

Chapter 7 Urban Development Plan in the DMA

7.1 Land Use Plan for DMA

(1) Criteria and procedure for land use planning

A land use plan for the DMA is prepared to guide the urbanization for both the realization of more desirable urban spaces and the preservation of greenery and agricultural land as much as possible. The basic idea of the land use planning is to indicate broadly general uses of different areas allowed in line with the desirable urbanization pattern rather than to designate the precise land use for each area.

Along this idea, such areas that may be used for future urbanization are identified by using several criteria. The more important criteria used for the present analysis are the topography or the slope of land, access from the existing urban areas directly or through artery roads, water availability, geology or more specifically the vulnerability to earthquake risk, and the environmental consideration represented by the need to protect watershed areas. The specific criteria used for the analysis here and land classification by each of the criteria are summarized in Table .

These criteria and classification are represented by thematic maps of a GIS. These maps are then overlaid by the GIS to define land suitability for urbanization. The urbanization areas where future urbanization would be allowed are generally outside the watershed areas, having favorable conditions such as relatively flat land, good access, reasonable water availability, and without direct threat from earthquakes. Within the watershed areas, limited areas are identified for careful development. The results are compiled by the GIS into a land suitability map (Figure 7.1).

Table 7.1 Criteria and Classification for Land Suitability for Urban Use

Criteria	Land suitability classification
A. Topography	1.Slope less than 5 degree 2.Slope between 5 and 12 degree 3.Slope larger than 12 degree
B. Access	1.a & b 2.a or b 3.otherwise where a: within 2km band on both sides of main arteries or within 1.5km band on both sides of secondary arteries, and b: within 3km radius from main intersections or within 2km radius from secondary intersections, where main artery + main/secondary artery = main intersection, secondary artery + secondary artery = secondary intersection
C. Water availability	1. High in all districts other than the below 2. Medium in Douma center, Saidnaya, Al Tall center, Al Kissweh, Ma'aloula, and Al Qutaifeh center 3. Low in Al Nashabiyeh, Harran Al Awamid, and Al Ghizlaniyeh
D. Geology	1. Outside the band of major fault lines (1km on both sides of major fault lines) 2. Within the band of major fault lines
E. Watershed	1. Area with annual precipitation exceeding 350mm 2. Area with annual precipitation less than 350mm

Source: JICA Study Team

The existing land use map has been prepared by a sub-contract work (Figure 7.2). It is overlaid with the land suitability map by the GIS, and a future land use map is prepared to indicate the desirable land use pattern to be realized in the long run. Finally, areas for specific developments planned by the master plan are delineated largely in line with the future land use map.

