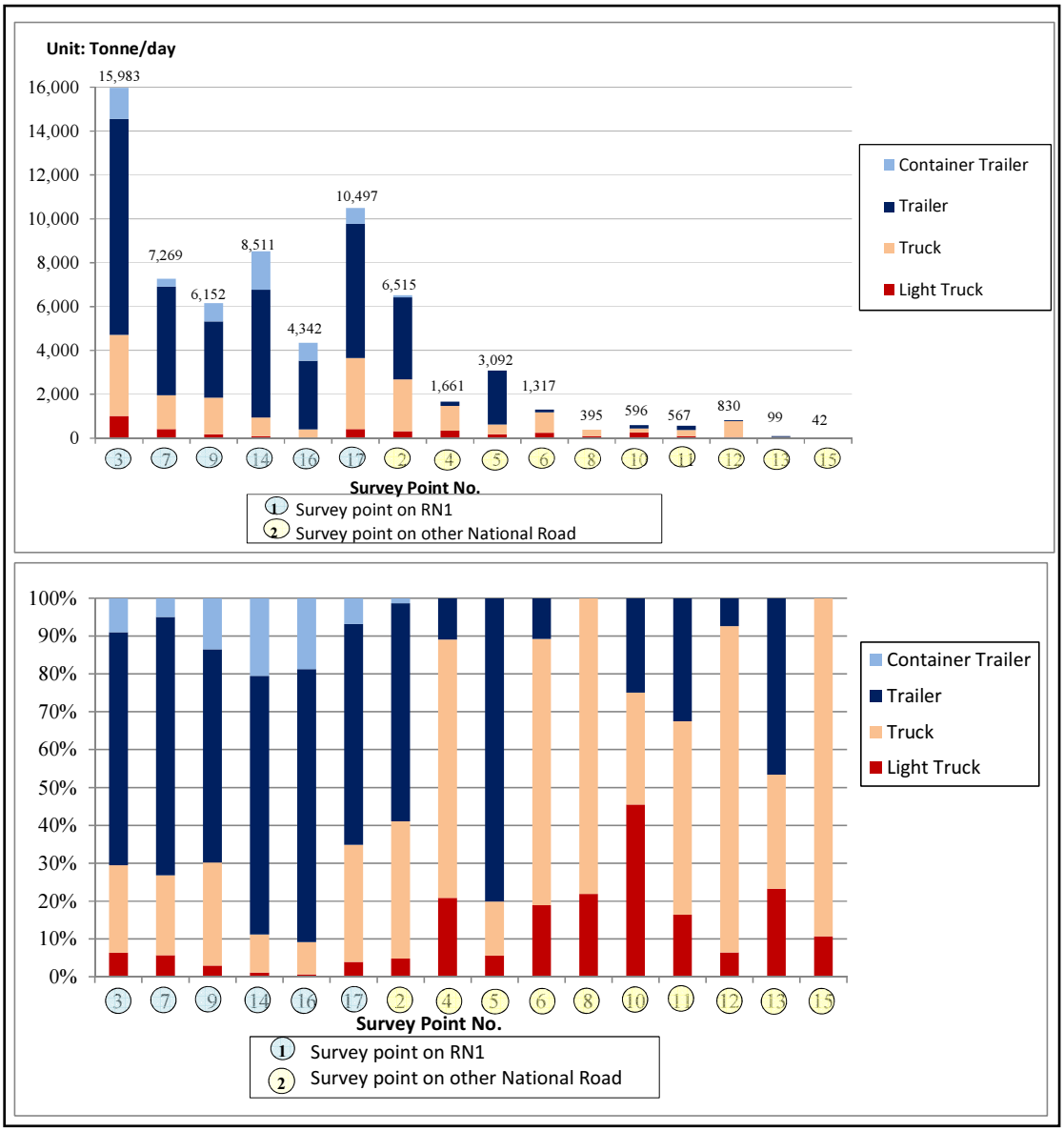
Figure 5-9 Trip Purpose of Passengers on Cars & Taxis and Buses

f) Transportation Freight Weight by Commodity

Figure 5-11 shows the transportation freight weight by commodity at each survey point. The volume shown in the figure is the average for two weekdays for freight vehicles.

A summary of the results is as follows:

- As a whole, the volume of other natural minerals was high.
- The volume ratio was the highest at survey point No. 5 on RN4 which links RN1 and the cement factory at Tagligbo.
- The volume ratio of mineral fuel and oil was high at survey point No. 13 located near the border between Togo and Bénin.



Source: Study Team

Figure 5-10 Transportation Freight Weight by Vehicle Type

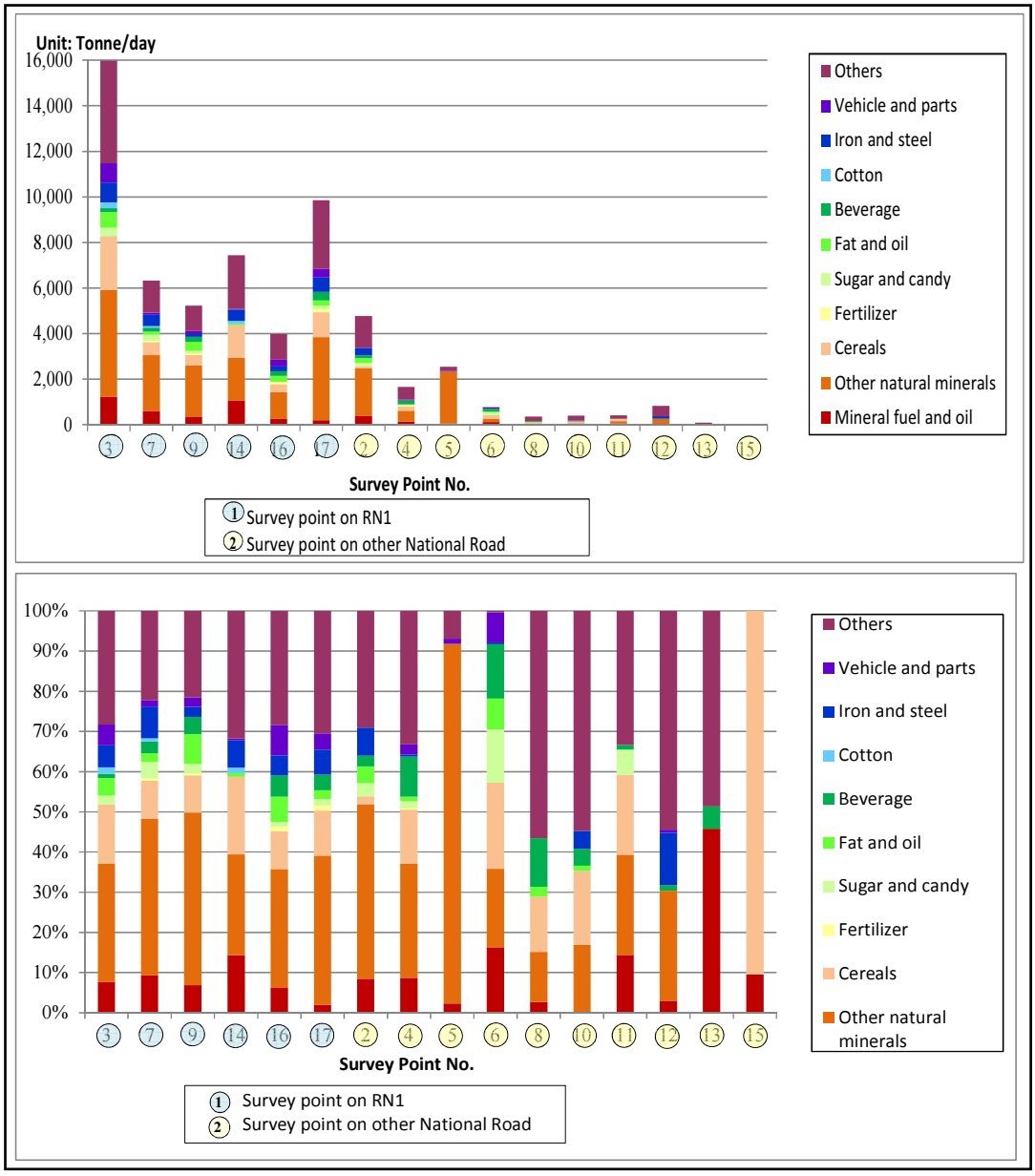
g) Empty Vehicle Ratio of Freight Vehicles

Figure 5-12 shows the empty vehicle ratio of freight vehicles at each survey point.

The figure is per direction and type of freight vehicles. The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

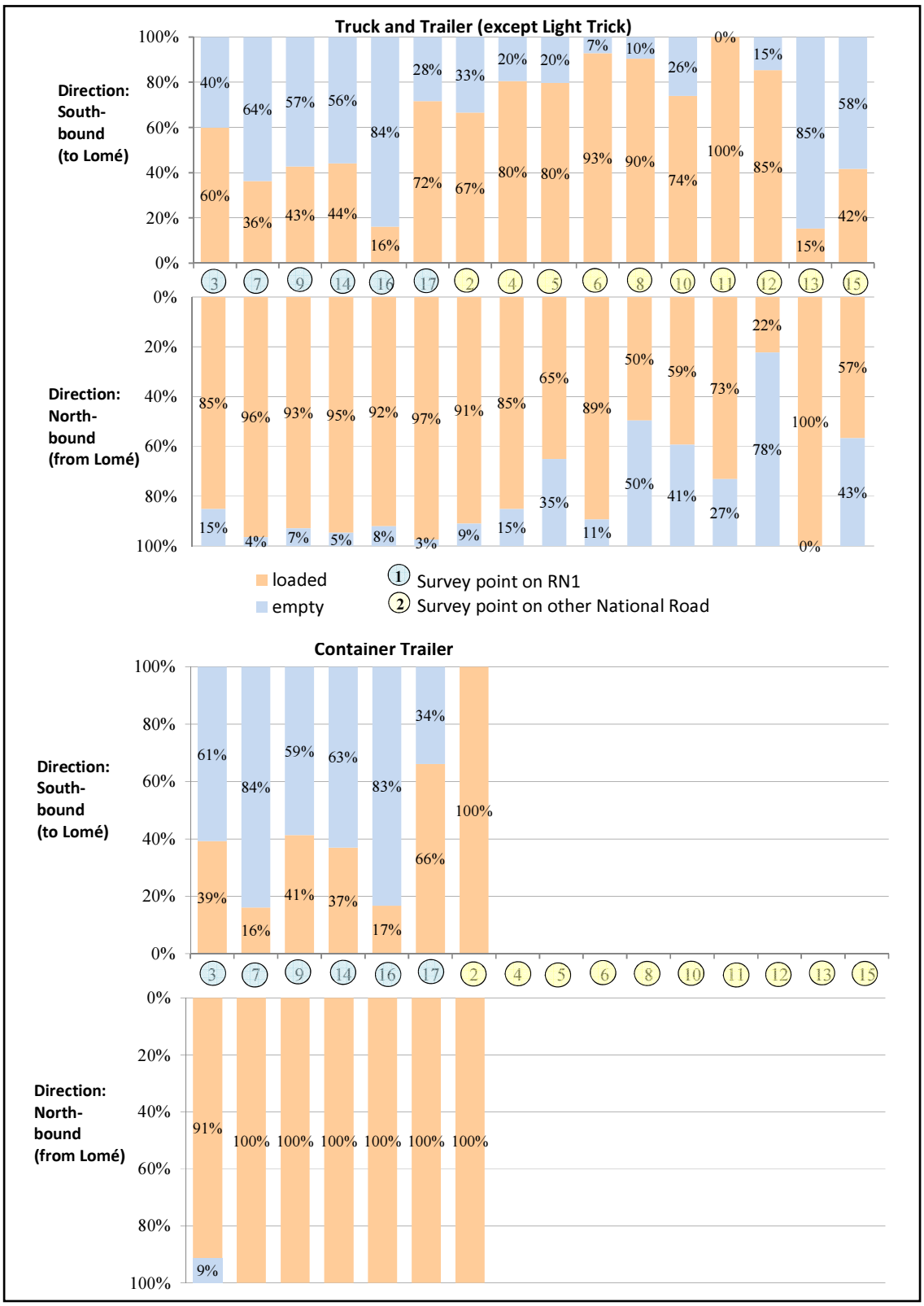
- The empty vehicle ratio in the up direction was higher than that in the down direction at all survey points on RN1.
- The highest empty vehicle ratio of trucks & trailers in the up direction on RN1 was 84% at survey point No. 16.



Source: Study Team

Figure 5-11 Transportation Freight Weight by Commodity

- The highest empty vehicle ratio of trucks & trailers in the down direction on RN1 was 15% at survey point No. 3.
- The empty vehicle ratio of container trailers in the down direction was 0% at all survey points except No. 3 on RN1.
- The empty vehicle ratio of container trailers in both directions was 0% at survey point No. 2 on RN2.
- The empty vehicle ratio of trucks & trailers in the down direction on RN19 was high, 78% at survey point No. 12.



Source: Study Team

Figure 5-12 Empty Vehicle Ratio of Freight Vehicles

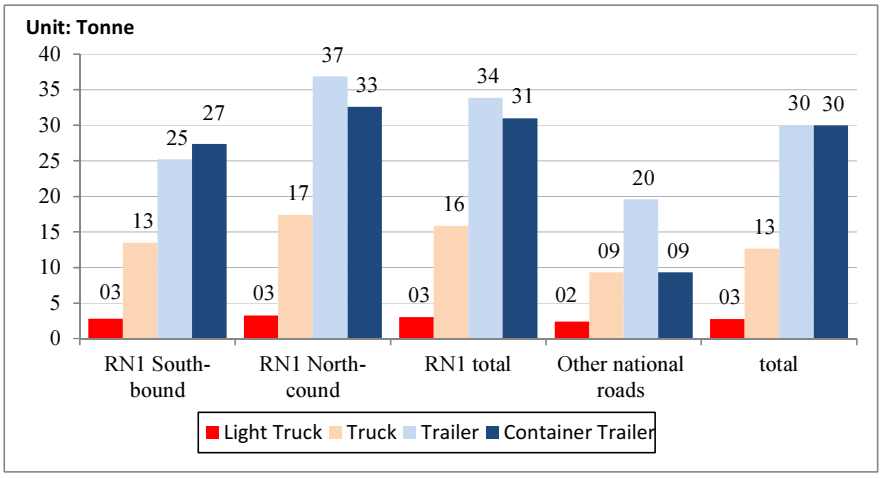
h) Average Freight Load per Loaded Freight Vehicle

Figure 5-13 shows the average freight load per loaded freight vehicle.

Figures are per type of freight vehicle. The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

- The total average freight load of light trucks, trucks, trailers, and container trailers was 2.7, 12.6, 30.1, and 30.0 tonnes per vehicle, respectively.
- The average freight load in the down direction on RN1 for every type of freight vehicle was higher than that in the up direction on RN1.
- The average freight load on other national roads for every type of freight vehicle was the lowest.



Source: Study Team

Figure 5-13 Average Freight Load per Loaded Freight Vehicle

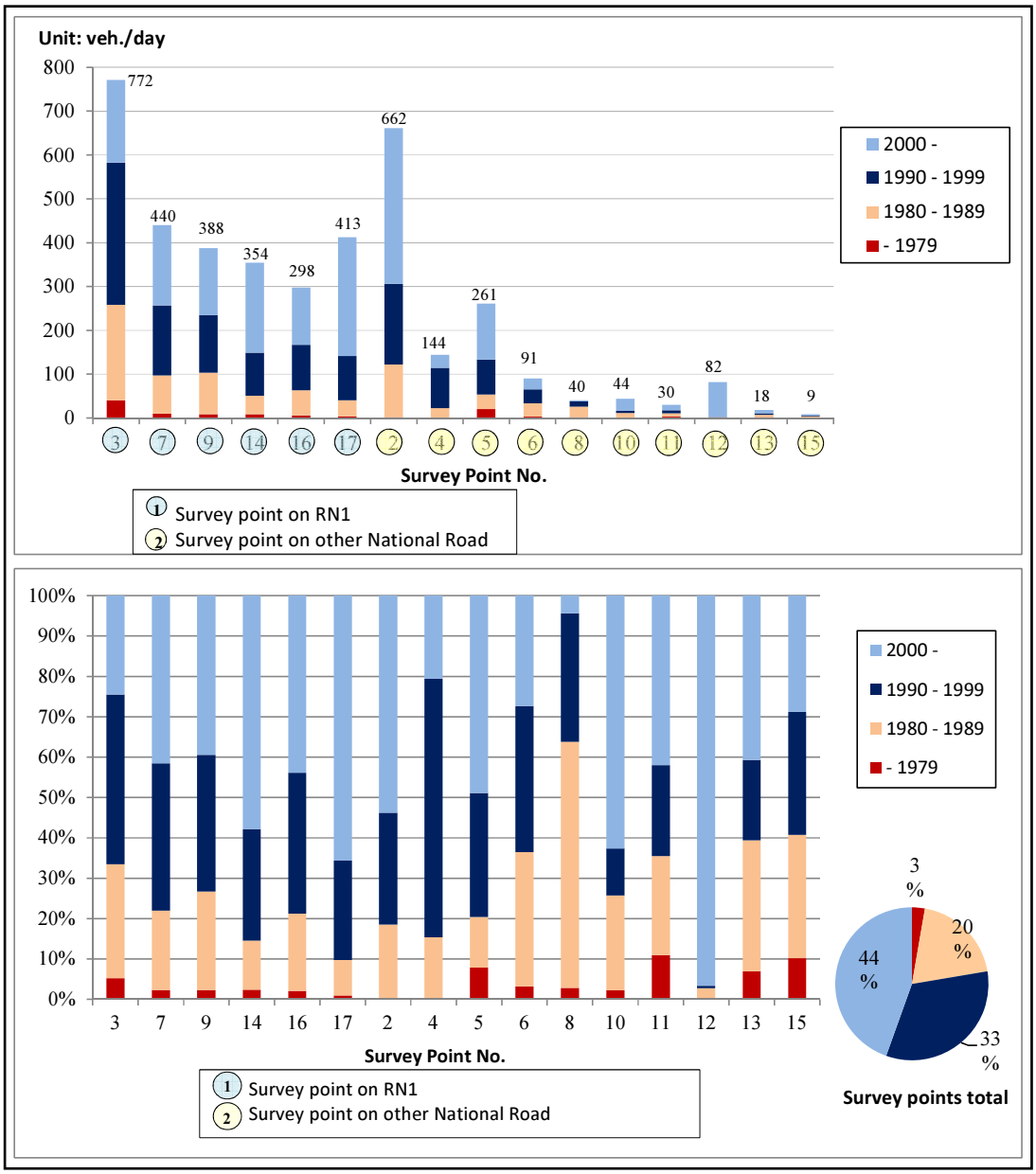
i) Year of Manufacture of Heavy Freight Vehicles

Figure 5-14 shows the year of manufacture of heavy freight vehicles (except light trucks) at each survey point.

The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

- As a whole, the volume ratio of vehicles after 2000 was the highest at 44%, and the volume ratio of vehicles before 1989 was 23%.
- The volume ratio of vehicles before 1989 on RN1 ranged from 10% to 30%.
- The highest volume ratio of vehicles before 1979 was approximately 10% at survey point No. 11 on RN17 and No. 15 on RN17.



Source: Study Team

Figure 5-14 Year of Manufacture of Heavy Freight Vehicles

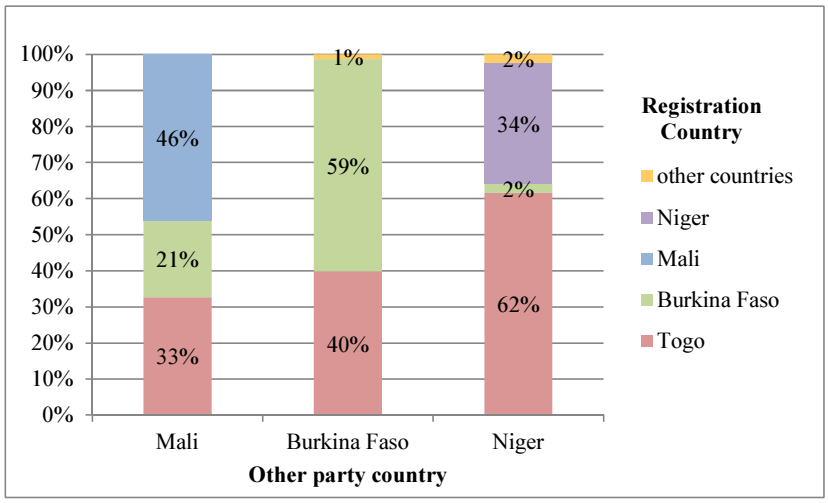
j) Heavy Freight Vehicle Registration Country in O/D with Inland Countries

Figure 5-15 shows the heavy freight vehicle (except light truck) registration country ratio in O/D with inland countries.

The volume shown in the figure is the average for two weekdays.

A summary of the results is as follows:

- In the O/D flow between Mali and Togo, the ratio of vehicles registered in Mali was the highest at 46%.
- In the O/D flow between Burkina Faso and Togo, the ratio of vehicles registered in Burkina Faso was the highest at 59%.
- In the O/D flow between Niger and Togo, the ratio of vehicles registered in Togo was the highest at 62%.



Source: Study Team

Figure 5-15 Heavy Freight Vehicle Registration Country Ratio with Landlocked Countries

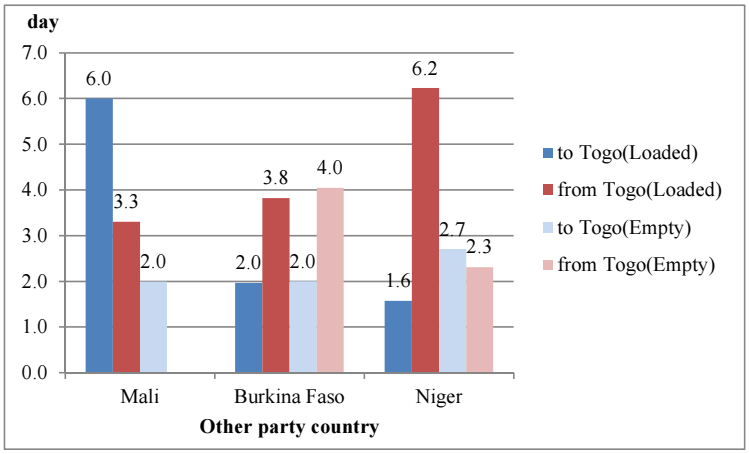
k) Heavy Freight Vehicle Trip Days between O/D with Landlocked Countries

Figure 5-16 shows the average trip days of heavy freight vehicles (except light trucks) between O/D with landlocked countries.