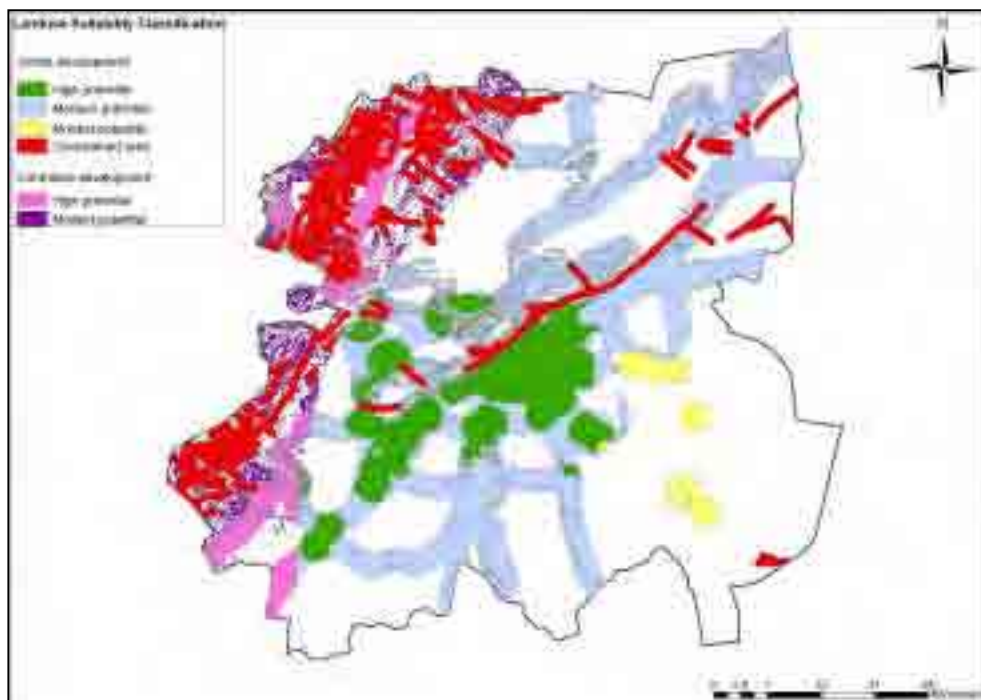


Figure 7.1 Land Suitability for Urban and Controlled Development in the DMA

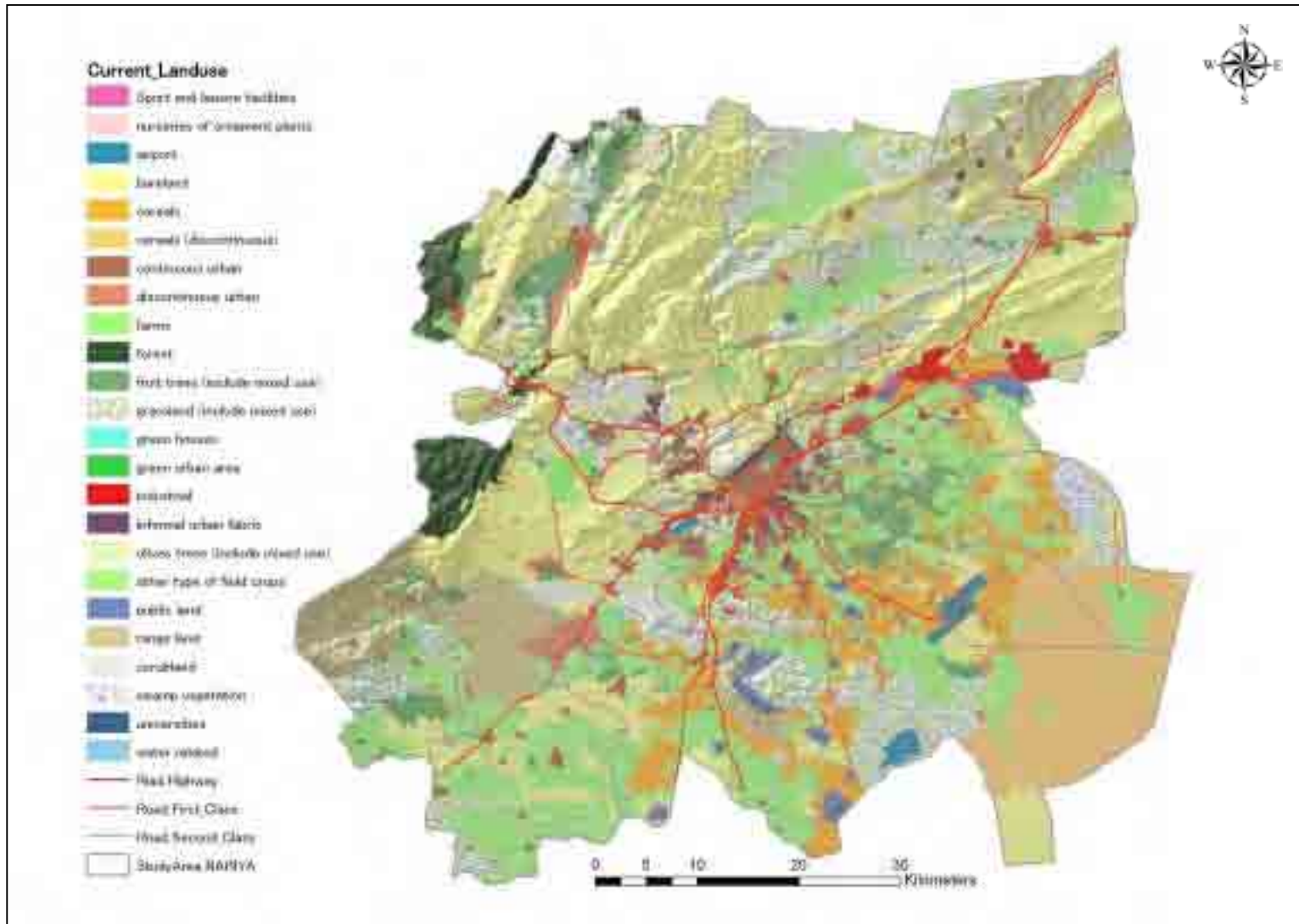


Figure 7.2 Existing Land Use in the DMA

(2) DMA land use plan for 2025

Following the procedure outlined above, the future land use map is prepared. On this map, areas for specific developments planned by the master plan are delineated. These areas include those for the six proposed multi-functional urban centers and the four new cities. The results are shown in Figure 7.3 as the DMA directional land use plan for 2025. The land use classes used for the DMA land use plan is described in Table 7.1.

It is noted that the directional land use plan thus prepared is largely consistent with the on-going studies and planning for urban and residential developments in the Barada valley region, Al Tal, Saidnaya and Ma'aloula. In other words, these areas for future developments have been well identified in terms of the criteria used for the directional land use plan. An exception is the area in the Barada valley region identified for development by the ongoing planning, which falls in the land use classes for non-development or controlled development by the directional land use plan due to the geological vulnerability and the watershed area.

Some areas are reserved for possible urbanization areas in the future designated as the urbanization area. Areas for other urban uses may be selected from these areas such as additional industrial land, sports and leisure facilities, airport expansion, and universities. The designated agricultural land should be preserved as shown. Some other areas where the land use conversion is expected may be in the process of the conversion as of 2025, although specific areas cannot be determined. They include the controlled urban development area, formalization area, and productive greenery and urban park.