The number of days shown in the figure is the average for two weekdays and is shown for each direction and the presence/absence of freight.

A summary of the results is as follows:

- The average number of trip days of loaded freight vehicles from Togo to Niger was 6.2 days, which was the highest number.
- The average number of trip days of loaded freight vehicles from Mali to Togo was 6.0 days, which was the second-highest number.
- For the above-mentioned two, the number of trip days of loaded freight vehicles was higher than that of empty freight vehicles in the same route and the same direction.
- However, the average number of trip days of empty freight vehicles from Niger to Togo and from Togo to Burkina Faso was higher than that of loaded freight vehicles.



Source: Study Team

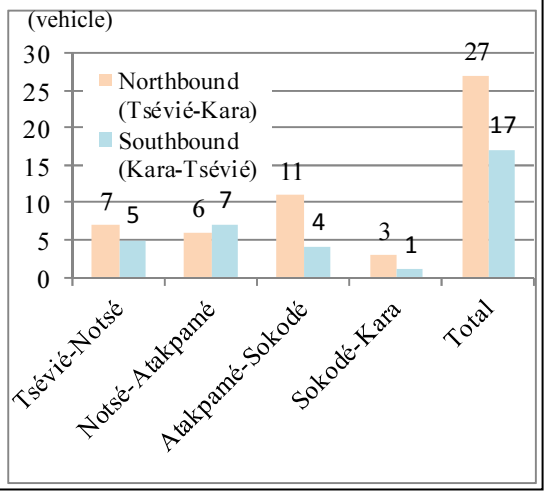
Figure 5-16 Average Trip Days of Heavy Freight Vehicles with Landlocked Countries

5.1.4 Results of Broken-down Freight Vehicle Survey

(1) Number of Broken-down Freight Vehicles

The total number of broken-down freight vehicles interviewed in the survey was 44 vehicles. Figure 5-17 shows the number of broken-down freight vehicles by direction and section where those vehicles were found.

Section	Number of Broken-down Freight Vehicles		
	Northbound (Tsévié-Kara)	Southbound (Kara-Tsévié)	Total
Tsévié-Notsé	7	5	12
Notsé-Atakpamé	6	7	13
Atakpamé-Sokodé	11	4	15
Sokodé-Kara	3	1	4
Total	27	17	44



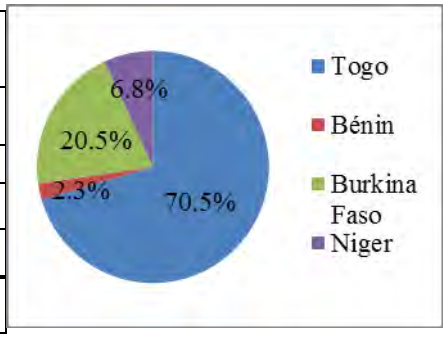
Source: Study Team

Figure 5-17 Number of Broken-down Freight Vehicle

a) Vehicle Registration Country

Figure 5-18 shows the ratios of vehicle registration countries of the interviewed broken-down freight vehicles. Over 70% of the interviewed broken-down vehicles were registered in Togo.

Vehicle Registration Country	Number of Vehicles	Percentage
Togo	31	70.5%
Bénin	1	2.3%
Burkina Faso	9	20.4%
Niger	3	6.8%
Total	44	100%



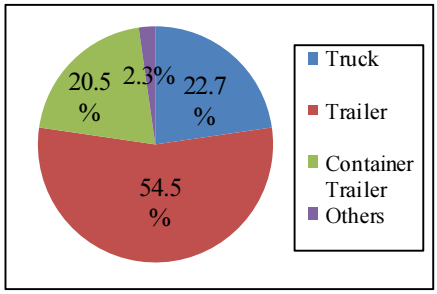
Source: Study Team

Figure 5-18 Vehicle Registration Country of Broken-down Freight Vehicles

b) Vehicle Type

Figure 5-19 shows the ratios of vehicle type of the interviewed broken-down freight vehicles. More than half of the interviewed broken-down vehicles were trailers.

Vehicle Type	Number of Vehicles	Percentage
Truck	10	22.7%
Trailer	24	54.5%
Container Trailer	9	20.5%
Others(Bus)	1	2.3%
Total	44	100%

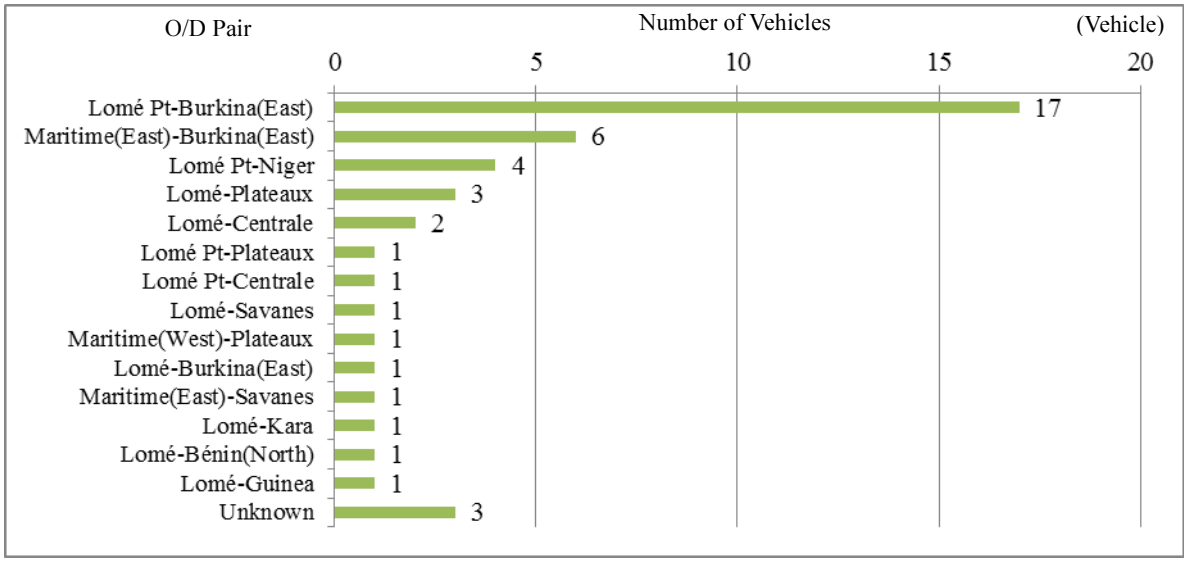


Source: Study Team

Figure 5-19 Vehicle Types of Broken-down Freight Vehicles

c) Trip O/D

Figure 5-20 shows the O/D pairs of the interviewed broken-down freight vehicles. This figure shows that many broken-down vehicles were going to or from Lomé Port, Burkina Faso and Niger.



Source: Study Team

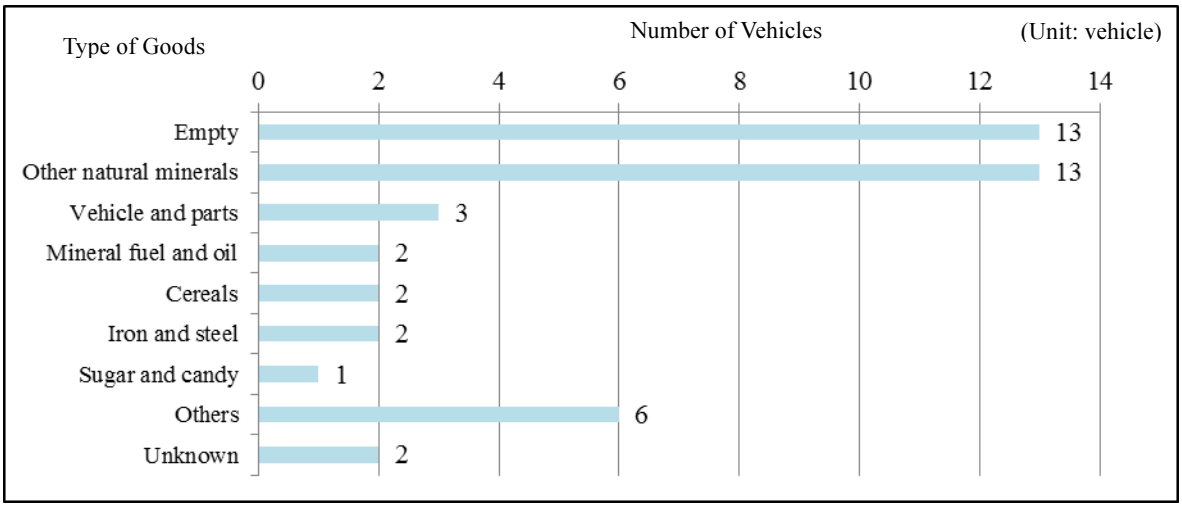
Figure 5-20 O/D Pairs of Broken-down Freight Vehicles

d) Types of Goods

Figure 5-21 shows the types of goods loaded on the interviewed broken-down freight vehicles; 13 broken-down freight vehicles were not loaded.

e) Load

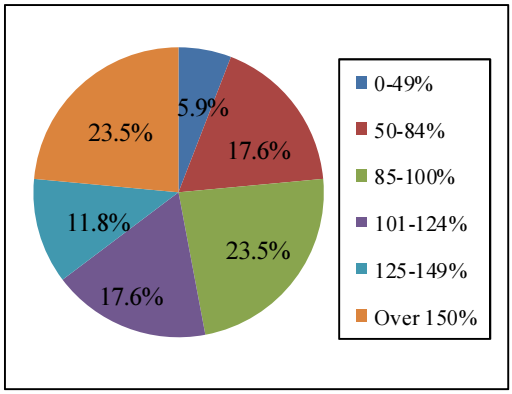
Load information of the broken-down freight vehicles was collected from 17 vehicles in the survey. According to the results, the average actual load was 53.9 tonnes, and the average loading ratio was 112%. The maximum actual load of interviewed vehicles was 62 tonnes, and its loading ratio was 182%. Figure 5-22 shows the proportions of the loading ratio of the interviewed vehicles, showing that more than half of the broken-down freight vehicles were overloaded.



Source: Study Team

Figure 5-21 Types of Goods Loaded on Broken-down Freight Vehicles

Loading Ratio (%)	Number of Vehicles	Percentage
0-49	1	5.9%
50-84	3	17.6%
85-100	4	23.5%
101-124	3	17.7%
125-149	2	11.8%
Over 150	4	23.5%
Total	17	100%



Note: Loading ratio is the ratio of actual load to maximum load capacity for each vehicles.
Source: Study Team

Figure 5-22 Loading Ratio of Broken-down Freight Vehicle

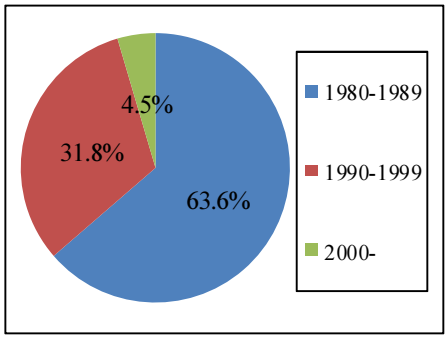
f) Year of Vehicle Manufacture

Information on the year of vehicle manufacture of the broken-down freight vehicles was collected from 22 vehicles in the survey. Figure 5-23 shows the years of vehicle manufacture of the interviewed vehicles. More than 60% of the interviewed vehicles had been manufactured more than 20 years ago.

g) Broken-down Parts and Cause of Breakdown

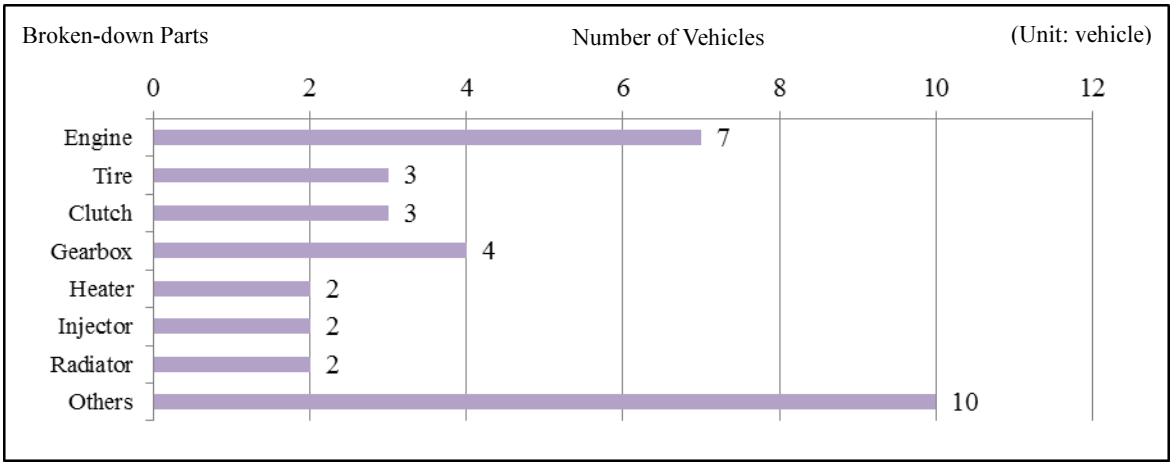
Information on broken-down parts was collected from 33 vehicles in the survey; the main broken-down parts were engine, gearbox, tyre and clutch. Figure 5-24 shows the ratios of the broken-down parts of the interviewed vehicles.

Year of Vehicle Manufacture	Number of Vehicles	Percentage
1980-1989	14	63.6%
1990-1999	7	31.8%
2000-	1	4.6%
Total	22	100%



Source: Study Team

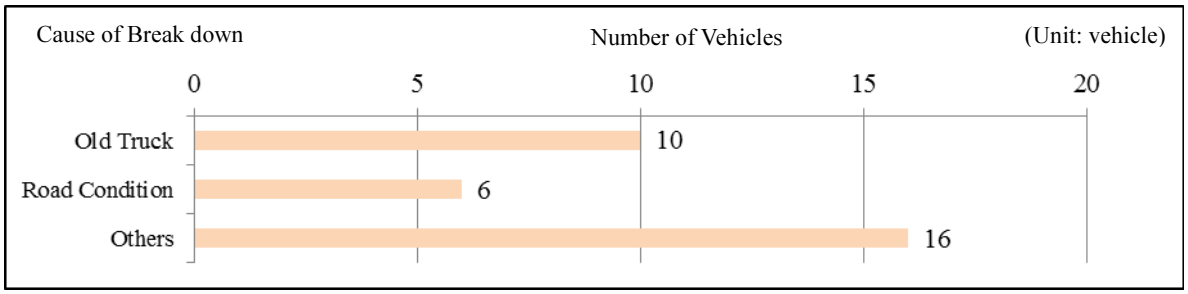
Figure 5-23 Year of Vehicle Manufacture of Broken-down Freight Vehicles



Source: Study Team

Figure 5-24 Broken-down Parts of Interviewed Vehicles

Regarding the estimated causes of breakdown answered by drivers, 10 drivers answered "Old Truck" and 6 drivers answered "Road Condition". However, no drivers answered "Overloading". Figure 5-25 shows the ratio of the cause of breakdown answered by drivers. The answer "Others" includes "lack of maintenance", "accident" and so on.



Source: Study Team

Figure 5-25 Cause of Break Down of Interviewed Vehicles

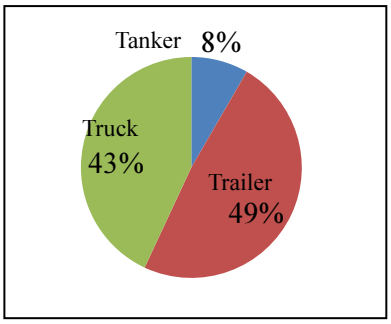
5.1.5 Results of Axle Load Survey

(1) Results of Survey

The number of surveyed vehicles was 72.

a) Vehicle Type

The ratio of surveyed vehicles by type is shown in Figure 5-26.

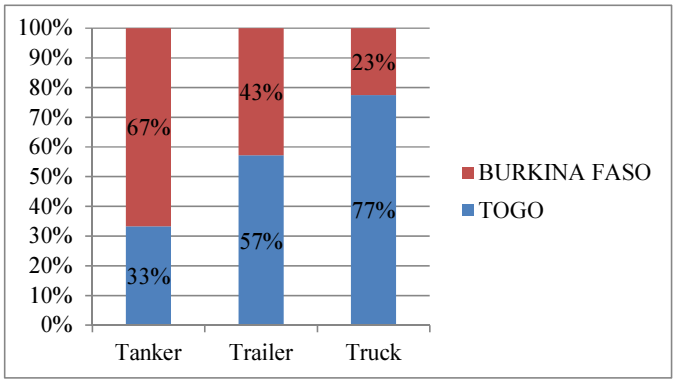


Source: Study Team

Figure 5-26 Ratio of Vehicles by Type

b) Country of Vehicle Registration

The ratio of surveyed vehicles by country of registration is shown in Figure 5-27. The ratio of Togo was high for trucks but low for tankers.



Source: Study Team

Figure 5-27 Ratio of Vehicles by Country

c) Weight of Vehicle

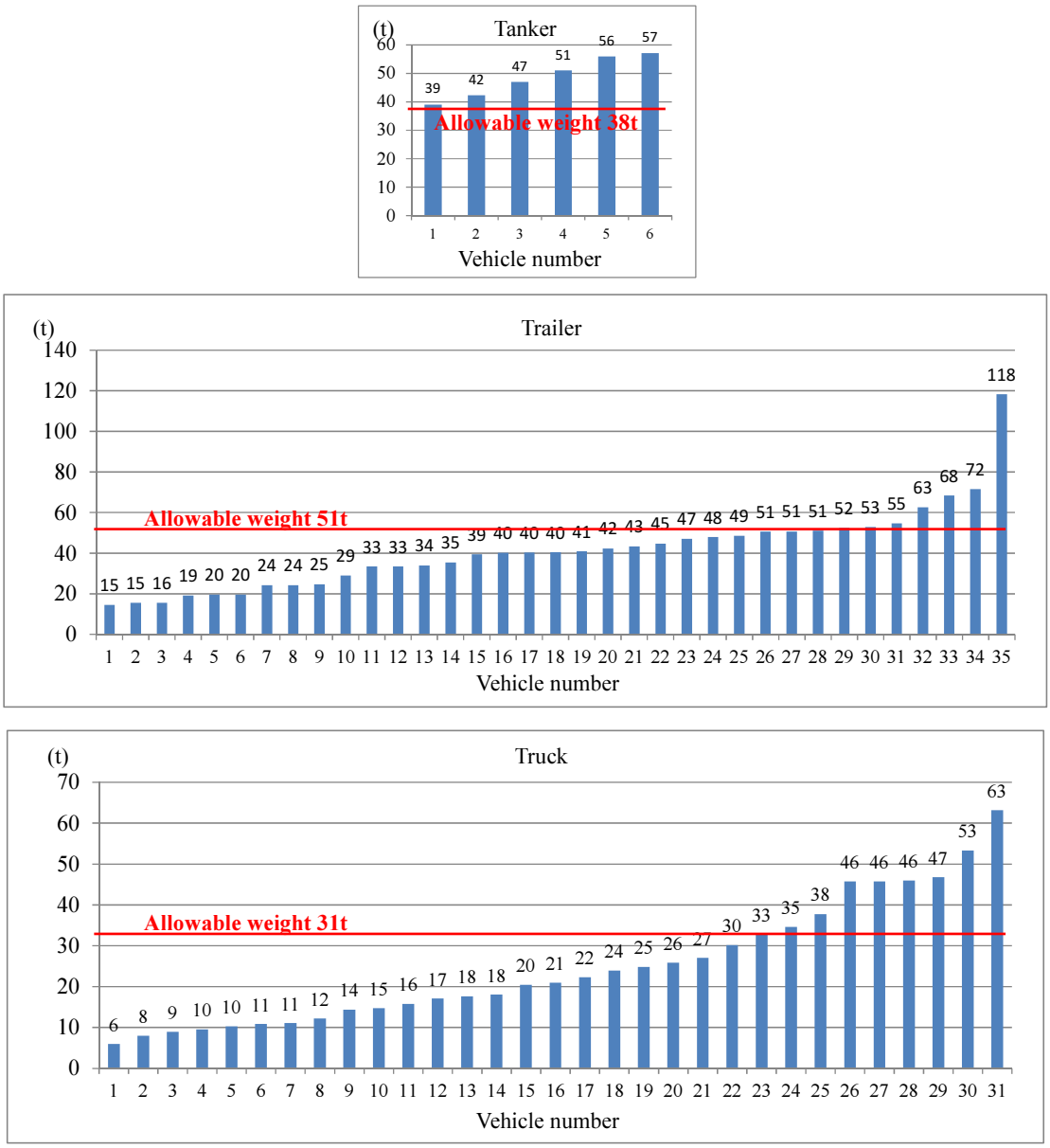
The gross weights of vehicles by type are shown in Figure 5-28. The maximum gross weight of tankers was 57 tonnes, that of trailers was 118 tonnes, and that of trucks was 63 tonnes.

d) Overloaded Vehicle Ratio

1) Gross Weight

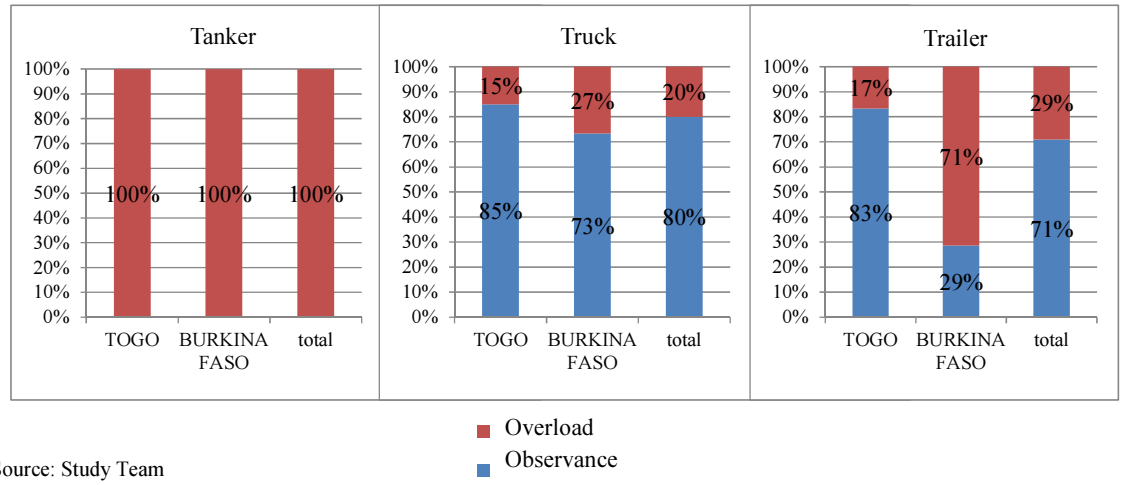
The overloaded vehicle ratio in terms of gross weight of vehicles by country of registration is shown in Figure 5-29.

- All tankers were overloaded.
- The ratio of overloaded trucks was 15 – 27%.
- The ratio of overloaded trailers registered in Burkina Faso was 71%.



Source: Study Team

Figure 5-28 Gross Weight of Surveyed Vehicles



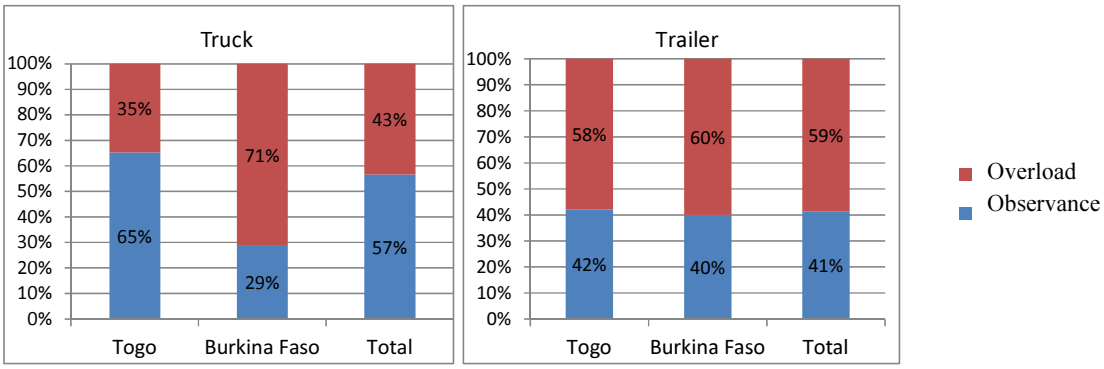
Source: Study Team

Figure 5-29 Ratio of Overloaded Vehicles by Gross Weight

2) Single Axle Load

The overloaded vehicle ratio in terms of single axle load of vehicles by country of registration is shown in Figure 5-30.

- The ratio of overloaded trucks on single or multiple axle load was 43%.
- The ratio of overloaded trailers on single or multiple axle load was 59%.



Source: Study Team

Figure 5-30 Ratio of Overloaded Vehicles by Single or Multiple Axle Load

5.1.6 Present Characteristics of Traffic and Logistics

The current characteristics of traffic and logistics are as follows;

(1) Traffic

- The ratio of motorcycle volume to total volume is more than 50% at most survey points.
- The average daily traffic volume in the northern area tends to be lower than it is in the southern area.
- The traffic volume on RN1 tends to be higher than it is on other roads.

(2) Logistics

- The flows between the maritime (Lomé) and inland countries such as Mali, Burkina Faso, and Niger were not low at each southern survey point.
- The highest total volume by weight was at survey point No.3 located near Tsévié on RN1.
- The percentage of weight volume accounted for by container trailers was 10% to 20% at every survey point on RN1.
- As a whole, the volume of other natural minerals is high.

5.2 Forecast of Future Traffic Demand

5.2.1 Methodology Used for Traffic Demand Forecast

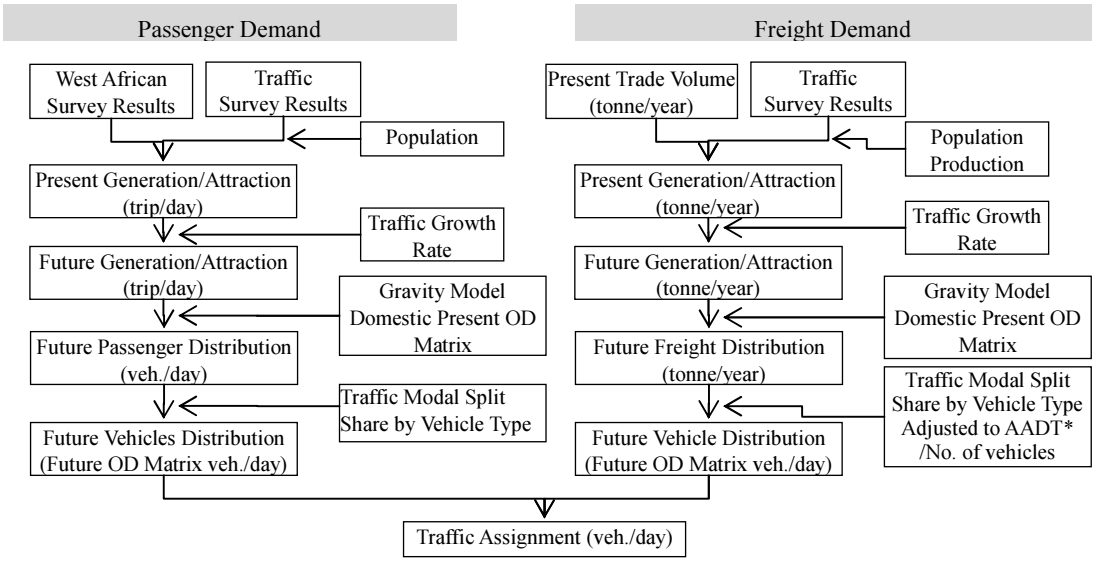
(1) Basic concepts applied in forecast

In this Survey, forecasts of future O/D matrices are based on the present O/D matrices created using field traffic surveys, existing survey results, and socioeconomic indicators. The basic preconditions are shown in the Table 5-3 below. Forecasts of future traffic demand were made based on the preconditions and flows of passengers and freight shown in Figure 5-31.

Table 5-3 Preconditions of Future Traffic Demand Forecast

Items	Preconditions
Target year	Future O/D matrix (2018,2030)
Zoning	27 zones (refer to the Table 5-3 and Figure 5-2)
Future road network	The target road network consists of the national roads in Togo, the WAEMU corridors, and main roads in eastern Ghana. The roads expected in the future and the roads examined this time were added to the network.
Generation/Attraction model	Traffic generation and attraction amounts in each zone are set in the model that used economic indicator data with a strong correlation to the amounts, and the forecast was made referring to the O/D survey results, etc.
Distribution model	Because the current O/D pattern is imperfect, the amount of distribution from each zone to the other zones is forecast using a gravity model that suits the current distribution pattern.
Assignment model	Route assignment by vehicle type was conducted using the distributed traffic demand (Future O/D matrix) and the road network model. The "Divisional Distribution Method", which is the most common method of route assignment, is used in order for each bunching to select an optimal route.
Share of vehicles	No current transportation amounts are noted because the railway has stopped running. The amount of freight that the railway can be expected to carry in the future was set as clinker, ore, and containerized cargo shipped inland. The current shares are applied for shares among vehicle types. The percentage accounted for by container freight passing through the port in the future was adjusted to the Port Master Plan.
Transport efficiency	Using survey data, the conversion factors for vehicles is obtained based on numbers of passengers and freight volumes transported in vehicles.

Source: Study Team

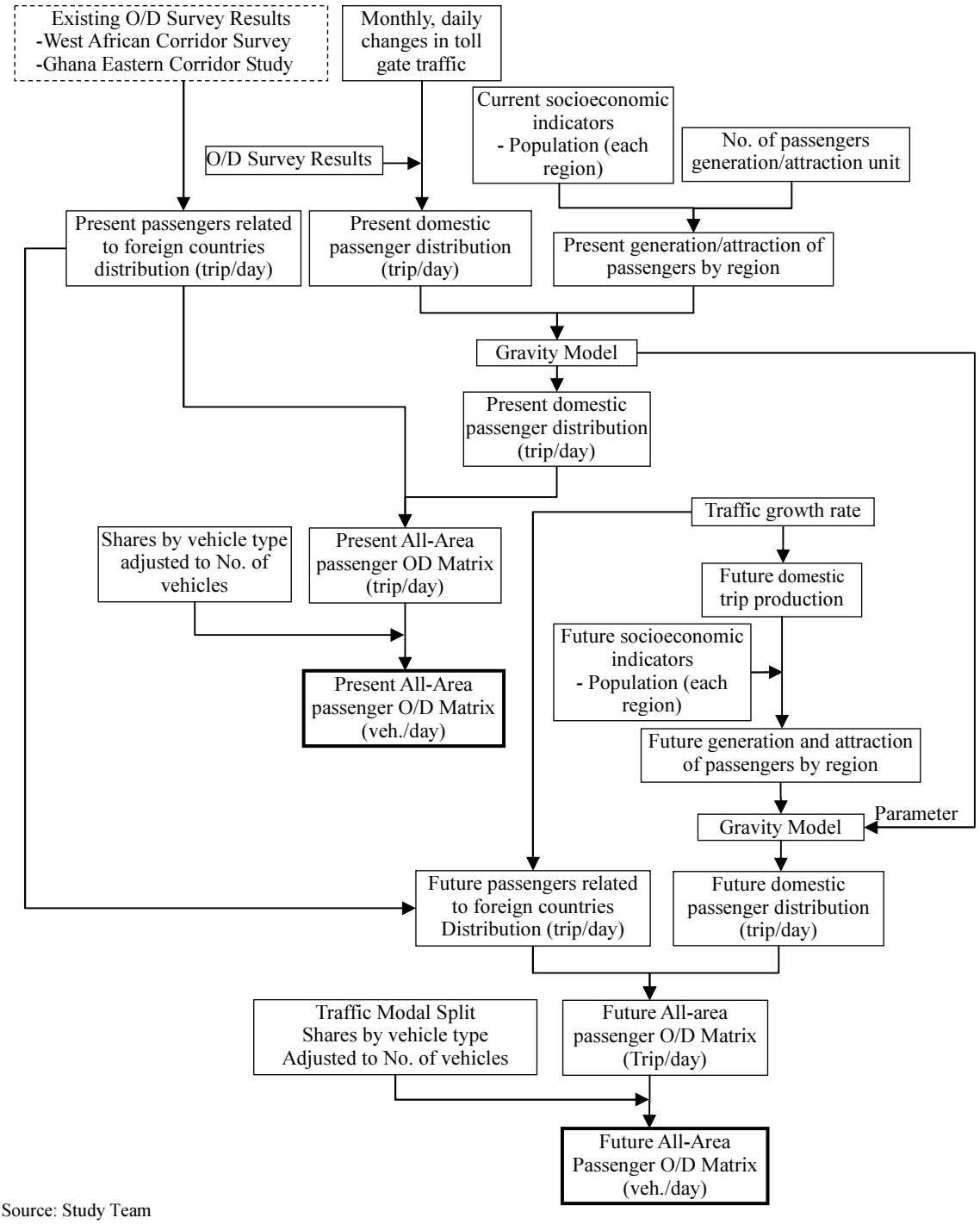


Note: *AADT – Annual Average Daily Traffic
Source: Study Team

Figure 5-31 Basic Concepts Applied in Traffic Demand Forecast

(2) Passenger Demand

Details of passenger demand forecast method are shown in Figure 5-32.



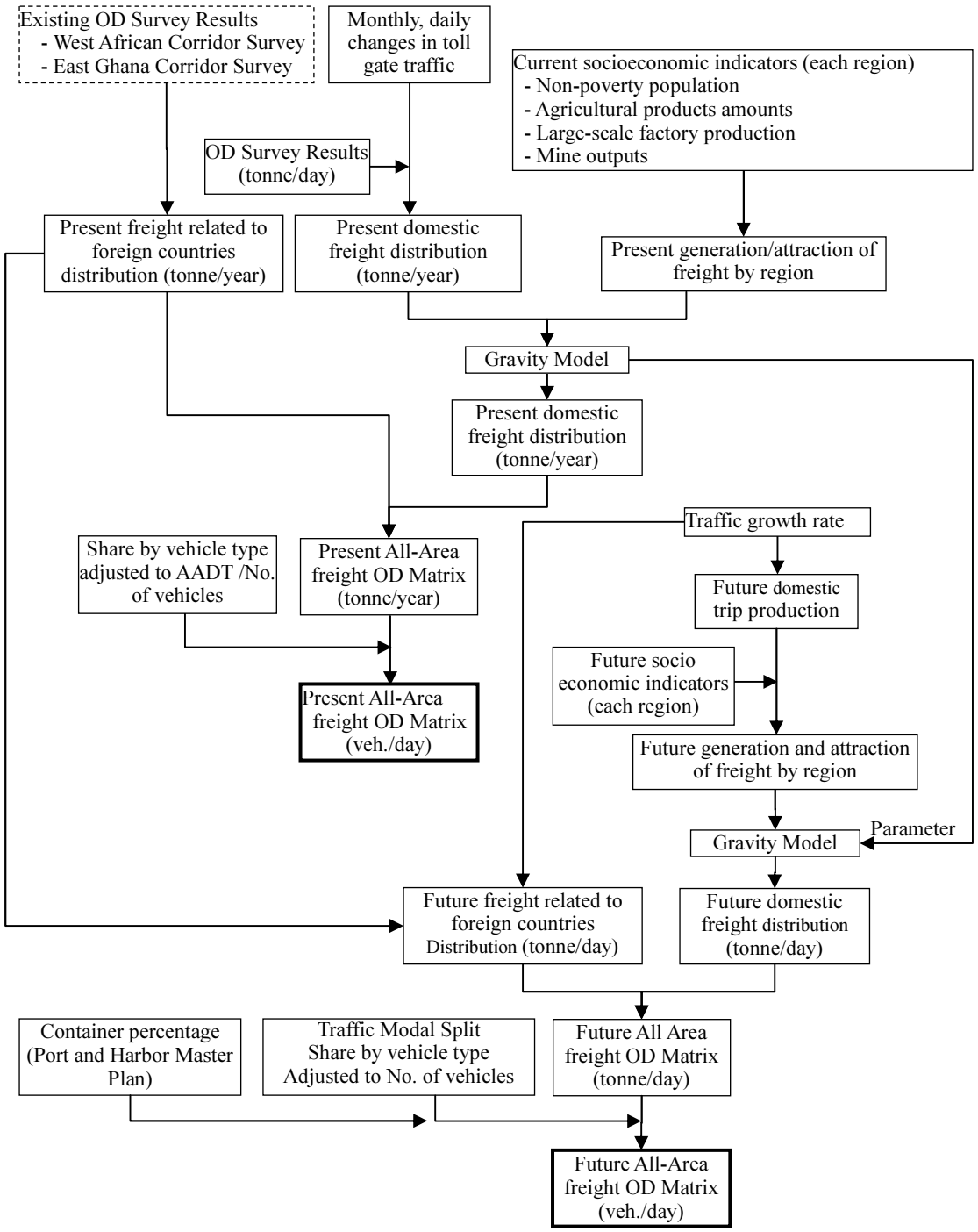
Source: Study Team

Figure 5-32 Details considered in passenger demand forecast

(3) Freight Demand

Details considered in freight demand forecast are shown in Figure 5-33.

The import, export and transit volumes in Togo were totalled by weight, using the HS2 digit code. Demand is forecast according to ten articles with lots of these weights. Demand for articles produced in Togo are in even lots if not included in the ten articles forecast.



Source: Study Team

Figure 5-33 Details on Concepts Applied in Freight Demand Forecast

5.2.2 Future Socioeconomic Framework

The future socioeconomic framework on which the traffic demand forecast and other demand forecasts will be based is described below.

(1) GDP

The GDP of Togo has been rising consistently since the early 2000s, from 1.2% to 5.6% a year. According to PRSP-II, the GoT has set a GDP growth rate target of 6.0% from 2013 to

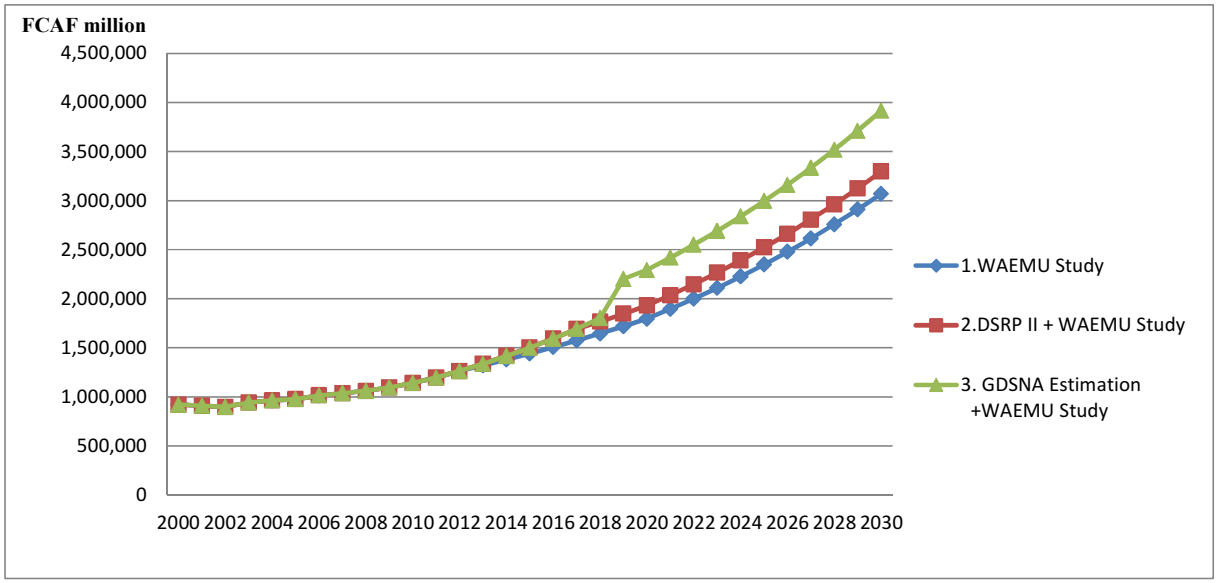
2017. However, the WAEMU Study conducted this year has set a more moderate growth scenario: in their baseline scenario, GDP growth rates are 4.5% in 2013–2020 and 5.5% in 2021–2030. Meanwhile, the GDSNA has provided its own estimates of GDP until 2020. We built three scenarios this time to estimate the future GDP: 1) the same scenario as the baseline scenario in the WAEMU Study, 2) combined scenario of PRSP-II target and WAEMU Study, and 3) combined scenario of GDSNA estimates and WAEMU Study. The results and growth rates of each prediction scenario are presented in the table below.

Table 5-4 GDP Forecast Scenarios and GDP at Constant Prices in 2018 and 2030

(Unit: FCFA million)

1. WAEMU Study	**2012 (Actual Value)**	**2018**	**2030**
Estimated Results	1,263,596	1,645,531	3,069,469
Growth Rate	4.5% (2013–2020), 5.5% (2021–2030)		
2. DSRP II + WAEMU Study	**-**	**2018**	**2030**
Estimated Results		1,767,071	3,296,182
Growth Rate	6.0% (2013–2017), 4.5% (2018–2020), 5.5% (2021–2030)		
3. GDSNA Estimation +WAEMU Study	**-**	**2018**	**2030**
Estimated Results		1,802,690	3,915,463
Growth Rate	5.5% (2021–2030)		

Source: Study Team estimated future values based on the frames developed in DSRP, Travaux de dédoublement de la route Sokodé – Kara – Cinkassé (WAEMU) and GDSNA



Source: Study Team

Figure 5-34 GDP Forecast at Constant Prices (2000-2030)

(2) Population

The average annual rate of increase of the population of Togo from 1981 to 2010 was 2.84%. Some 42% of the total population of Togo is concentrated in the Maritime Region where the capital Lomé is located, and so the population growth rate of the Maritime Region is the highest in the country. In the Savanes Region, which is the northernmost region bordering with Burkina Faso, the areal population has also risen by a higher rate than the national average. In this study, considering the differences in the rates of population increase of the five regions, respective

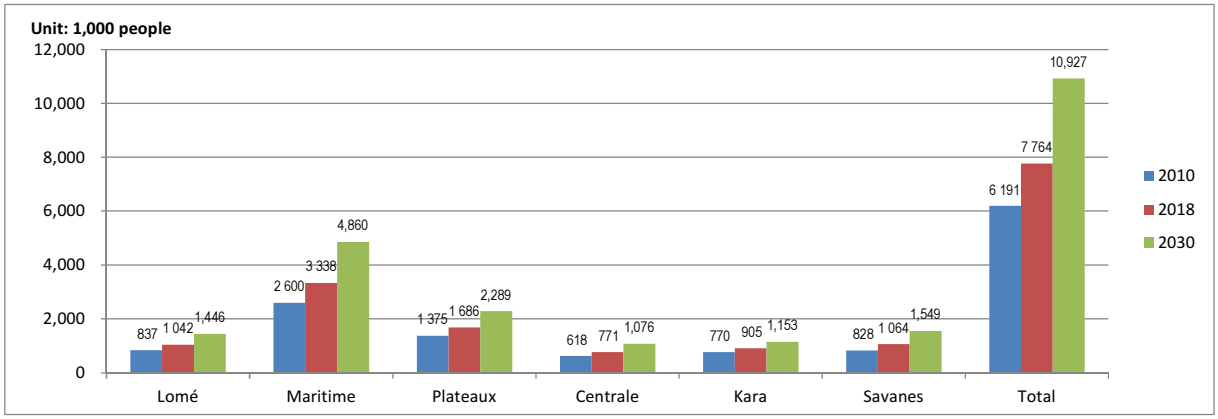
rates of increase will be set to forecast the areal populations for each region. As for Lomé, where the rate of increase in past years has tended to decline, the rate will be set lower than the average rate of the Maritime Region. The table below presents the estimation results and growth rates of the five regions and prefectures.