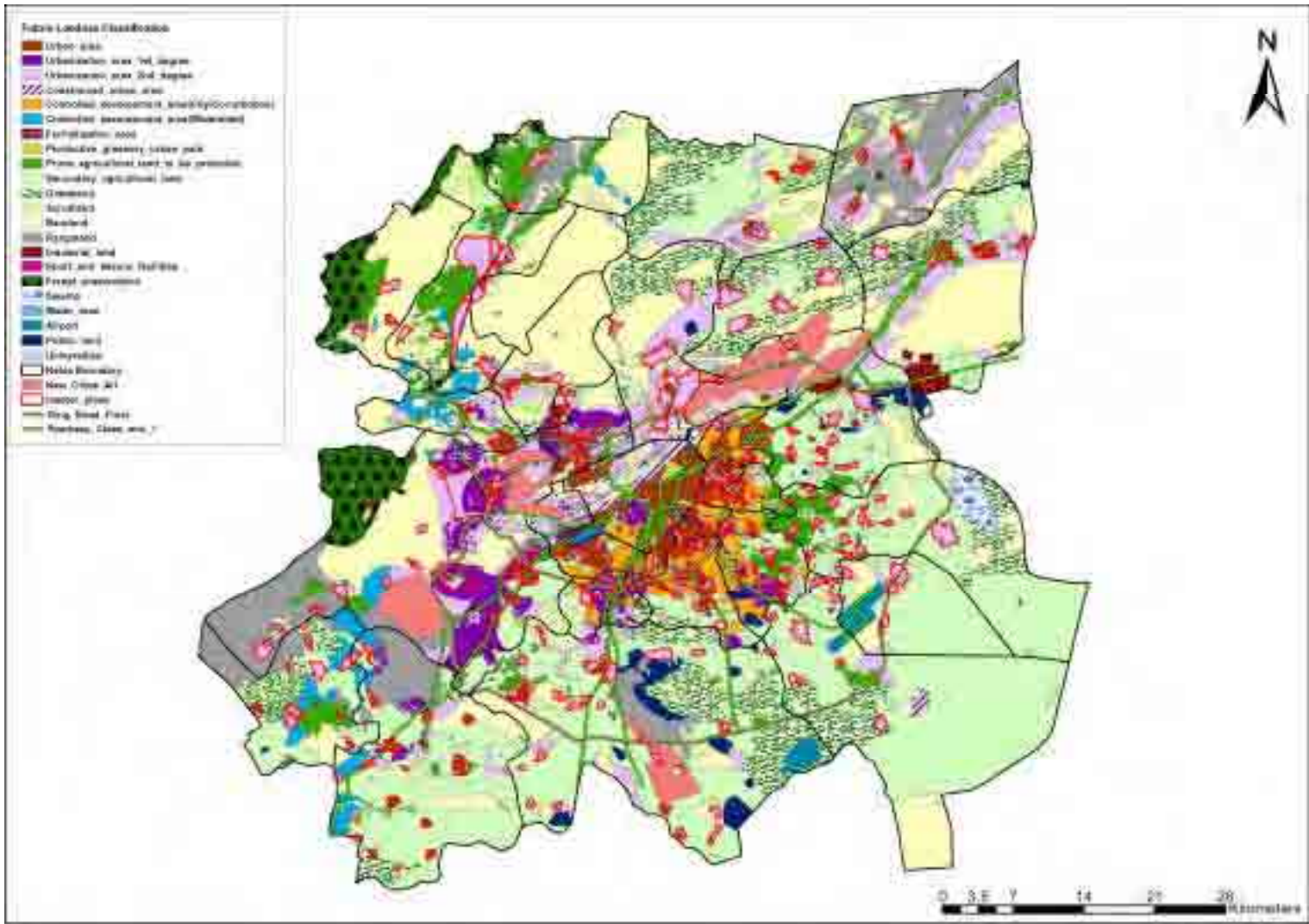


Figure 7.3 Directional Land Use Plan for the DMA

Table 7.1 Future Land Use Classification

No.	Land use class	Description
1	Urban area	Existing urban area with already high density, where urban renewal is an option
2	Urbanization area-1st degree	Discontinuous urban area or low productivity land near existing urban areas where urbanization is inevitable
3	Urbanization area-2nd degree	Discontinuous urban area or low productivity land with reasonable access from existing urban areas
4	Constrained urban area	Urbanized area near major fault lines or with serious water problems
5	Controlled development area (city/conurbation)	Area under urbanization pressure where a new control mechanism is to be introduced to guide the urbanization
6	Controlled development area (watershed)	Area within watershed but with development potentials where careful development is to be undertaken
7	Formalization area	Informal housing area that is to be formalized
8	Productive greenery & urban park	Productive land near existing urban areas that is to be developed for additional economic activities with park
9	Prime agricultural land to be protected	Agricultural land with fruit trees partly in combination with vegetables that should be protected and enhanced
10	Secondary agricultural land	Agricultural land under cereals, olive trees or other field crops that is to be protected if urbanization potentials are not high
11	Grassland	Existing grassland that is not to be urbanized due to low urbanization potentials
12	Scrubland	Existing scrubland that is not to be urbanized due to low urbanization potentials
13	Bare land	Existing bare land that is not to be urbanized due to low urbanization potentials
14	Rangeland	Existing rangeland that is not to be urbanized due to low urbanization potentials
15	Industrial land	Existing industrial land that may be converted to other uses
16	Sports & leisure facilities	Existing sports & leisure facilities that are to be maintained
17	Forest preservation area	Existing forest area to be preserved
18	Swamp/water area	Existing swamp/water area that is to be maintained
19	Airport	Existing airport
20	Public land	Existing public land
21	Universities	Existing universities