Table 5-5 Estimated Population in 2018 and 2030

(Unit: 1000 people)

Region	2010 (Actual Value)	2018	2030	Average Growth Rate
Maritime Total	2,600	3,338	4,860	3.2%
Commune de Lomé	837	1,042	1,446	2.8%
Plateaux Total	1,375	1,686	2,289	2.6%
Centrale Total	618	771	1,076	2.8%
Kara Total	770	905	1,153	2.0%
Savanes Total	828	1,064	1,549	3.2%
Total Population in Togo	6,191	7,764	10,926	2.9%

Source: Study Team



Source: Study Team

Figure 5-35 Estimated Population by Region in 2018 and 2030

(3) Poverty Ratio

According to the PRSP-II, the future headcount poverty ratio estimated by the GoT is 49.3% in 2015 and 43.7% in 2017. Based on these values, the Study Team estimated the future poverty ratio in 2018 and 2030 by using the growth rates of the non-poverty population in each region.

Table 5-6 Estimated Poverty Ratios by Regions in 2018 and 2030

Region	2011 (Actual Value)	2018	2030
Maritime	43.8%	27.3%	22.0%
Lomé	27.2%	15.0%	8.5%
Plateaux	65.4%	49.4%	43.0%
Centrale	65.4%	49.2%	41.7%
Kara	67.3%	50.0%	44.1%
Savanes	91.6%	73.4%	67.2%
Whole Country	60.1%	42.4%	22.2%

Source: Study Team

(4) Agricultural Production

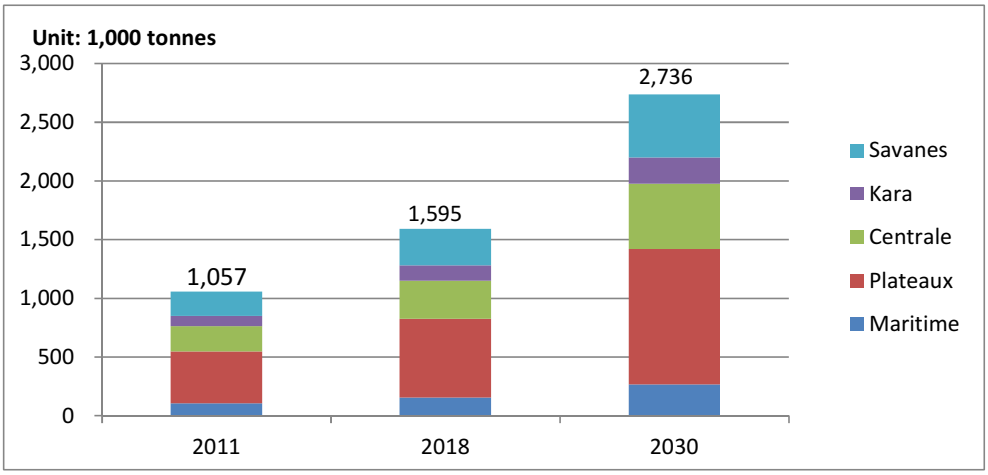
This Study selected six major agricultural crops in Togo for estimating future production: cereals, tubers, legumes, cotton, coffee and cacao. To estimate the production of the agriculture

sector, we referred to PNDAT as a national strategy as well as PRSP-II. However, these two plans conflict with each other for some crops, so in these cases the PNDAT values are used primarily for the following reasons: PNDAT was issued later than PRSP-II (PNDAT was published in October 2012, PRSP-II in July 2012); the target period of PNDAT is 2013–2022, which is longer than that of PRSP-II; the target values of PNDAT look more realistic in the agricultural sector.

After 2022, growth rates of production were determined taking into consideration cultivable land areas in Togo and production amount per unit in each category. According to PRSP-II, the area of arable land in Togo is approximately 3.4 million ha (60% of the whole country area) of which only 45% is currently cultivated. We assess that around 80% of the remaining arable areas will be cultivated by 2030. As for production amounts per unit, they will be estimated respectively for each category.

a) Cereals

Cereals are the primary agricultural product in Togo. This category includes maize, sorghum, millet and rice. The PNDAT planned values of 1.3 million tonnes in 2015 and 2.0 million tonnes in 2022 are used for cereals. The production amount per unit was assessed to be double that of 2011.

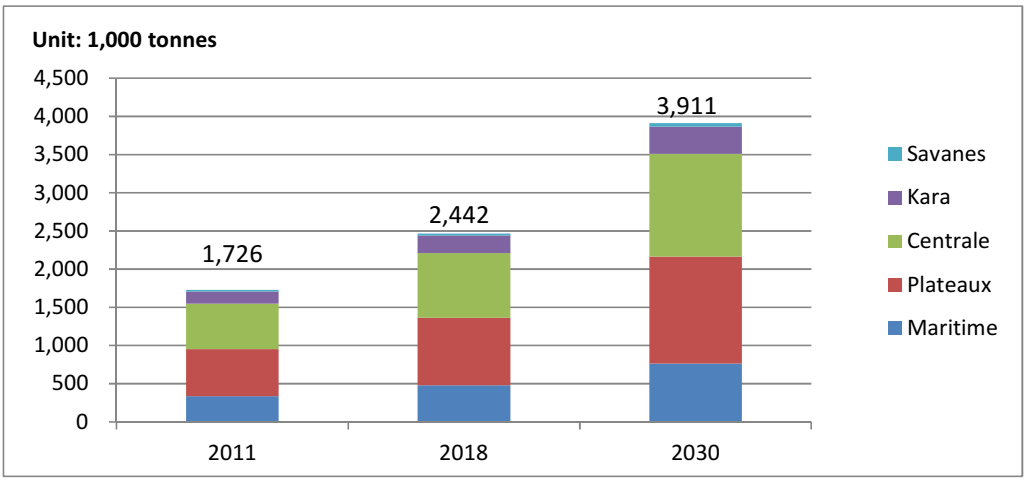


Source: Study Team

Figure 5-36 Estimated Production in 2018 and 2030 (Cereals)

b) Tubers

Tubers are another primary agricultural product of Togo. This category includes yam and cassava. The PNDAT planned values of 2.0 million tonnes in 2015 and 3.0 million tonnes in 2022 are used for tubers. The production amount per unit was assessed to be double that of 2011.

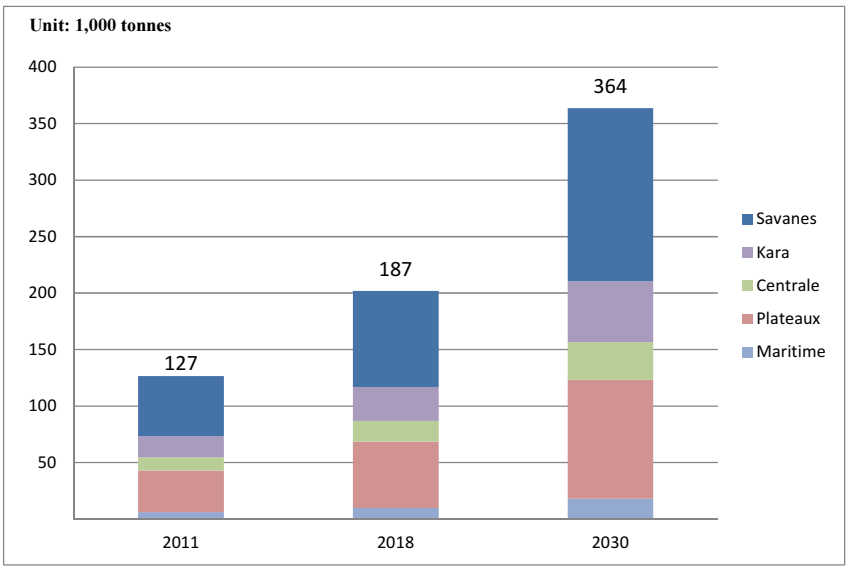


Source: Study Team

Figure 5-37 Estimated Production in 2018 and 2030 (Tubers)

c) Legumes

The production of legumes in Togo has increased rapidly in the last 10 years. This category includes beans and peanut. The PNDAT planned values of 160 thousand tonnes in 2015 and 276 thousand tonnes in 2022 are used for legumes. The production amount per unit was assessed to be 2.5 times that of 2011.

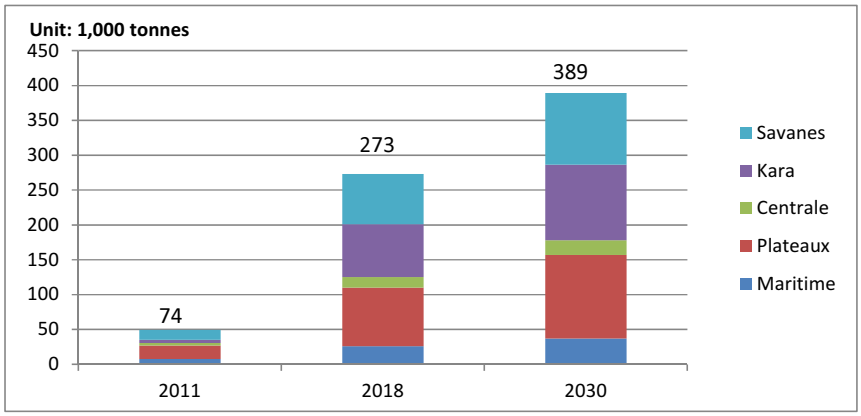


Source: Study Team

Figure 5-38 Estimated Production in 2018 and 2030 (Legumes)

d) Cotton

Cotton is the main commercial crop cultivated in Togo. The production amount in recent years has dropped significantly because of defects and problems in sales and distribution systems, but these systems have already been improved so the government is trying to encourage farmers to increase the production amount. The PRSP-II planned values of 100 thousand tonnes in 2012 and 265 thousand tonnes in 2017 are used for cotton.

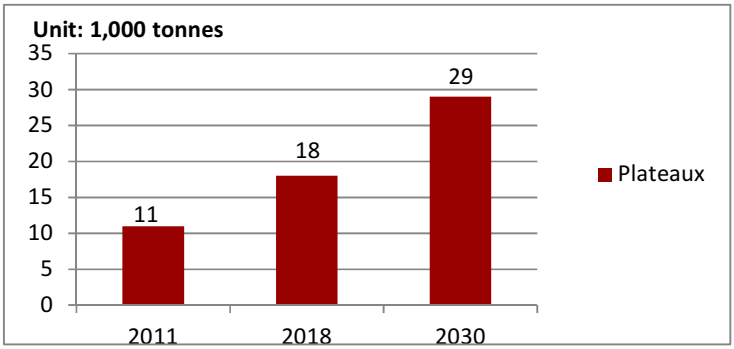


Source: Study Team

Figure 5-39 Estimated Production in 2018 and 2030 (Cotton)

e) Coffee

Coffee is not currently significant in the agricultural sector in Togo, but the government expects it to be a future revenue source of the country along with cacao. The PRSP-II planned values of 12 thousand tonnes in 2012 and 17 thousand tonnes in 2017 are used for coffee.

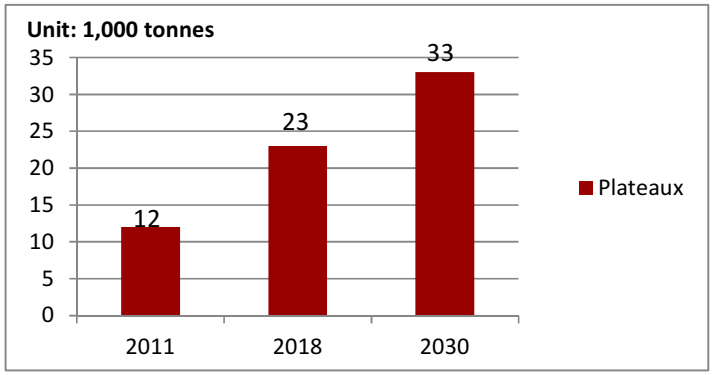


Source: Study Team

Figure 5-40 Estimated Production in 2018 and 2030 (Coffee)

f) Cacao

Cacao accounts for only a small portion of Togolese agriculture, but it is expected to become one of the most important commercial crops of the country. The PRSP-II planned values of 14 thousand tonnes in 2012 and 22 thousand tonnes in 2017 are used for cacao.



Source: Study Team

Figure 5-41 Estimated Production in 2018 and 2030 (Cacao)

(5) Volume of Cement Factory and Mining Product Transport

There was a volume of transportation not included in the data of the O/D result of the survey and the customhouse in the entrepreneur's plan when surveying. In this case, the volume of transportation was individually set referring to the entrepreneur's plan.

The set volume of transportation is shown in the Table 5-7, Figures 5-42 and 5-43.

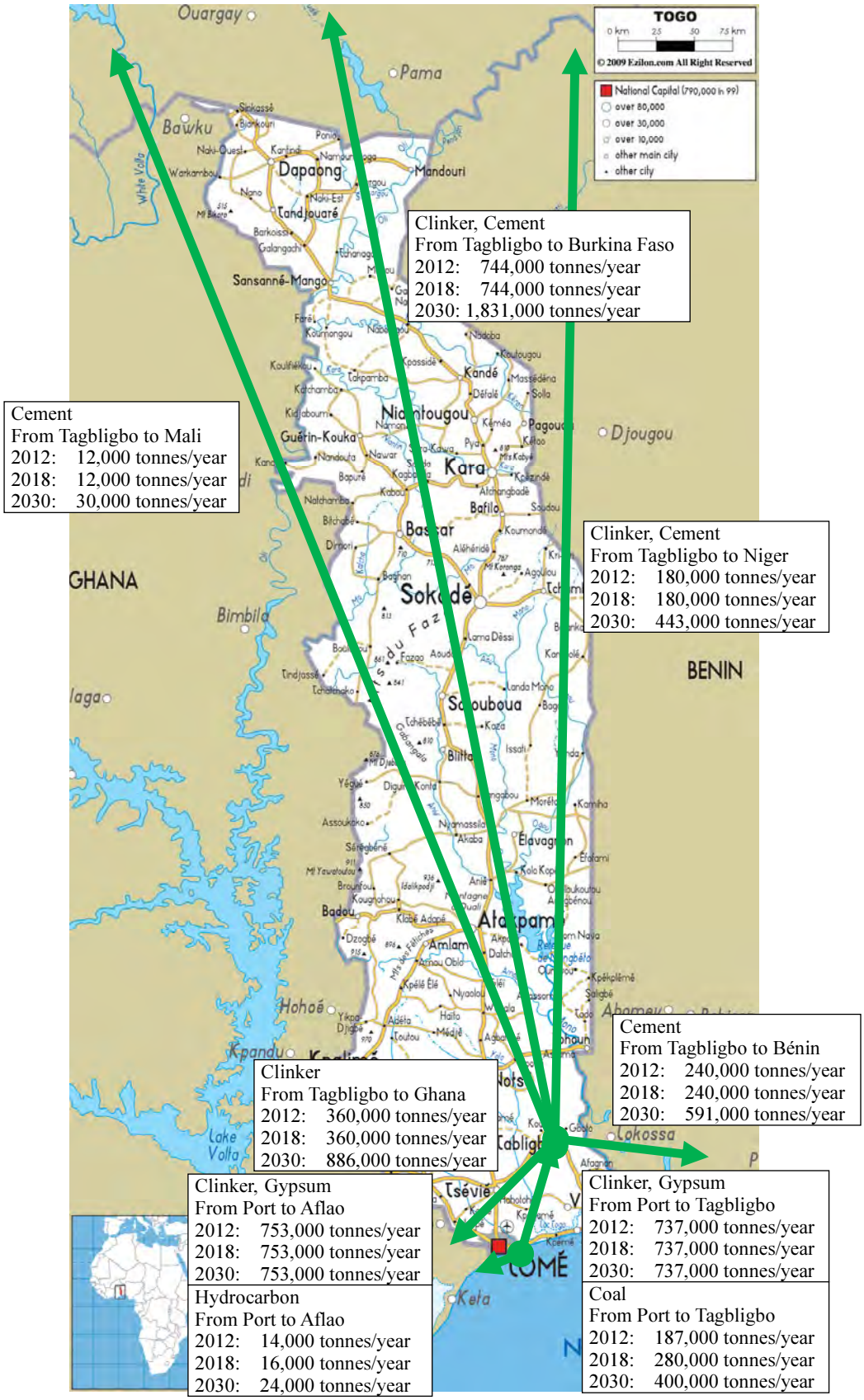
Table 5-7 Cement Factory and Mining Product Transport Volume

(Unit: 1000 tonnes/year)

Company	Origin	Destination	Product	2012	2018	2030	2018 /2012	2030 /2012
Cement Factory	Tagbligbo	Ghana	Clinker	360	360	886	1.00	2.46
			Cement	0	0	0	-	-
			Total	360	360	886	1.00	2.46
		Burkina Faso	Clinker	720	720	1,772	1.00	2.46
			Cement	24	24	59	1.00	2.46
			Total	744	744	1,831	1.00	2.46
		Bénin	Clinker	0	0	0	-	-
			Cement	240	240	591	1.00	2.46
			Total	240	240	591	1.00	2.46
		Niger	Clinker	60	60	148	1.00	2.46
			Cement	120	120	295	1.00	2.46
			Total	180	180	443	1.00	2.46
		Mali	Clinker	0	0	0	-	-
			Cement	12	12	30	1.00	2.46
			Total	12	12	30	1.00	2.46
		Total	Clinker	1,140	1,140	2,806	1.00	2.46
			Cement	396	396	975	1.00	2.46
			Total	1,536	1,536	3,780	1.00	2.46
	Lomé Port	Tagbligbo	Clinker*	670	670	670	1.00	1.00
			Gypsum*	67	67	67	1.00	1.00
			Coal*	187	280	400	1.50	2.14
			Total	924	1,017	1,137	1.10	1.23
		Aflao	Clinker*	685	685	685	1.00	1.00
			Gypsum*	68	68	68	1.00	1.00
			Hydrocarbon*	14	16	24	1.19	1.70
			Total	767	769	777	1.00	1.01
M,M, Mining	Blitta	Lomé Port	Iron ore	172	429	2,000	2.50	11.65
Other	Burkina Faso	Lomé Port	Manganese	83	250	738	3.00	8.87

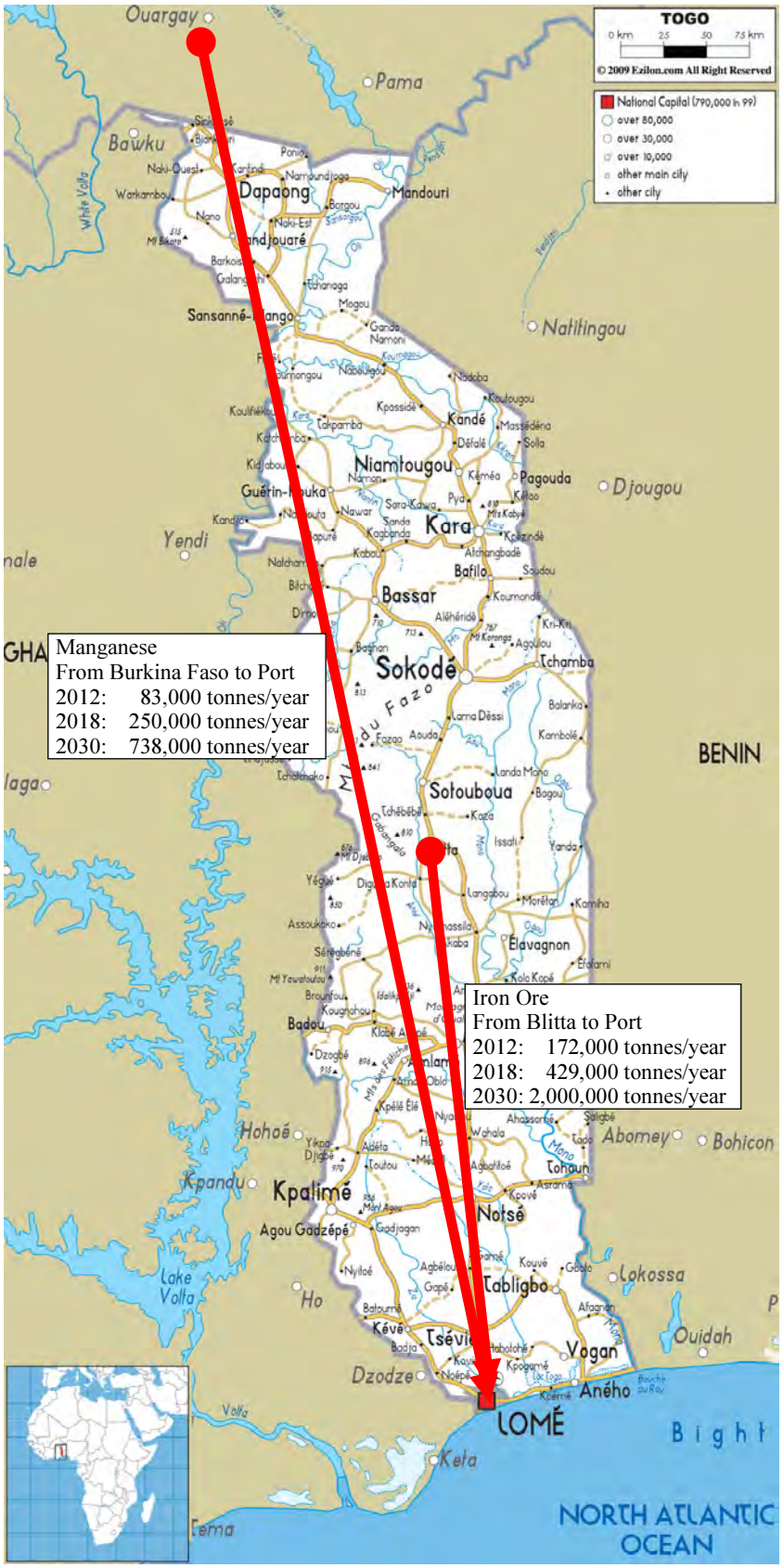
Note: The Study Team adopted the tendencies and growth rates of transport volume of clinker, gypsum, coal and hydrocarbon related to the Lomé Port from the used in the Leading Plan of the Autonomous Port of Lomé

Source: Study Team



Source: Study Team

Figure 5-42 O/D Volume of Cement Related Materials



Source: Study Team

Figure 5-43 O/D Volume of Other Mineral Products

(6) Growth Rate of Traffic in WAEMU's RN1 F/S Report

The feasibility study on the first four-lane national road was examined by WAEMU. The growth rate of the traffic assumed in this study's report is shown in Tables 5-8 and 5-9. As a result, until 2030, it is forecast that passenger traffic volume will increase by 5.3-6.8%, and that freight traffic volume will increase by 7.2-8.8% per year.

Table 5-8 Growth Rate of Passenger Traffic

			Scénario de base		Scénario alternatif	
Période	DP/P	k	DPIB/PIB	DT/T	DPIB/PIB	DT/T
2011-2020	2,60 %	1,4	4,5 %	5,3 %	6 %	7,5 %
2021-2030	2,50 %	1,4	5,5 %	6,8 %	7%	9 %
2031-2040	2,4%	1,4	5 %	6,1 %	6,5 %	8,3 %

Source: ''Travaux de dédoublement de la route Sokodé – Kara – Cinkassé (CU9) '' by WAEMU

Table 5-9 Growth Rate of Freight Traffic

		Scénario de base		Scénario alternatif	
Période	m	DPIB/PIB	DT/T	DPIB/PIB	DT/T
2011-2020	1,6	4,5 %	7,2 %	6 %	9,6 %
2021-2030	1,6	5,5 %	8,8 %	7%	11,2 %
2031-2040	1,6	5%	8%	6,5 %	10,4 %

Source: ''Travaux de dédoublement de la route Sokodé – Kara – Cinkassé (CU9) '' by WAEMU

(7) Numbers of Registered Vehicles

The forecast of future numbers of registered cars was made using the relationship between GDP and numbers of registered cars from 2000 to 2011. The GDP stated in the WAEMU report was used for the forecast. The results are shown in Table 5-10.

Table 5-10 Forecast of Numbers of Registered Vehicles

Item	Forecasted Number			Growth Rate	
	2012	2018	2030	2018/2012	2030/2012
Passenger vehicles	260,592	400,305	921,184	1.54	3.53
Freight vehicles	84,014	123,607	271,218	1.47	3.23
Total	344,606	523,912	1,192,402	1.52	3.46

Source: Study Team

(8) Assumed Values of Traffic Growth Ratio

The ratio of traffic volume in 2030 to that in 2012 was decided by referring to various indices as shown in Table 5-11. However, when there was an individual plan, the value of the plan was used as the growth ratio.

Table 5-11 Growth Rate of Passenger and Freight Traffic

Year	Passenger		Freight	
	Growth Rate	Accumulation Value	Growth Rate	Accumulation Value
2012	-	1.00	-	1.00
2013	5.3%	1.05	7.2%	1.07
2014	5.3%	1.11	7.2%	1.15
2015	5.3%	1.17	7.2%	1.23
2016	5.3%	1.23	7.2%	1.32
2017	5.3%	1.29	7.2%	1.42
2018	5.3%	1.36	7.2%	1.52
2019	5.3%	1.44	7.2%	1.63
2020	5.3%	1.51	7.2%	1.74
2021	6.8%	1.61	8.8%	1.90
2022	6.8%	1.72	8.8%	2.06
2023	6.8%	1.84	8.8%	2.25
2024	6.8%	1.97	8.8%	2.44
2025	6.8%	2.10	8.8%	2.66
2026	6.8%	2.24	8.8%	2.89
2027	6.8%	2.40	8.8%	3.15
2028	6.8%	2.56	8.8%	3.42
2029	6.8%	2.73	8.8%	3.73
2030	6.8%	2.92	8.8%	4.05

Source: Study Team

Table 5-12 Outline of Trip Production and Generation/Attraction

Categories	Trip Production Control	Domestic Flow (Generation Indicator)	Domestic Flow (Attraction Indicator)	Growth Ratio of Trip Production
Passengers	Nothing	All Population	All Population	Growth of WAEMU's Report
HS27 Mineral fuel and oil	Nothing	Non-Poverty Population	Non-Poverty Population	Growth of WAEMU's Report
HS25 Cement, Clinker and Ore	Addition of Ore and Cement, etc.	Specific O/D in the mine and cement, etc. Non-Poverty Population		Production Plan of Mining and Factory
HS31 Fertilizer	Nothing	Non-Poverty Population	Agricultural Production Amount	Growth of WAEMU's Report
HS17 Sugar and candy	Nothing	Limited Lomé (According to the realities)	Non-Poverty Population	Growth of WAEMU's Report
HS15 Fats and oils	Nothing	Limited Lomé (According to the realities)	Non-Poverty Population	Growth of WAEMU's Report
HS22 Beverages	Nothing	Non-Poverty Population	Non-Poverty Population	Growth of WAEMU's Report
HS52 Cotton	Cotton Production Amount	Cotton Production	Non-Poverty Population	Cotton Production Plan
HS72 Iron and steel	Nothing	Limited Lomé (According to the realities)	Non-Poverty Population	Growth of WAEMU's Report
HS87 Vehicles and parts	Nothing	Limited Lomé (According to the realities)	Non-Poverty Population	Growth of WAEMU's Report
Other O/D	Nothing	Non-Poverty Population	Non-Poverty Population	Growth of WAEMU's Report

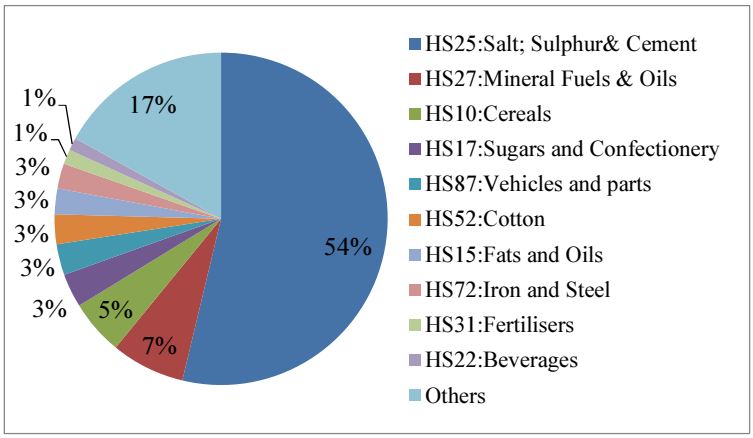
Source: Study Team

5.2.3 Traffic Demand Forecast for the Master Plan

(1) Top-ranked Goods

Based on the concepts outlined in section 5.2.1, the freight was totalled using the HS2 digit code.

The top-ranked goods (based on HS2 digit code) as percentages accounted for in total import/export/transit weights are shown in the Figure 5-44. Cement accounts for the highest percentage of shipments at 54%; together the top ten articles account for 83% of the total.



Source: Study Team

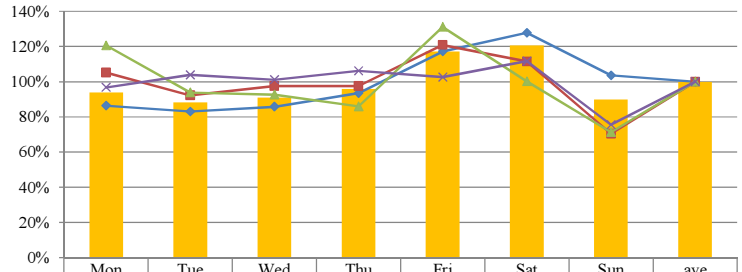
Figure 5-44 Ranking by Commodity

(2) Correction of Traffic Survey

a) Conversion to Weekly Average Daily Traffic

It is necessary to observe traffic volume continuously for more than one year in order to obtain an ideal ADT at traffic survey points. However, such data are not available around the target areas. Therefore, the volumes recorded in the survey of daily traffic were converted using factors based on existing traffic volume data at tollgates collected by the CAPER in 2012.

Tollgate: RN1 Davié



	Mon	Tue	Wed	Thu	Fri	Sat	Sun	ave
total	94%	88%	91%	96%	117%	121%	90%	100%
Passenger car & Light truck	86%	83%	86%	93%	117%	128%	104%	100%
Minibus	105%	92%	98%	98%	121%	111%	70%	100%
Bus	121%	94%	93%	86%	131%	100%	71%	100%
Heavy truck	97%	104%	101%	106%	103%	112%	76%	100%
	No.7-11* No.12-17*			No.1-6*				

* A day of the week at this survey point

Source: Study Team, using CAPER data

Figure 5-45 Results of Weekly Fluctuation Factor Computation

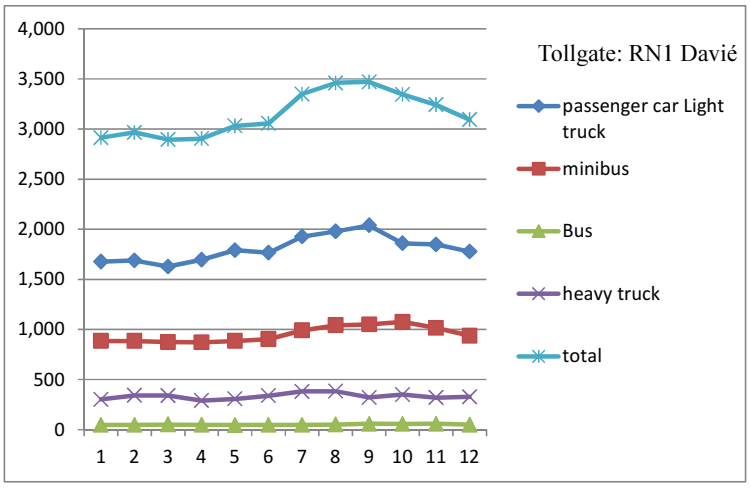
b) Conversion to Monthly Average Daily Traffic

Monthly changes were similarly corrected based on traffic data gathered at the toll gate (RN1: Davié); they are shown in Figure 5-46 and Table 5-13.

Table 5-13 Results of the Monthly Fluctuation Factor Computation

Davié RN1	Month												Average
	1	2	3	4	5	6	7	8	9	10	11	12	
Paasenger car & Light Truck	92.7%	93.4%	90.0%	93.7%	99.0%	97.6%	106.5%	109.4%	112.7%	102.8%	102.2%	98.3%	100.0%
Minibus	93.0%	92.9%	91.7%	91.5%	93.0%	94.8%	104.0%	109.4%	110.2%	113.0%	106.5%	98.3%	100.0%
Bus	95.2%	93.1%	100.4%	93.4%	90.1%	91.9%	94.2%	101.4%	113.6%	111.9%	114.8%	98.2%	100.0%
Heavy truck	90.0%	102.4%	101.9%	86.6%	92.0%	101.6%	114.0%	115.1%	96.0%	104.7%	95.5%	98.3%	100.0%
Total	92.5%	94.2%	92.0%	92.3%	96.3%	97.1%	106.3%	109.9%	110.2%	106.2%	103.0%	98.3%	100.0%

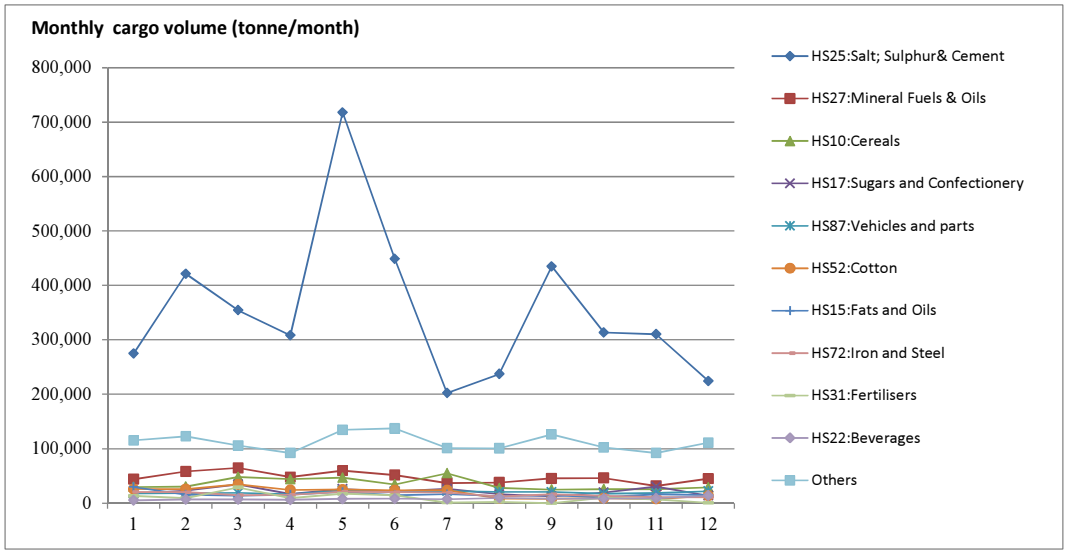
Source: Study Team based on CAPER data at the Davié tollgate 2011-2012



Source: Study Team using CEPER data

Figure 5-46 Results of Computation of Monthly Fluctuation Factors

Monthly O/D matrix showing annual average days was made by considering these changes.



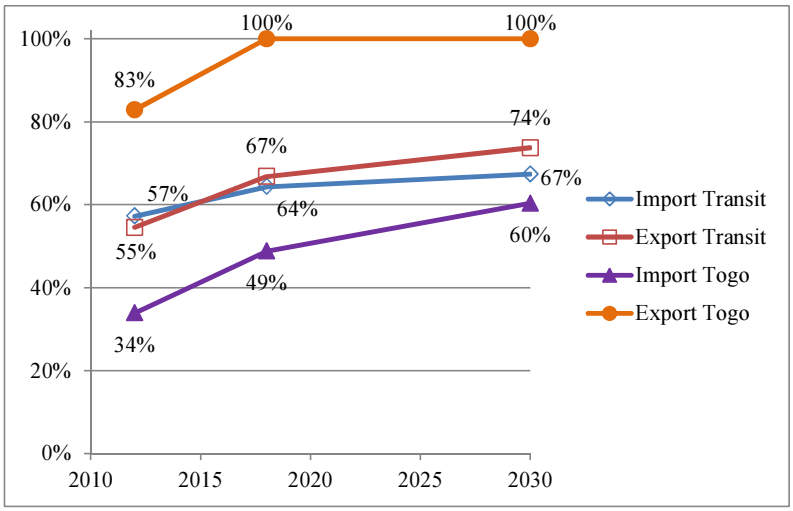
Note: Annual amounts were calculated as daily amounts multiplied by 365.

Source: Study Team based on customs data

Figure 5-47 Monthly Variation of Export/Import/Transit Volume in Togo

(3) Percentage Accounted for by Container Freight

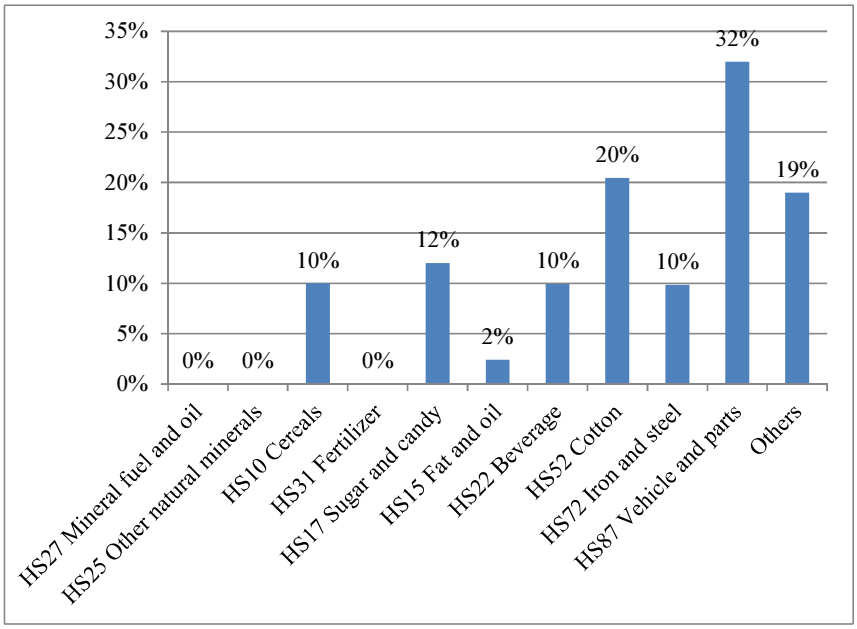
The percentage accounted for by container freight passing through the port was adjusted to the Port Master Plan. The percentage of improper goods for container shipping such as ore, clinker, and fuel was set to 0%. The percentage of other goods was set equal to. The results are shown in Figure 5-48.



Source: Study Team based on Leading Plan of the Autonomous Port of Lomé

Figure 5-48 Percentage Accounted for by Container Freight Passing through the Port

The percentage accounted for by container freight not passing through the port was adjusted to the O/D survey results. This percentage has been set not to change in the future. The results are shown in Figure 5-49.



Source: Study Team

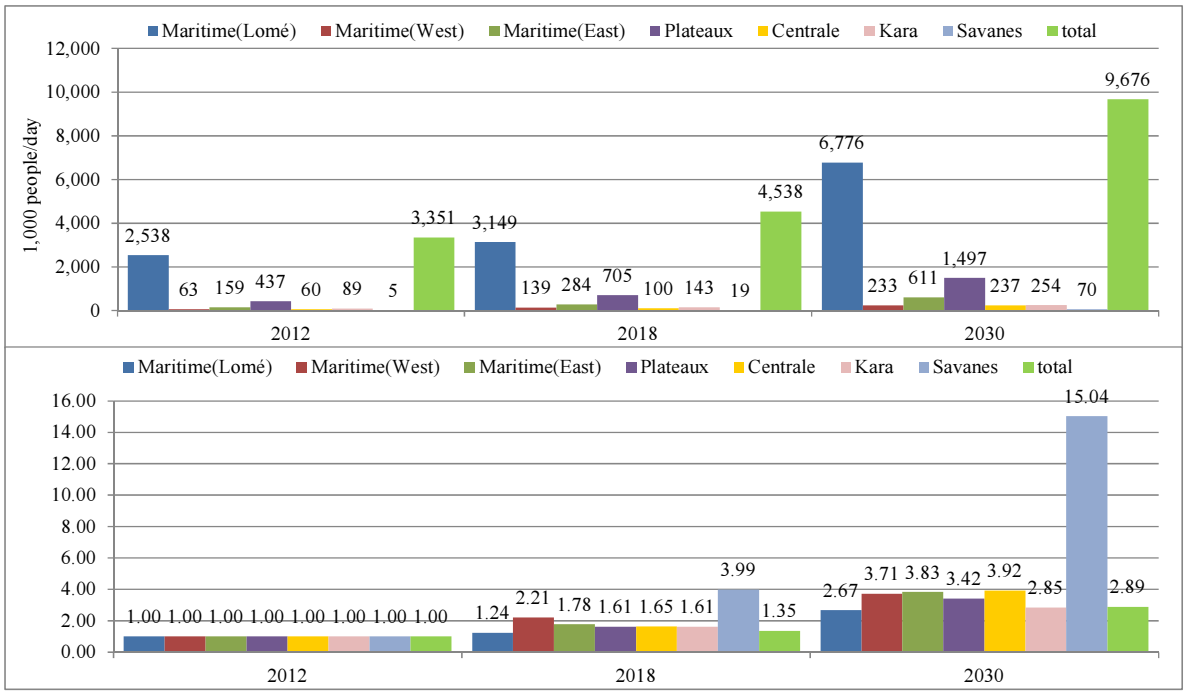
Figure 5-49 Percentage Accounted for by Container Freight not Passing through the Port

(4) Passenger Demand

The generation/attraction amounts of passenger demand for each fiscal year were calculated

according to the concepts outlined in 5.2.1. The results are shown in Figures 5-50 and 5-51.

The total value in 2030 was forecast to be 2.89 times that in 2012.