Source: JICA Study Team

(3) Indicative land use plan for the Damascus city

By taking the land use plan for the DMA as presented above as a framework, an indicative land use plan is prepared for the Damascus city. From the DMA land use plan, the six urban land use classes are defined:

- 1) Formalization area,
- 2) Controlled urban and agricultural development area,
- 3) Urban area (existing),
- 4) Productive greenery and urban park,
- 5) Urbanization area, and
- 6) Constrained urban area.

In addition, the following land use classes are introduced specific to the Damascus city:

- i) Heritage restoration and use area,
- ii) Urban renewal area,
- iii) Living environment improvement area, and
- iv) Mixed use (residential + commercial) area.

These additional land use classes broadly indicate areas within which specific sites should be selected for respective purposes.

The indicative land use plan for the Damascus city is presented in Figure 7.4. For each land use class, the same concepts and approach should be applied for the development and preservation, but within each class more than one building codes may apply to specify more detailed land uses. The correspondence between the land classification adopted by the GCEC and the indicative land use plan for the city is shown in Table 7.3. The land use classes by the indicative land use plan indicate what land use should be realized in each class rather than the existing status of the respective land.

Table 7.2 Correspondence between Land Use Classification by GCEC Plan and Indicative Land Use Plan for Damascus City

GCEC Plan		Indicative land use plan for Damascus city
Zone	Description	Land use class
B	High density agricultural area	Controlled urban & agricultural development area Productive greenery & urban park
G	Industrial area	Urban renewal area
H	New organized residential area	Urban renewal area Living environment improvement area Mixed use (residential + commercial) area Constrained urban area
K	Old district area	Heritage restoration & use area
K1	Historical district area	Heritage restoration & use area (priority)
O	Informal area	Formalization area Constrained urban area