Source: Study Team

Figure 5-50 Passenger Demand

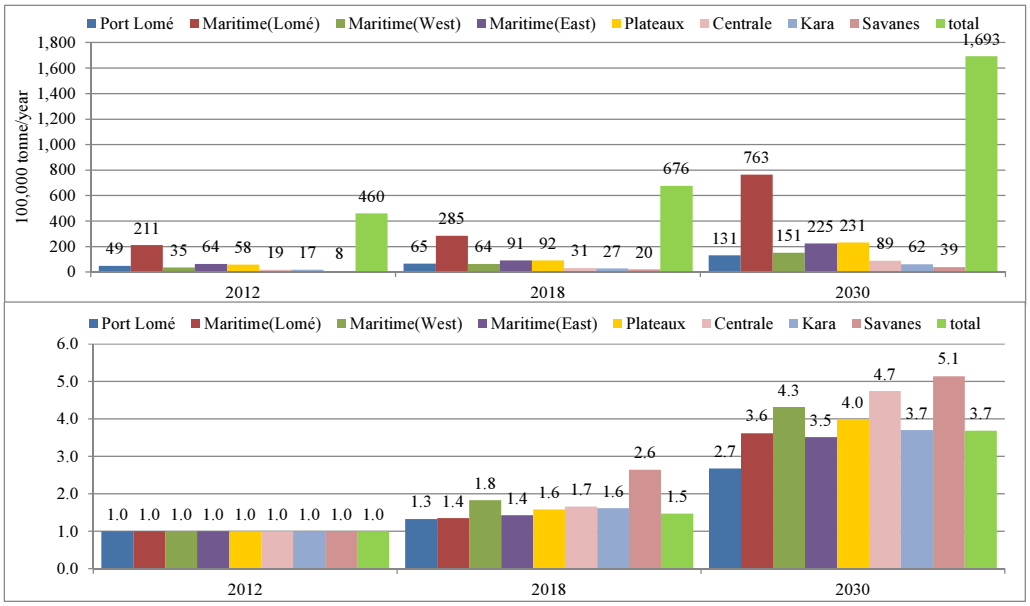
Source: Study Team

Figure 5-51 Passenger Demand in 2030

(5) Freight Demand

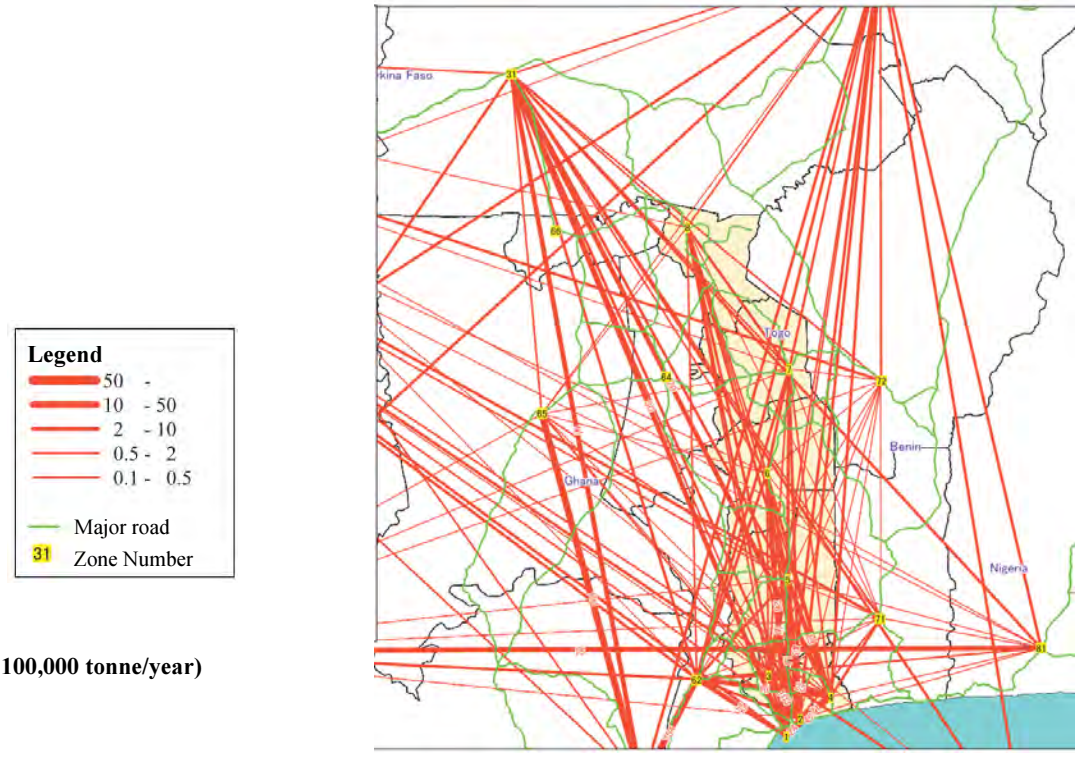
The generation/attraction amounts of freight demand for each fiscal year were calculated according to the concepts outlined in 5.2.1. The results are shown in Figures 5-52 and 5-53.

The total value in 2030 was forecast to be 3.7 times that in 2012.



Source: Study Team

Figure 5-52 Freight Demand



(Unit: 100,000 tonne/year)

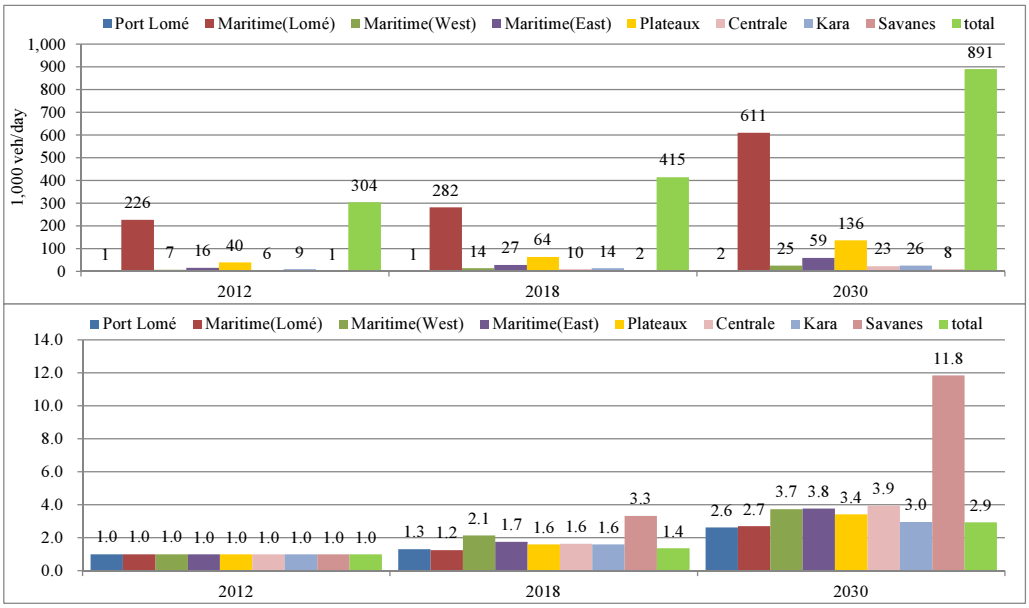
Source: Study Team

Figure 5-53 Freight Demand in 2030

(6) Traffic Demand (All vehicle types)

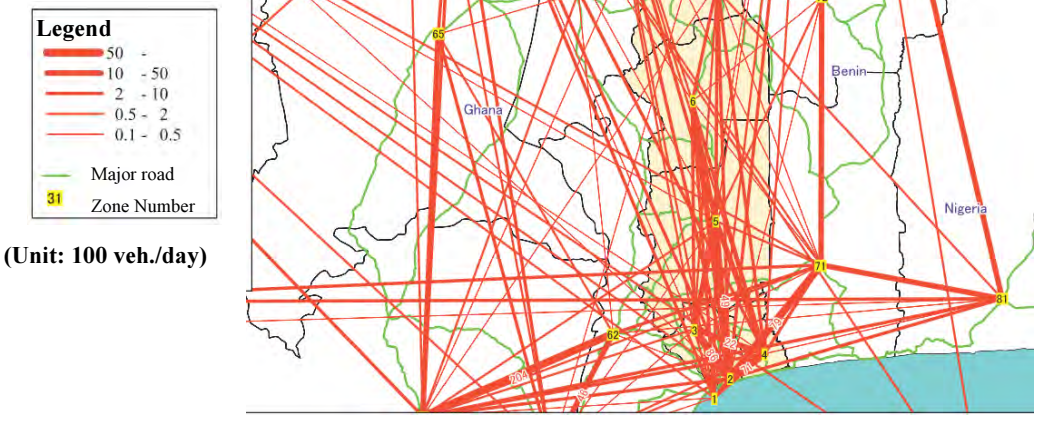
Numbers of passengers and freight weights were converted to generation/attraction amounts by a conversion coefficient. The results are shown in Figures 5-54 and 5-55. And O/D matrices by vehicle type for 2012, 2018 and 2030 are attached in Appendix A-5.

The total value in 2030 was forecast to be 2.9 times that in 2012.



Source: Study Team based on customs data

Figure 5-54 Traffic Demand of All Vehicle Types (except motorcycles)



(Unit: 100 veh./day)

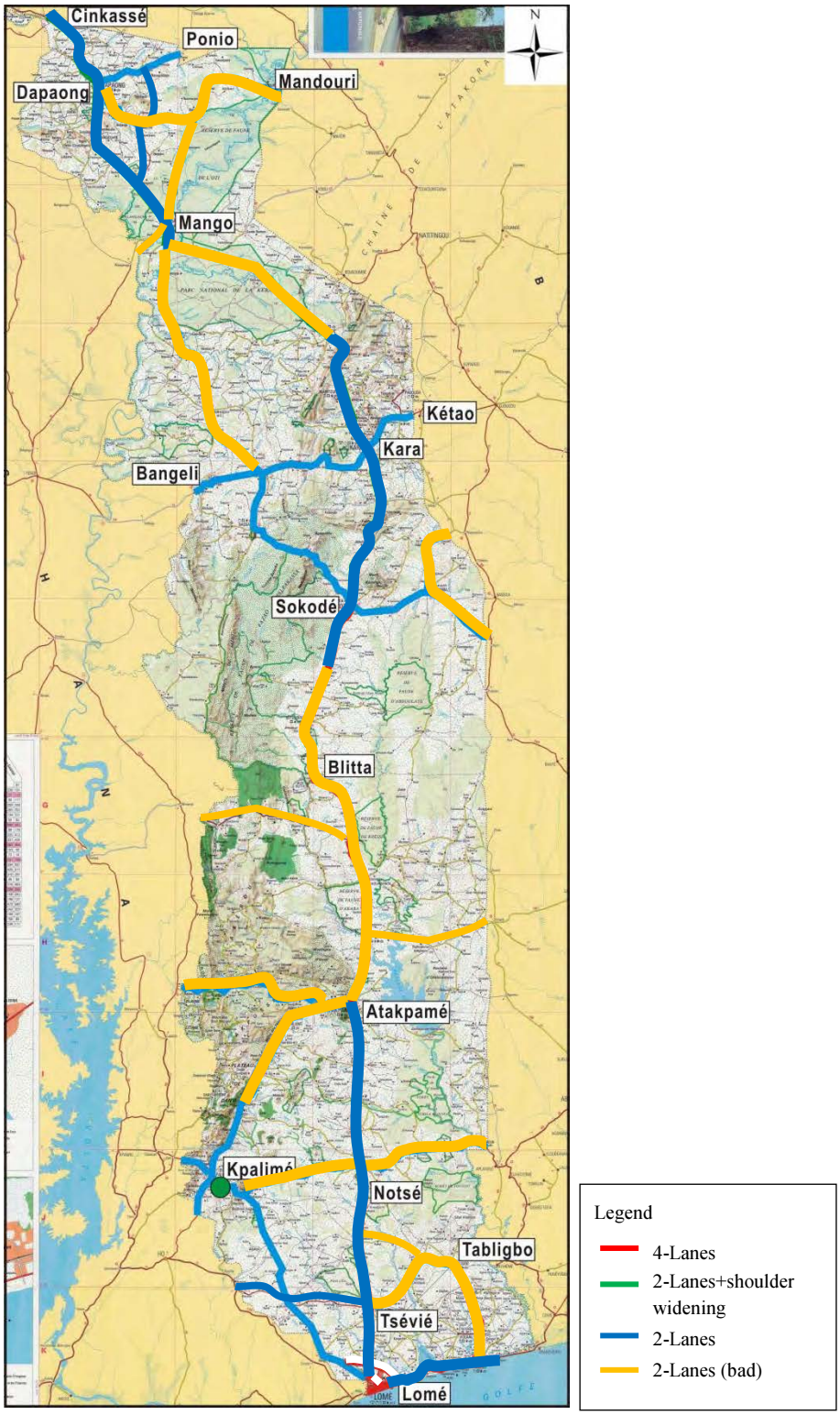
Source: Study Team

Figure 5-55 Traffic Demand of All Vehicle Types (except motorcycles) in 2030

5.2.4 Transport Network to Meet Future Traffic Demand

(1) Road Network Model

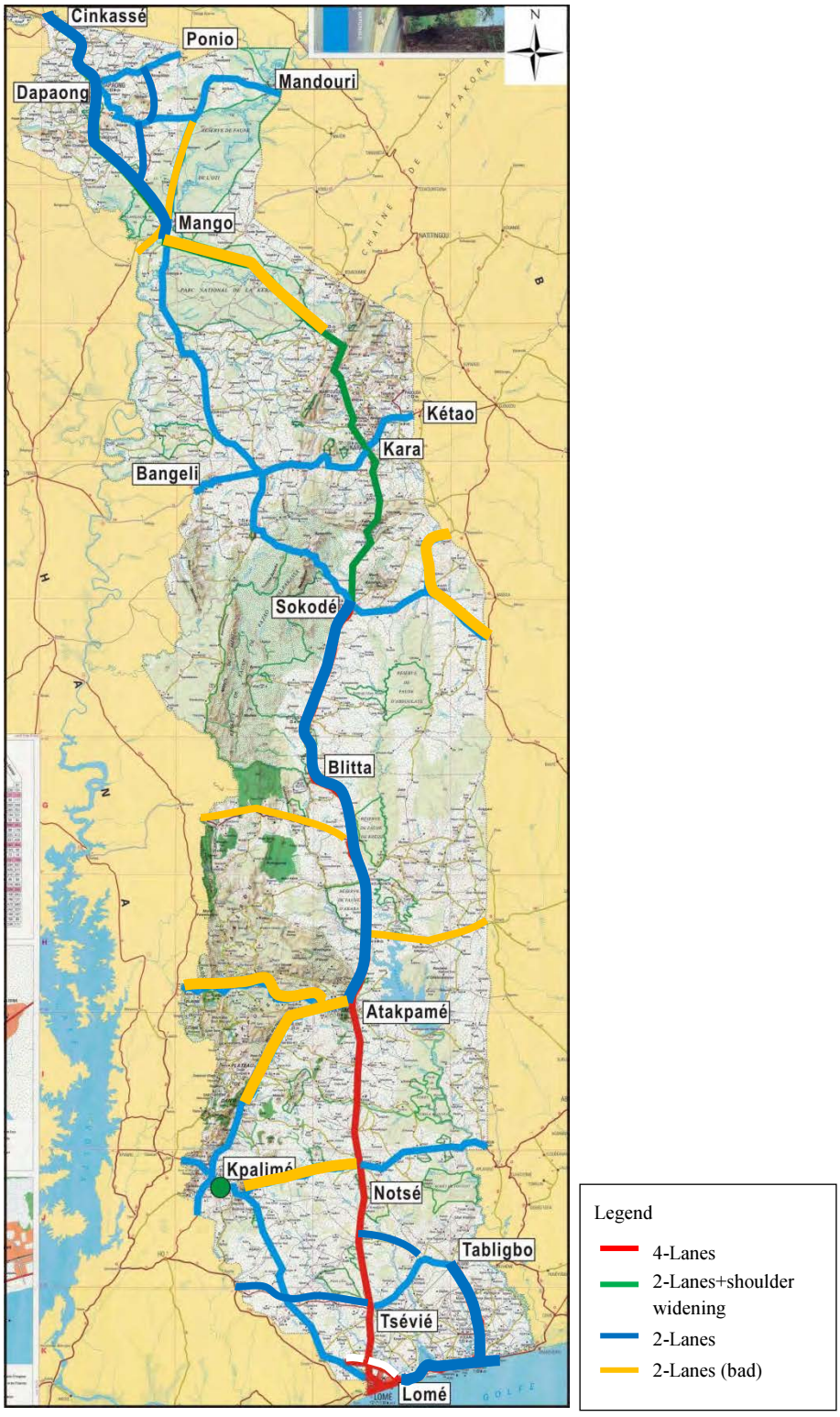
The present road network in 2012 is shown in Figure 5-56.



Source: Study Team

Figure 5-56 Road Network in 2012

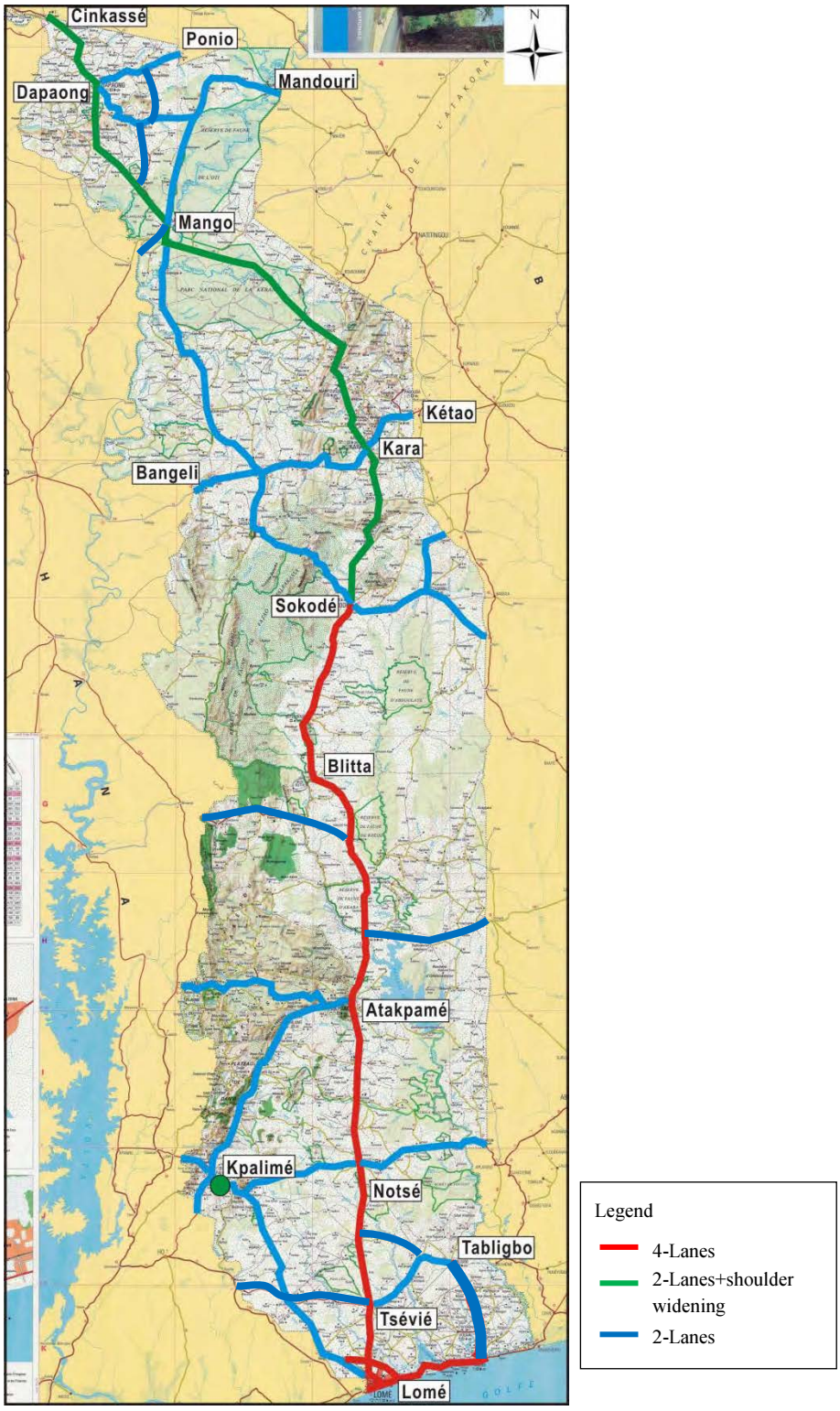
The projected road network in 2018 is shown in Figure 5-57.



Source: Study Team

Figure 5-57 Road Network in 2018

The projected road network in 2030 is shown in Figure 5-58.



Source: Study Team

Figure 5-58 Road Network in 2030

5.2.5 Forecast of Future Freight Flow

The freight transportation flow in 2012 and 2030 by product is shown in Appendix 6

5.2.6 Traffic Assignments on Alternative Transport Networks

(1) Confirmation of Reliability of Route Assignment on the Present Road Network

- The present O/D volume was assigned to the present road network. The results of the present route assignment are shown in Figure 5-59.
- The results of route assignment on each road link were compared with the estimated AADT based on the traffic survey, and the correlation coefficient between the two was calculated as shown in Table 5-14 and Figure 5-60.
- As a result, the assigned traffic volume on the present road network was considered to be reliable because the correlation coefficient was 0.9.

Table 5-14 Correlation Coefficient between AADT and forecast

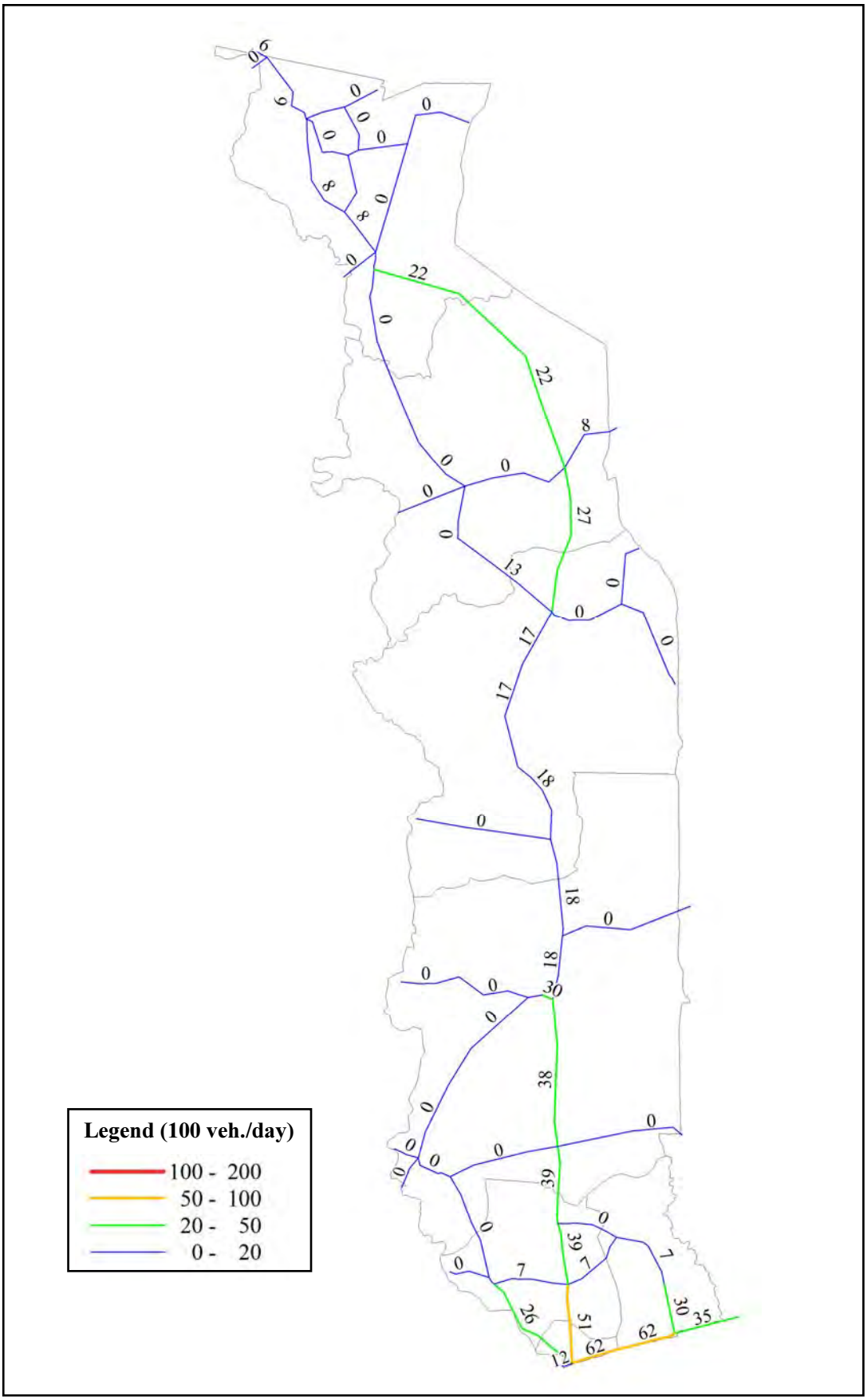
Point No.	Location	Road No.	2012 Traffic Survey Result (a)	Weekly Correction Coefficient (b)	Monthly Correction Coefficient (c)	2012 AADT (=a/b/c)	Present Traffic Forecast
1	In front of Sahel Terminal	RN1	9,538	1.065	1.102	8,126	5,095
3	Tsévié	RN1	5,020	1.065	1.102	4,277	5,095
7	Atakpamé	RN1	2,136	0.911	1.062	2,208	3,840
9	Anié	RN1	2,062	0.911	1.062	2,131	1,792
14	Niamtougou-Kandé	RN1	866	0.911	1.062	895	2,218
16	Kandé – Sansanne Mango	RN1	516	0.911	1.062	533	2,218
17	Dapaong	RN1	823	0.911	1.062	851	805
2	Kpémé	RN2	7,802	1.065	1.102	6,647	6,160
5	Tsévié	RN4	1,119	1.065	1.102	953	682
4	Sanguéra	RN5	1,978	1.065	1.102	1,686	2,589
6	Gadjagan	RN5	1,616	1.065	1.102	1,376	0
8	Atakpamé	RN5	543	0.911	1.062	561	2
10	Sokodé – Tchamba	RN14	341	0.911	1.062	353	1
13	Border of Togo – Bénin	RN16	859	0.911	1.062	888	841
11	Sokodé – Bassar	RN17	173	0.911	1.062	179	1,318
15	Katchamba	RN17	0	0.911	1.062	0	0
12	Kara – Kabou	RN19	536	0.911	1.062	554	0

Source: Study Team

(2) Traffic Modal Split

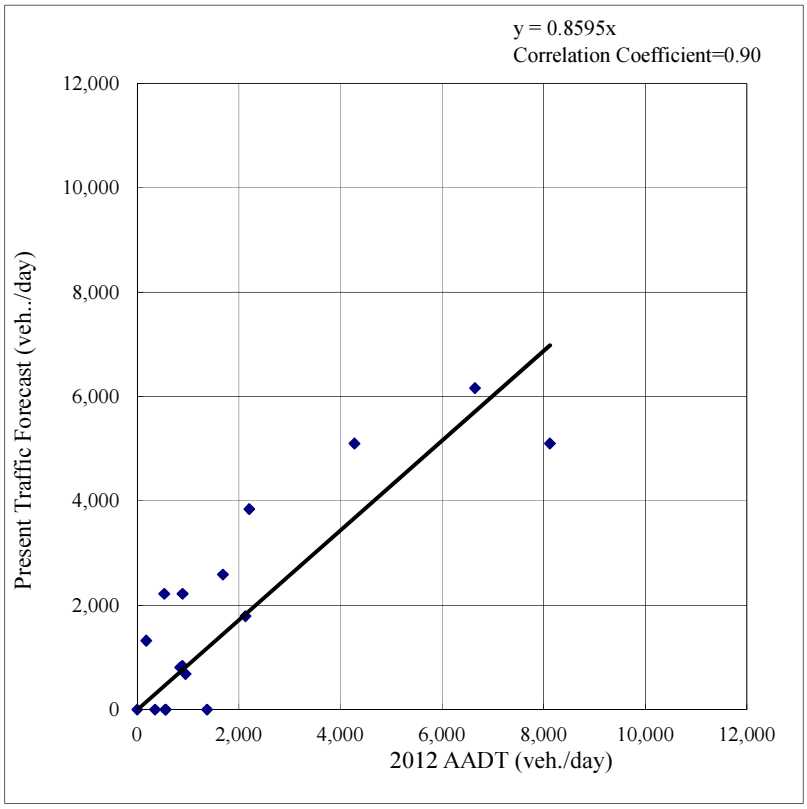
The following assumptions were used for calculating the modal split of the traffic demand in the Study for the optimum case for the evaluation. However, if the railway projects are judged to be unfeasible, the cargo demand for railway is assumed to be converted to road transport.

- The full volumes of fuel, clinker, ore and containerised cargo to landlocked countries are assumed to be transported by railway. (see Table 5-15)
- About 20% of fuel and containerised cargo form Lomé Port to the northern part of Togo is assumed to be transported by railway.
- 10% of passenger demand between Maritime (Lomé) and Kara is assumed to be diverted to air transport (see Figure 5-61).



Source: Study Team

Figure 5-59 Results of Route Assignment of Present Traffic in 2012



Source: Study Team

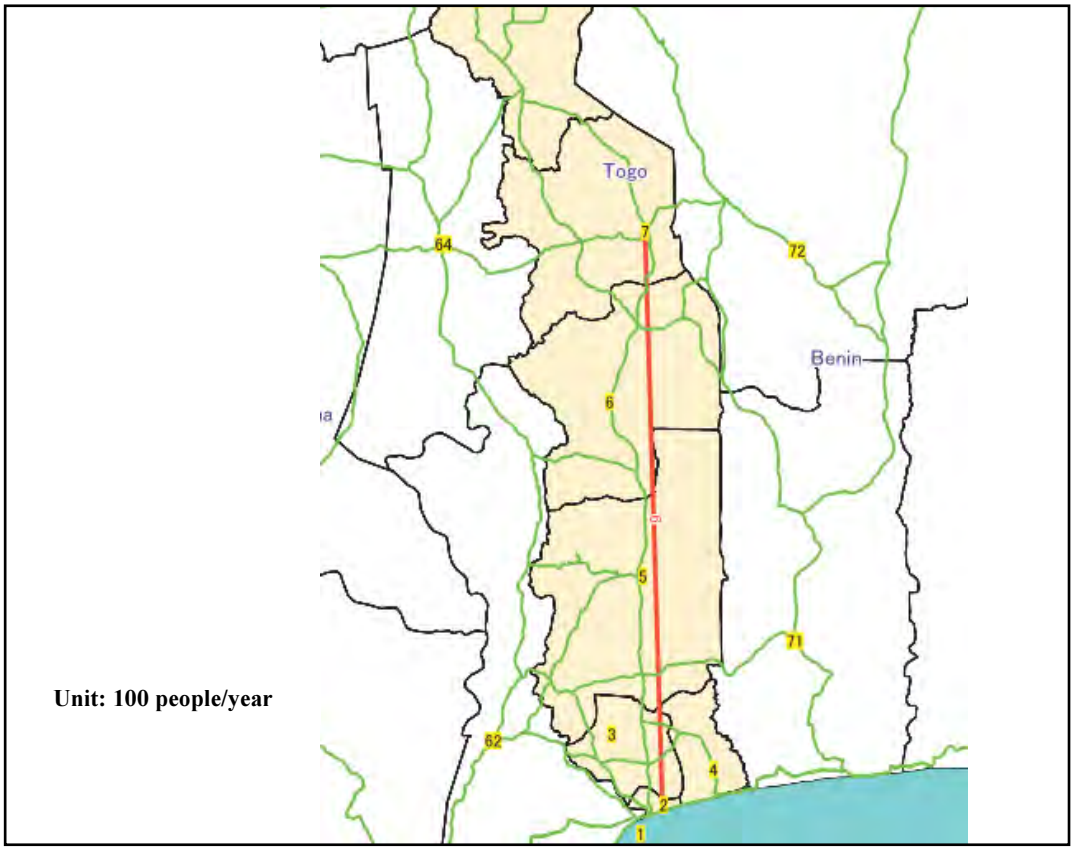
Figure 5-60 Correlation Coefficient between AADT and Forecast

Table 5-15 Modal split of freight transportation

OD Goods	Ore	Clinker	Fuel	Container*	others
Lomé port – Tabligbo	Road	Railway	Road	Road	Road
Lomé port – Aflao	Road	Railway	Road	Road	Road
Tabligbo – Aflao	Road	Railway	Road	Road	Road
Tabligbo – Inland countries	Road	Railway**	Road	Road	Road
Lomé Port – Blitta(including northern Togo)	Railway**	Railway**	railway** 20% Road 80%	Railway** 20% Road 80%	Road
Lomé Port – Inland countries	Railway**		Rail**	Railway**	Road
Others	Road	Road	Road	Road	Road

Notes: *Container means freight which is transported by a container at the time of marine transportation.
**In sections where there is no railway , the freight is transported by road.

Source: Study Team

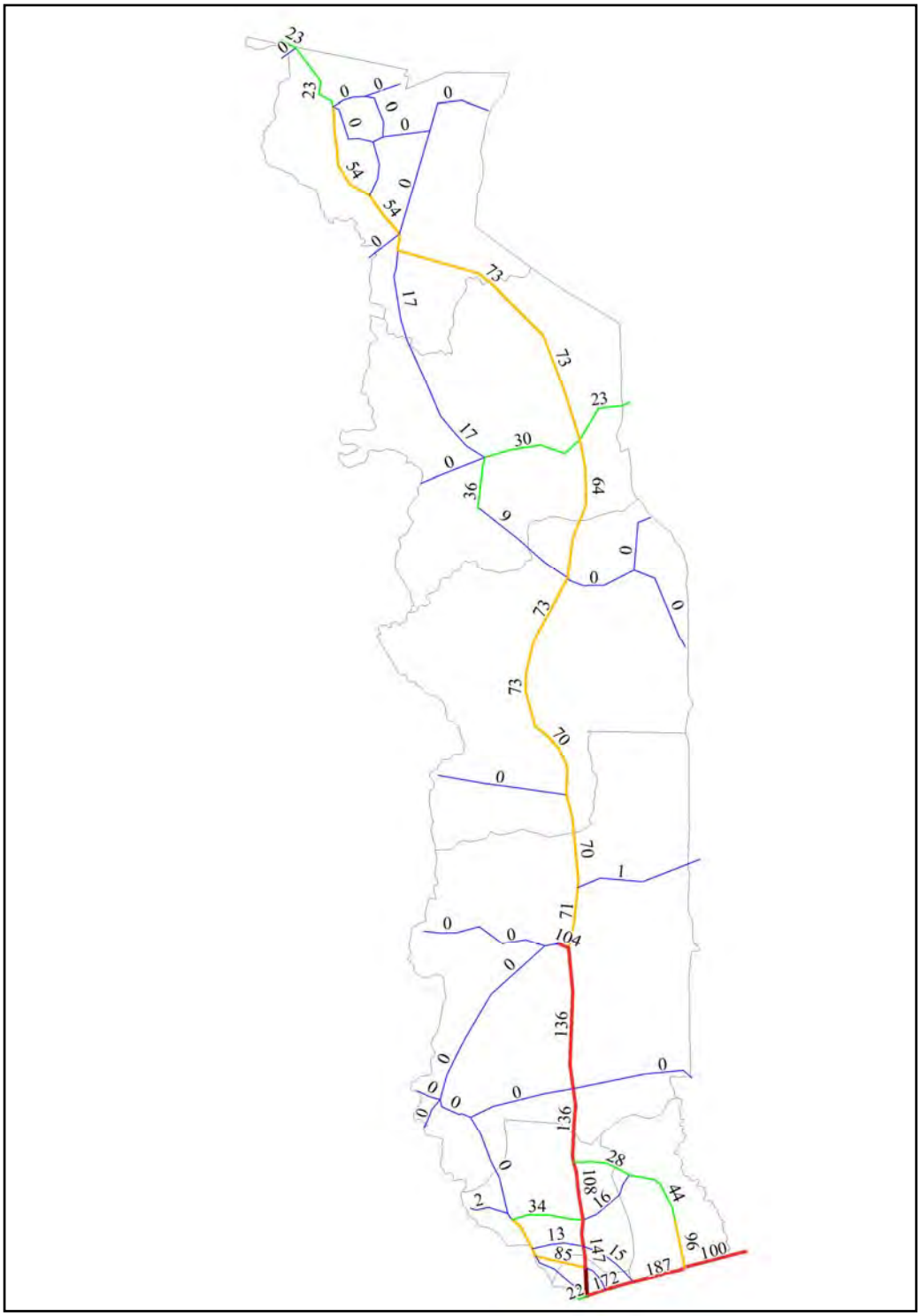


Source: Study Team

Figure 5-61 Air Passenger Demand in 2030

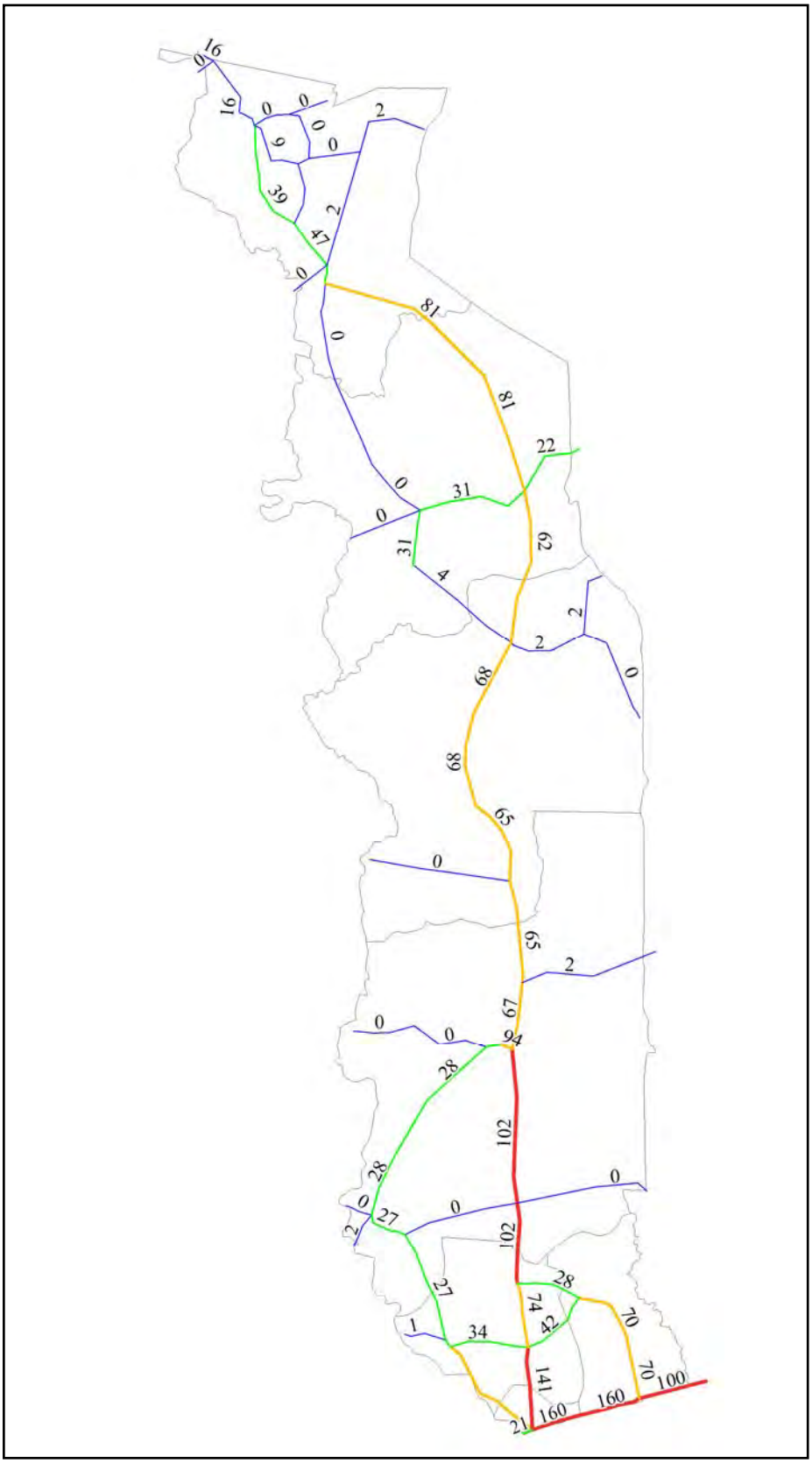
(3) Route Assignment of Future Traffic Demand on the Road Network

Figures 5-62 and 5-63 show the results of route assignment of the future traffic demand (2030) on the road network for the "with all road projects case" and the "without new road projects case", respectively. In the latter case, it was assumed that the road conditions will change from good to bad with ageing. The traffic on RN1 is 10,000 veh./day or more around Lomé, and is about 2,000 veh./day around Cinkassé.



Source: Study Team

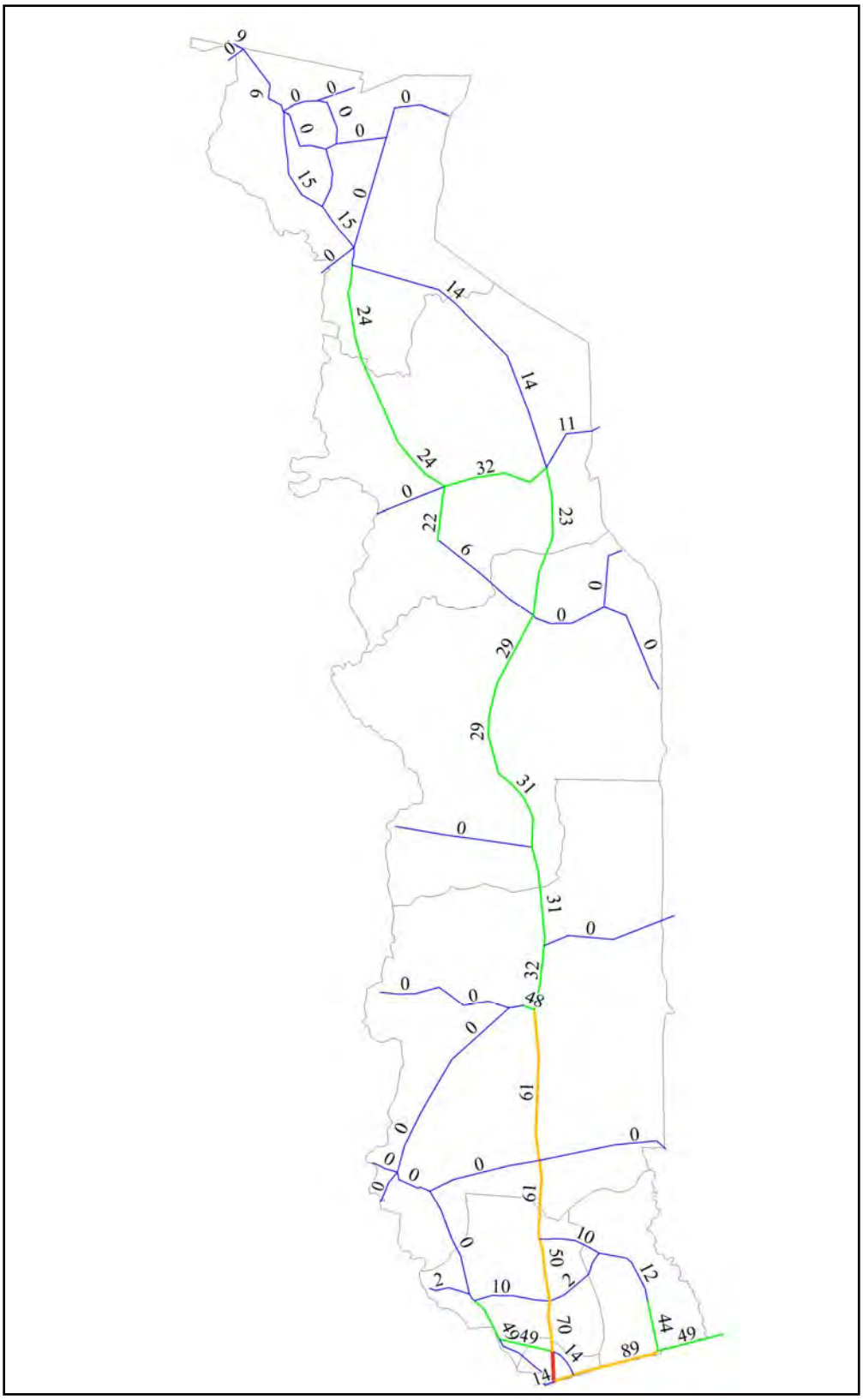
Figure 5-62 Results of Route Assignment on Full Road Network in 2030



Source: Study Team

Figure 5-63 Results of Traffic Assignment on Road Network without New Project (2030)

Figure 5-64 shows the results of route assignment of the future traffic demand (2018) on the road network.



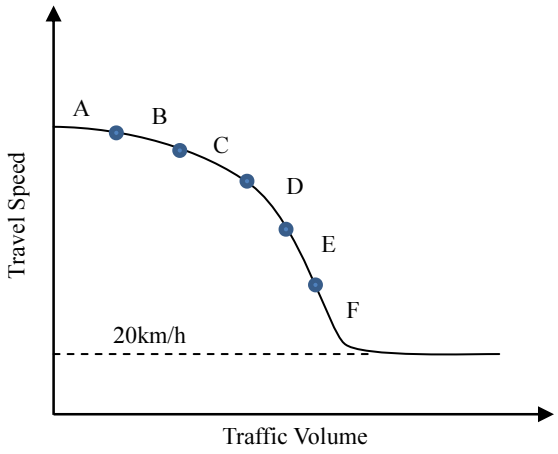
Source: Study Team

Figure 5-64 Results of Route Assignment on Road Network in 2018

(4) Level of Service

The Highway Capacity Manual (HCM) uses travel speed and volume by capacity ratio (v/c ratio) to distinguish between various levels of service (LoS). The value of this ratio can vary between 0 and 1. Depending upon the travel speed and v/c ratio, the HCM defines six LoS, level A to level F, based on a graph between travel speed and v/c ratio.