Source: JICA Study Team

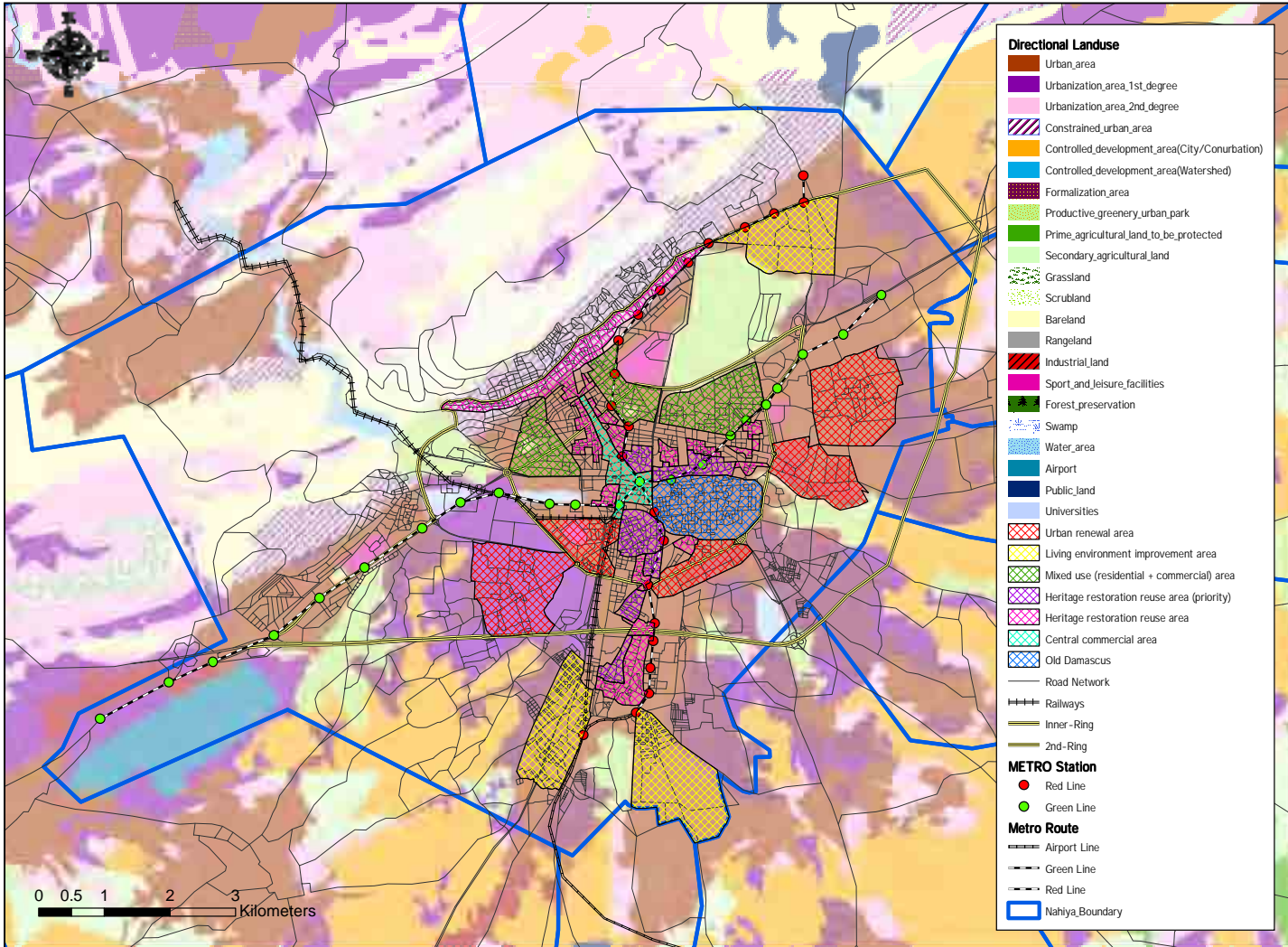


Figure 7.4 Indicative Land Use Plan for the Damascus City

7.2 Development Plan by Sector

7.2.1 Urban transport and public transportation plan

(1) Planning frameworks

Regional artery road network of the DMA

The urban transport and public transportation plan is formulated as part of the DMA urban development master plan to support the spatial and the socio-economic development of the capital region. The socio-economic framework for the DMA urban development is to decongest the city center by guiding the urbanization to outside the city to realize more balanced and viable urban socio-economy as a whole.

The spatial framework for the DMA urban development is to change the urbanization pattern from the mono-centric one at present to the dispersed concentric pattern. For this purpose, several new urban centers are planned in the outer area of the DMA, and the outer ring road is planned to link them. Also, several sub-centers are planned to be strengthened in the conurbation area just outside the Damascus city.

The structure of the regional artery road network should be changed, and consequently, traffic patterns would change. At present, the traffic pattern in the DMA is centering on the Damascus city for commuting, shopping, and access to various social and other services. Also, most through traffic passes through the Damascus city as the southern bypass has not been completed.

The creation of several new urban centers in the outer area and strengthening of sub-centers just outside the city would reduce the urbanization pressure on the city. The proposed outer ring road would improve the links between the outer areas including the new urban centers to make them more viable, and also separate the through traffic from the intra-city traffic. Consequently, the traffic pattern would change from the one centering on the city to a concentric pattern as illustrated in Figure 7.5.

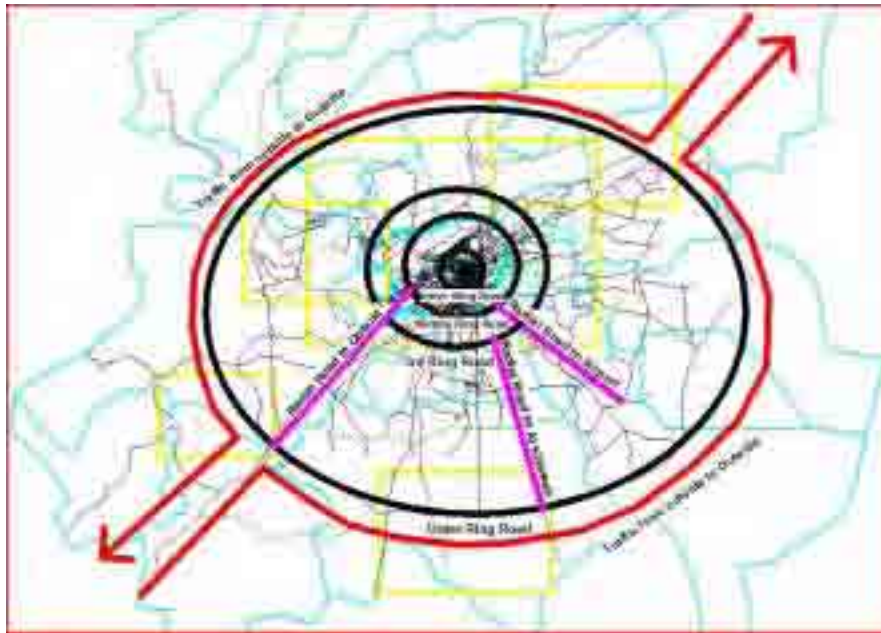


Figure 7.5 Traffic Pattern Conceived for DMA Transport Plan

Urban transport system of the Damascus city

The urban transport system of the Damascus city has been improved, following largely the 1998 JICA transportation master plan (TMP), although the implementation has been delayed due to escalation of construction costs, concerns for preservation of urban heritage, and decreasing budgets of the Damascus Governorate transport department. Of the projects proposed by the 1998 JICA TMP, the north-south and east-west arteries and major intersections on the second ring road have been improved (Figure 7.6). The Damascus Governorate intends to undertake further improvements inside the second ring road.



Figure 7.6 Present Project Implementation under 1998 JICA TMP

Of the underground parking proposed by the 1998 JICA TMP, a feasibility study was carried out for one site. Two parking areas proposed are operational, but their occupancy is low at 9.2% and 27.2%. This is a reflection of lack of effective regulation of on-street parking as well as relatively high parking charges.

The Metro green and red lines are currently planned to improve the transportation within the second ring road. A key point of future transportation in and around the city is to reduce the traffic within the secondary ring road by introducing the “park and ride system.” In addition to the Metro, therefore, trunk bus operation between sub-centers and terminals and re-routing of bus/microbus services as distributors are proposed. These measures are expected to reduce the traffic in the central part of the city. Combined with the provision of parking spaces and regulation of on-road parking as proposed by the 1998 JICA TMP, the traffic flow would be much improved in the city center.

Links between the regional and urban transport systems

The regional artery road network consists of the outer ring road, the third and second ring roads, and radial roads linking these ring roads with the urban transport system of the Damascus city. Three radial roads are proposed to be strengthened linking the city center with the airport, Al Kissweh and the southern area, and Qatana and the southwestern area, respectively.

The outer ring road links the proposed new cities for their complementary development, and the third ring road links the six multi-functional urban centers proposed in the conurbation area of the city. The development of these new cities and urban centers would reduce the urbanization pressure on the city and facilitate the traffic flow inside the second ring road.

The Metro lines, once completed, will be linked to the railway system serving the larger area outside the city, including the national railway (GESR) and the Al Hijaz railway (GEHR). The railway line sections close to the city center will be upgraded as commuter lines and linked with the Metro lines.

(2) Project formulation

The concepts applied to the formulation of projects are summarized as follows.

- 1) High service level should be ensured for the inter-city traffic between new urban centers to support their complementary development and thus reduce the city’s congestion.
- 2) Service level for through traffic should be enhanced to reduce the congestion of the city and realize spatially more balanced development.
- 3) The transport system should be improved to allow more efficient public transportation, supported by the modal shift away from the private car use.
- 4) Some sections of the radial roads should be selectively upgraded to increase the road capacity.
- 5) Selected road sections of the outer ring road should accommodate the installation of

underground fiber cables for data communications in the medium-term future.

- 6) Higher service levels should be realized for intra-city traffic of the city through controlled access to reduce the car traffic, and more efficient public transportation as well as the provision of parking, terminals and associated facilities.

(3) Proposed projects

By applying the planning frameworks and concepts described above, projects are formulated to improve the DMA transport system. To formulate specific projects constituting the artery network, the following criteria are applied.

- 1) Road sections to be newly established or upgraded should make use of existing road sections as much as possible to decrease the construction costs.
- 2) New traffic routes should offer shortcuts for existing and conceived traffic to attract traffic and enhance their feasibility.
- 3) New road sections should be selected in areas of slope equal to or less than 12% to decrease the construction costs.

The urban transport system of the Damascus city consists of the roads and the railways including the Metro lines. The road projects follow largely those proposed by the 1998 JICA TMP. All the proposed road projects including underground parking are listed in Table 7.4. The road projects constituting the DMA regional artery network and the urban transport system of the Damascus city are shown in Figure 7.7.

Table 7.4 Selected Projects Conceived for Transport Sector Plan

No	Category	Project name	Distance (km)	Purpose					
				Intercity traffic	Bypass	Public transport	Radial connection	Fiber cable	Reducing congestion (CBD)
1	Road	3rd ring road	73.3	0	0	0			
2	Road	Outer ring road	151.6	0	0	0		0	
3	Road	2nd ring road	17.4	0	0				0
4	Road	Inner ring road	2.8	0	0				0
5	Road	Trunk bus route	49.8	0		0			0
6	Road	Airport road	17.7	0			0		
7	Road	Damascus-Quneitrah road	10.4	0		0	0		
8	Road	Radial road (south-east direction)	17.2	0			0		
9	Rolling stock	Trunk bus		0		0			0
10	Terminal and depot	South terminal		0		0			0
11	Terminal and depot	North terminal		0		0			0
12	Traffic management	ATC (area traffic Control)							0
13	Traffic management	Underground parking							0

to the new urban centers proposed as mentioned above. Therefore, a gravity model is used as the trip distribution model.

Many public transport projects are planned at present in the city including metro lines, but specifics such as the location of stations have not been determined. Therefore, the demand for public transportation is calculated as daily trips on desired routes without capacity limits rather than as vehicle bases.