In this Study, the levels of service were set from the relation between traffic volume and speed, as shown in Figure 5-65.



Source: Study Team

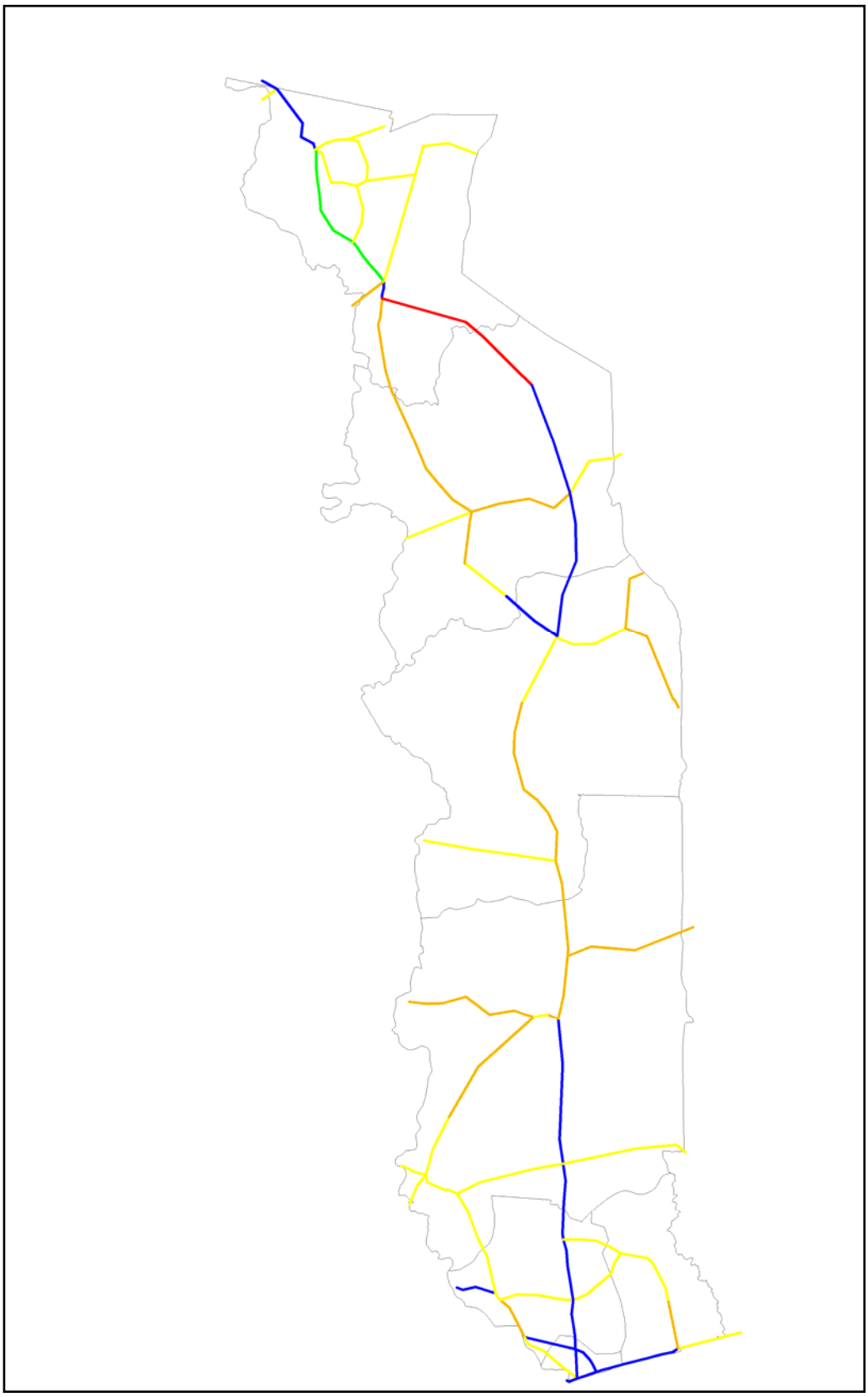
Figure 5-65 Level of Service

Then, the LoS of the road network in 2012, 2018, and 2030 in both cases of with the full network and without new projects were calculated as shown in Figures 5-66 to 5-69.

It was forecast that the LoS would decrease remarkably in 2030 if a new project is not executed. However, it was forecast that the LoS would improve remarkably if a new project is executed. Thus, the LoS showed the necessity of a new project.

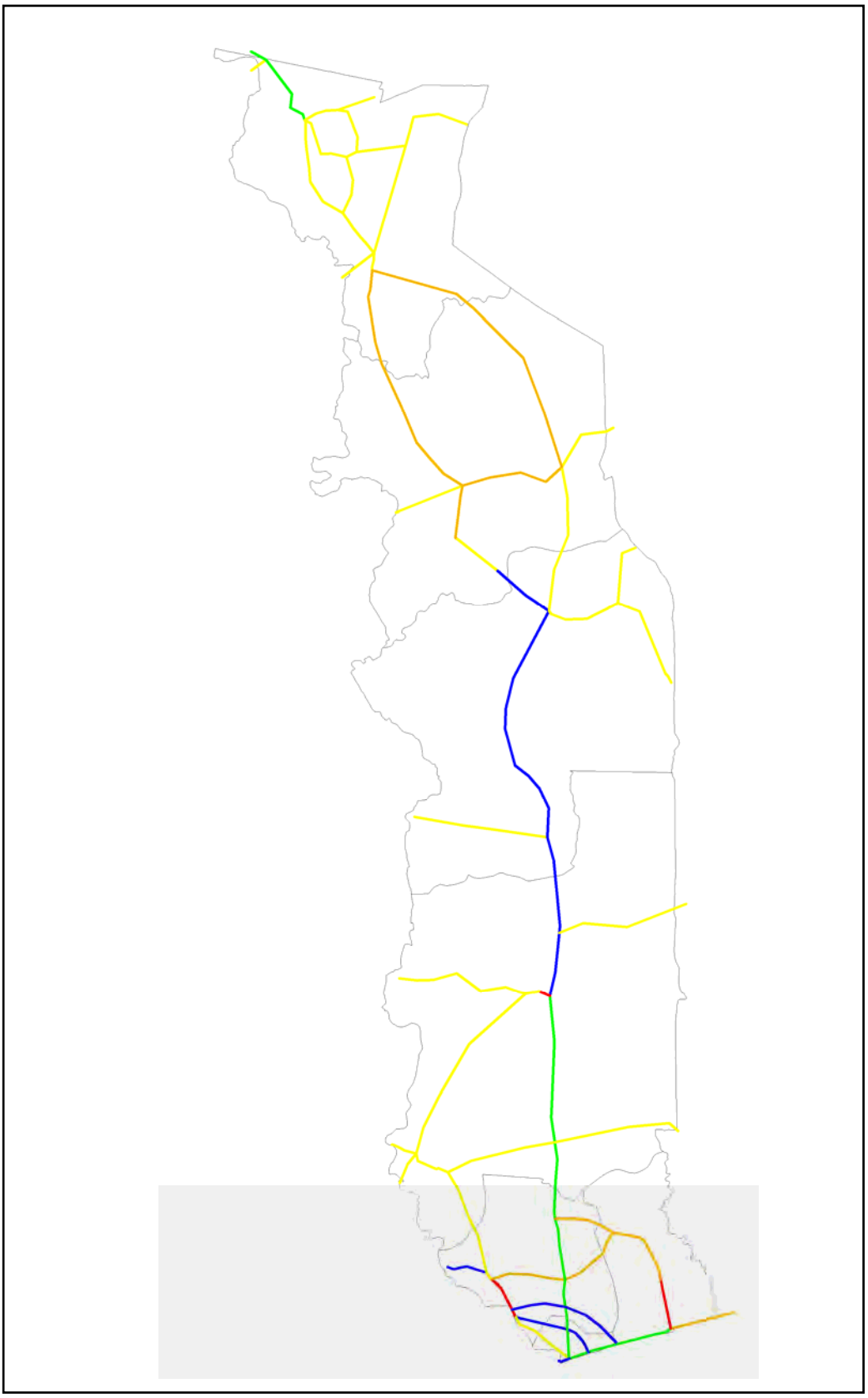
Source: Study Team

Figure 5-66 Level of Service of Present Traffic Forecast in 2012



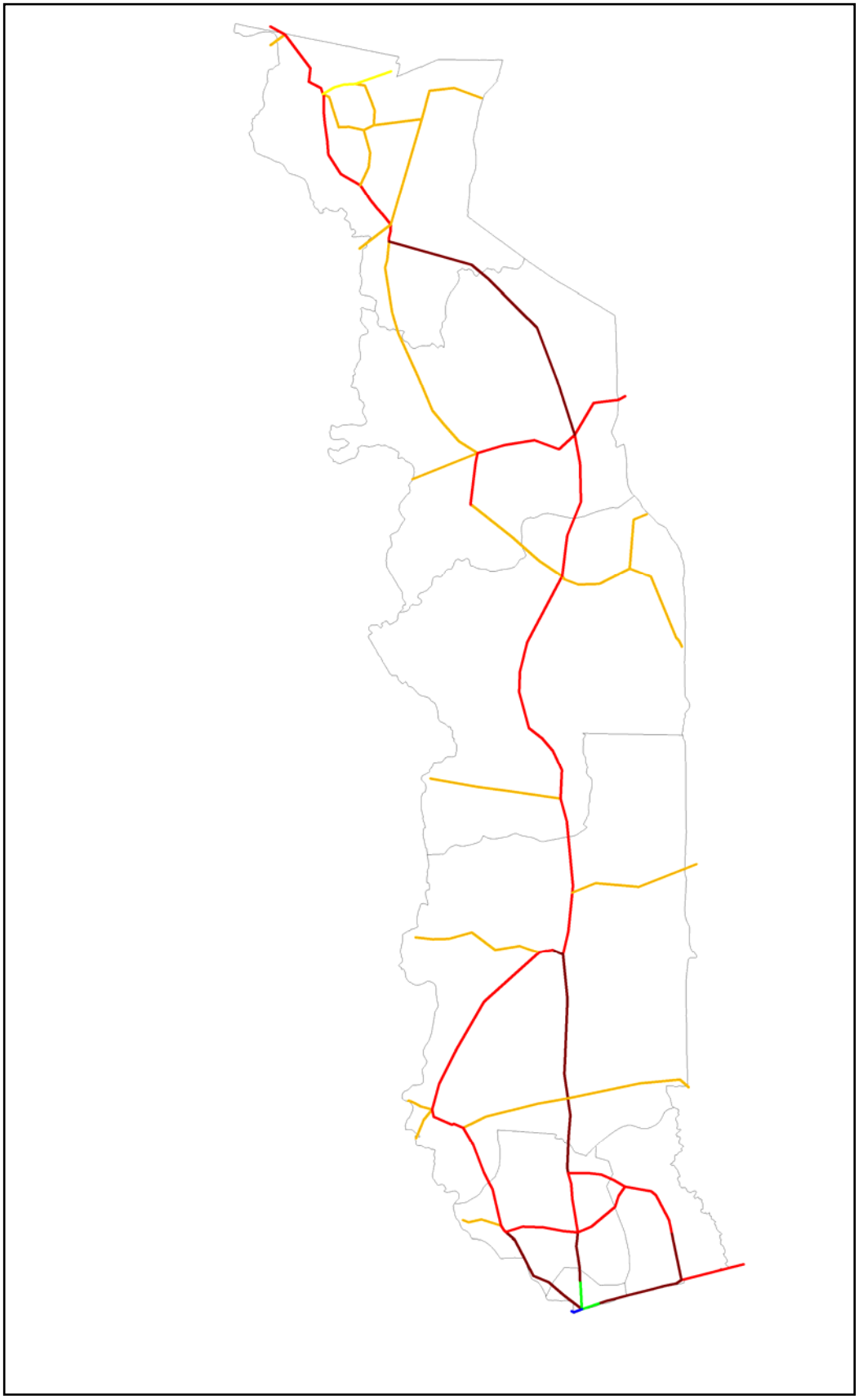
Source: Study Team

Figure 5-67 Level of Service of Future Traffic Forecast in 2018



Source: Study Team

Figure 5-68 Level of Service of Future Traffic Demand in 2030 with Full Road Network



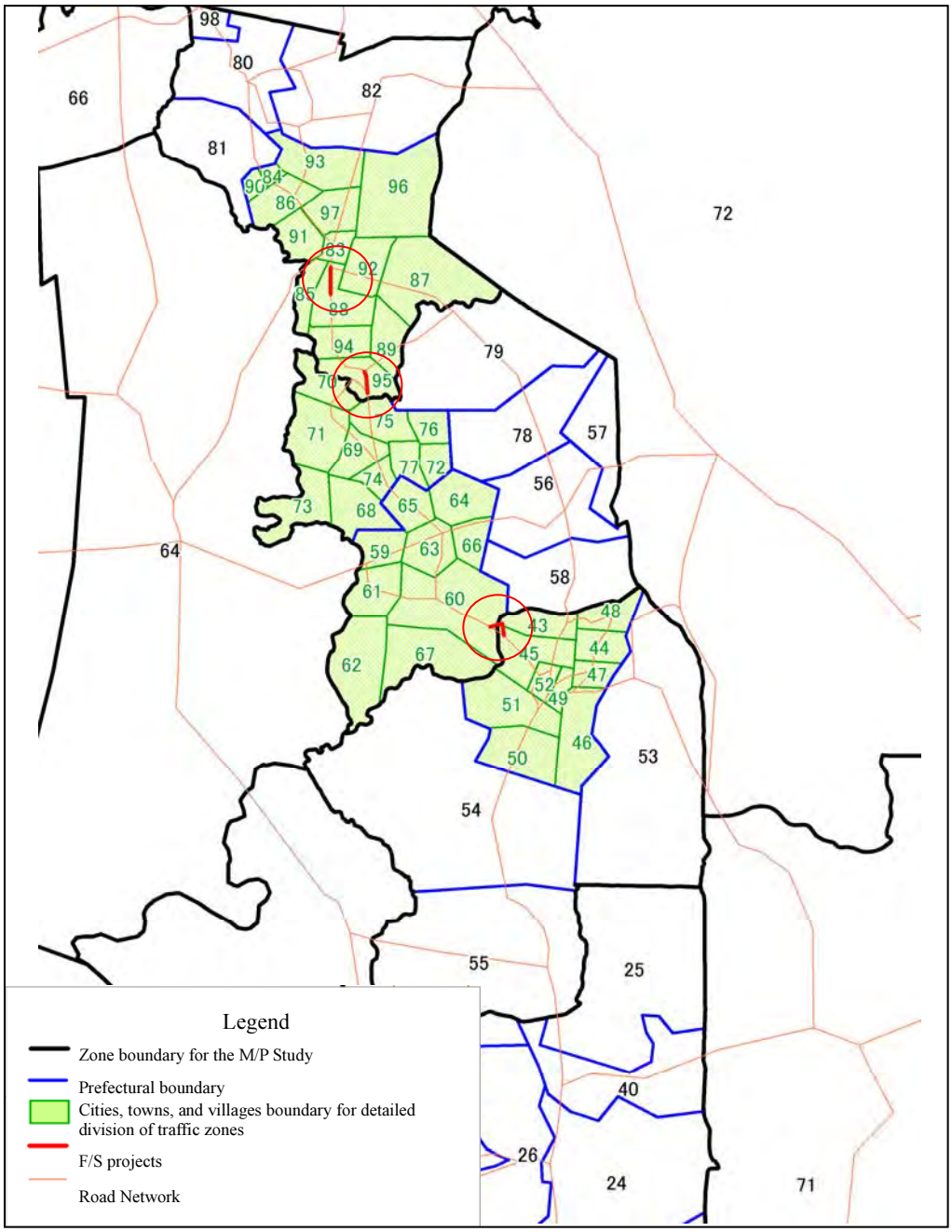
Source: Study Team

Figure 5-69 Level of Service of Future Traffic Volume in 2030 without New Project

5.2.7 Traffic Demand Forecast for the Feasibility Study

(1) Traffic Zones

For the economic evaluation in the F/S, the Study Team forecasted the future traffic volume on RN17 based on a further division of traffic zones in Tchaoudjo, Bassar, Dankpen and Oti Prefecture, which are influenced areas of RN17, mainly according to boundaries of cities, towns and villages. The total number of zones thus becomes 117, instead of 25 in the Master Plan stage. Figure 5-70 shows the detailed division of traffic zones in these areas.



Source: Study Team

Figure 5-70 Zoning Map for the F/S

(2) O/D Matrices

Based on the present O/D matrices by vehicle type prepared in the Master Plan study, the present and future O/D volumes of the new divided zones described above were estimated, as trip generation/attraction of each divided zone, using the population of each zone as a socio-economic indicator.

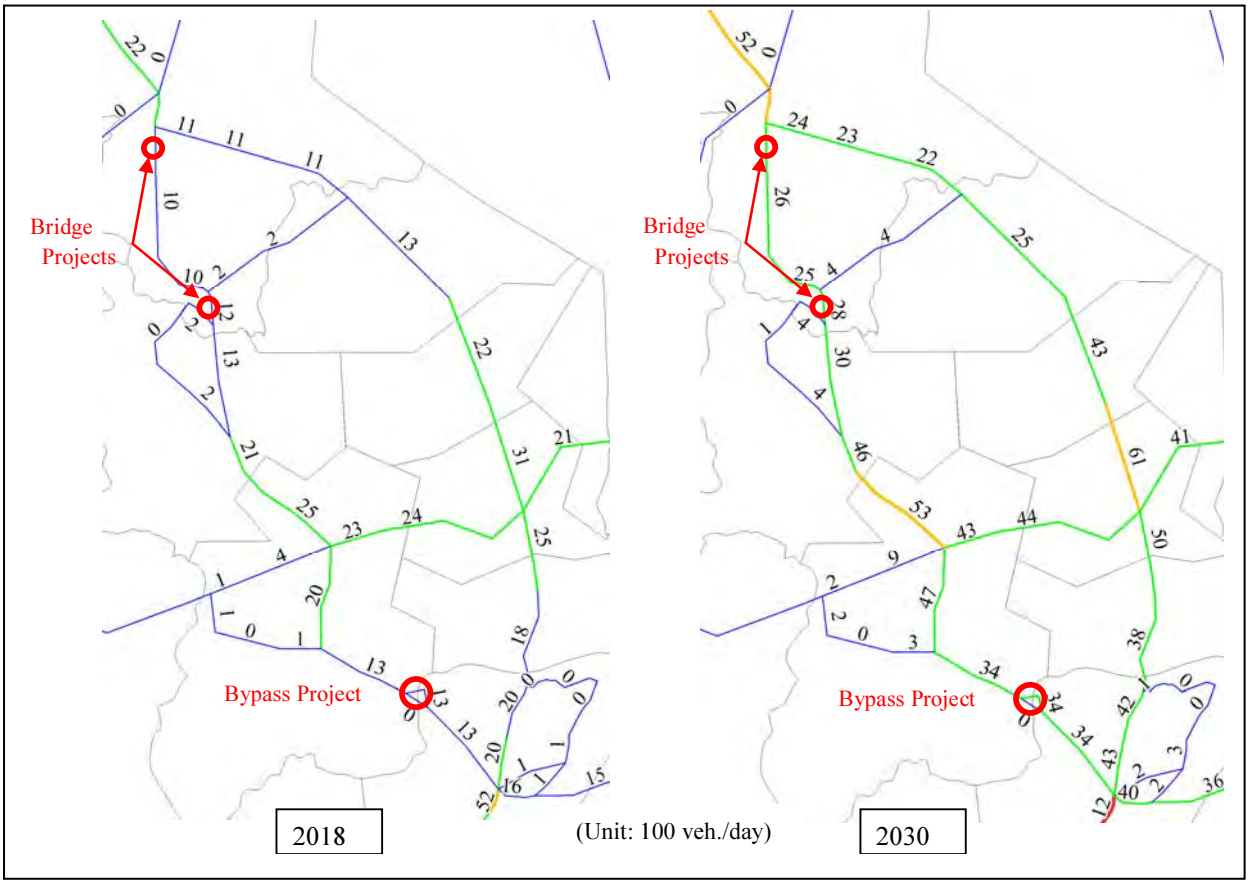
(3) Road Network

For the traffic demand forecast for the F/S, local access roads to city, town and village centres in the divided zones were added to the road network in the Master Plan study.

(4) Route Assignment of Future Traffic Demand on the Road Network

In the same manner as for the Master Plan study, the future O/D volumes were assigned to the future road network in the influenced areas of the two projects on RN17. Figure 5-71 shows the results of route assignments on RN1, RN17 and related road network in 2018 and 2030, assuming that both projects for the F/S will be constructed. In addition, the projected traffic volume at each project site by vehicle classification in 2018 and 2030 are shown in Table 5-16.

In this case, it should be noted that even though the analysis period of the economic evaluation for both projects is 2038, the traffic volume from 2031 to 2038 is considered to remain at the same level as in 2030, because traffic demand is unlikely to increase without limit.



Source: Study Team

Figure 5-71 Results of Route Assignments of Future Traffic Demand for the F/S

Table 5-16 Future Traffic Volume by Vehicle Type at Project Sites in 2030

(Unit: veh./day)

Vehicle Type	Malfakassa Bypass		Bridge across the Koumongou River	
	2018	2030	2018	2030
Passenger car	575	1,399	415	1,109
Light bus	153	389	127	337
Light truck	43	106	43	103
Heavy truck	212	633	171	437
Trailer	220	656	173	443
Container trailer	84	181	84	179
Total	1,287	3,363	1,013	2,608
Motorcycle	133	500	187	740