The same traffic zones used for the 1998 Master Plan are adopted for the Damascus governorate, but the network data were updated to the actual conditions in 2006. For Rural Damascus, each nahiya is taken as a traffic zone. The traffic zones for the present analysis are shown in Table 7.5. and Figure 7.8.

Table 7.3 Traffic Zones

Area	Code	Sub-zone	Zone name	Area	Code	Sub-zone	Zone name	
Damascus city	1		Assad Eddin	Damascus countryside	63		Al Tall center	
	2		Al Naqshbandi		64		Saidnaya	
	3		Al Ayubiyeh		65		Rankous	
	4		Abu Jarash		66		Ain Al Fijeh	
	5		Al Salihiyeh		67		Al Dimas	
	6		Shora		68		Qudsaya	
	7		Al Mastabeh		69		Qatana center	
	8		Al Murabet		70		Daraya center	
	9		Al Malki		71		Sahnaya	
	10		Kwan		72		Al Kissweh	
	11		Al Rabweh		73		Al Ghizlaniyeh	
	12		M azzeh		74		Babbila	
	13		Old Mezzeh		75		Jaramana	
	14		Dummar		76		Al M lalha	
	15		Al mazra' a		77		Al Nashbiyeh	
	16	1	Al Rawda		78		Harran Al Awamid	
		2	Al Jahez		79		Kafar Batna	
		3	Abu Rummaneh		80		Erbeen	
	17	1	Sarouja		81		Harasta	
		2	Einkeresh		82		Douma center	
	18		Al Hijaz		86		Al Hajar Al Aswad	
	19		Al Qanawat		87		Al Qutayfeh Center	
	20		Bab Srijeh		88		Ma' a loula	
	21		Al Ansari		89		Al Zabadani center	
	22		Al Baramkeh		90		Madaya	
	23		Kafar Souseh Al balad		91		Sarghaya	
	24		Al Liwan		92		Bait jin	
	25		Al Qadam		93		Sa' a Sa' a	
	26		Al Zahira		Outside	101		Homs direction North-East
	27		Ka ah			102		Palmyra direction East
	28		Al Daqqaq			103		Swaida direction Souse-East
	29		Al Haqleh			104		Dara' a direction South
	30		Bab M aser			105		Qunaytera direction West
	31		M idan Wastani			106		Beirut direction North-West
	32		Bab M usalah					
	33		Bilal					
	34		Dawamneh					
	35		Al Amin					
	36		Srouji					
	37		Shaghour Juwani					
	38		Bab Jabiyeh					
	39		Al Swaiqa					
	40		Tijari					
	41		M azant Eshahem					
	42		Al Qaimariyeh					
	43		Al Eqalbeh					
	44		M asjed Al Aksab					
	45		Amara					
	46		Bab Touma					
	47		Bab Sharqi					
	48		Jobar					
	49		Diwaniyeh					
	50		Al Qusour					
	51		Al Maamouniyeh					
	52		Fares Al Kouri					
	53		Kaser Al Libad					
	54		Betwana Al Janoubiyeh					
	55		Al Qaboun					
	56	1	Old Barzeh					
		2	Barzeh-Prefabricated Buildings (New)					
	57		Fallouja					
	58		Al Karmel					
59		Hittin						
60		Al Tadamon						
61		Al Wahda						
62		Adwela ah						



Figure 7.8 Traffic Zones in Damascus City and Rural Damascus

Socio-economic data were prepared first for each service department of the Damascus city and each nahiya of Rural Damascus. They were then broken down into traffic zone data for the following indices:

- 1) Population,
- 2) Number of employees in the primary, secondary and tertiary sectors on the residence base,
- 3) Number of students on residence base,
- 4) Number of employees by the primary, secondary and tertiary sectors on the work place base, and
- 5) Number of students on the school base.

Procedure

The procedure of the traffic demand analysis is illustrated in Figure 7.9. The generation/attraction process generates the total traffic volume by zone. The desired line process generates traffic between zones. The spider assignment process selects desired route through zones for any origin-destination (O-D) pair. Finally, the traffic assignment process allocates traffic volume to sections linking zones.

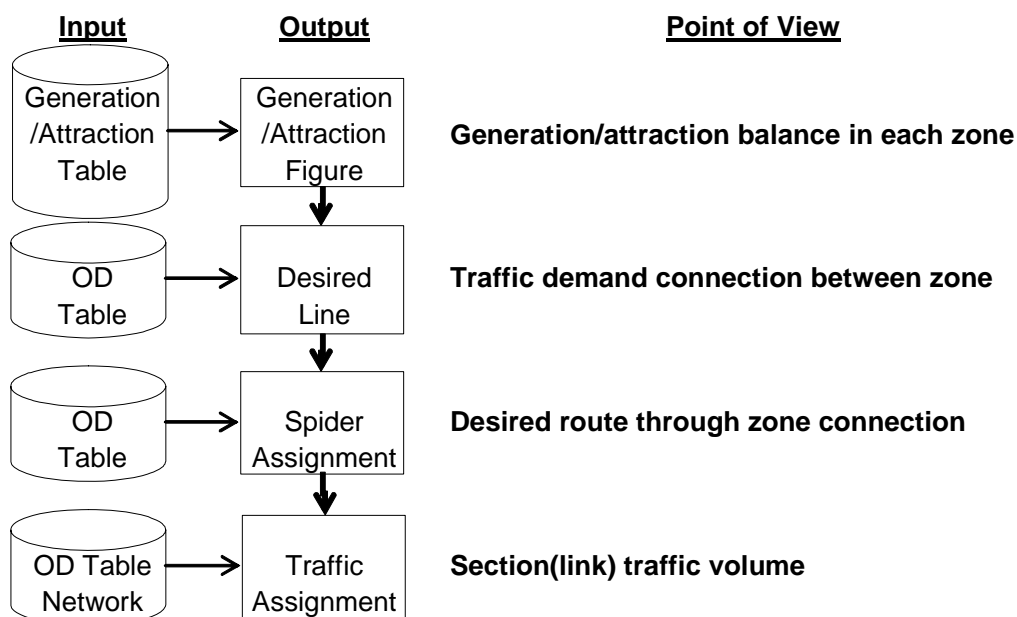


Figure 7.9 Procedure for Traffic Demend Analysis

Results

The results of the spider assignment for 2025 are shown in Figure 7.10. As seen from the figure, links between zones of new urban centers are very strong as expected. The results of traffic demand assignment are illustrated in Figure 7.11 separately for public transportation and for all other transport modes except public transportation. The traffic demand on the inner and middle ring roads is very high, and the third ring road also has high traffic demand. The outer ring road, however, has little traffic volume except its northern sections due to its long distance from the city center. This outer ring road has a function beyond the DMA to strengthen the link between the southern region with other regions in the north and the east and also the international links, which is not reflected in the demand analysis here.

The increases in the traffic demand for public and other transportation are summarized in Table 7.6. In the table, the traffic demand for public transportation is expressed in trips, and that for other transportation in passenger car unit (PCU). As seen from the table, the traffic demand decreases in 2025 by any indicators, while the OD volume increases. This is due to the dominance of short trips and enhanced service levels of the road network as a result of the improvement in the distribution of population and socio-economic activities as planned.

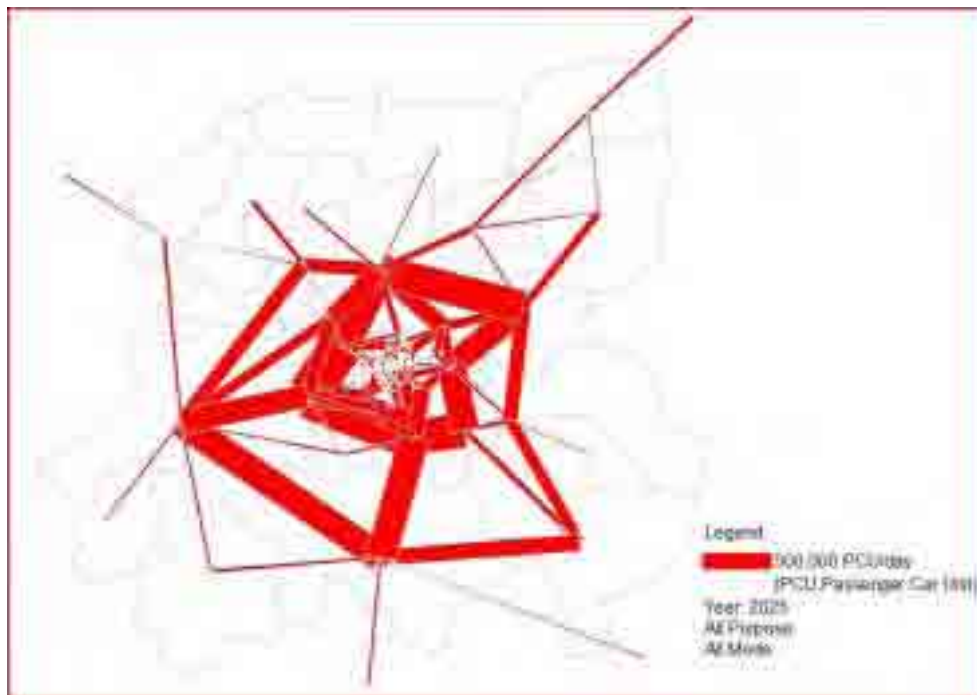


Figure 7.10 Spider Assignment Results for 2025

Table 7.6 Transport Demand for Public and Other Transportation

(Daily Vol.)

	Public Transport			Others		
	OD (Trip)	Trip x km	Trip x hr	OD (PCU)	PCU x km	PCU x hr
2006	5,200,941	359,376,334	5,965,768	2,060,548	149,141,358	2,337,192
2015	5,540,052	301,096,931	5,541,775	2,027,313	197,361,972	3,194,120
2025	7,531,680	334,566,698	6,673,827	2,404,026	127,485,036	2,061,594

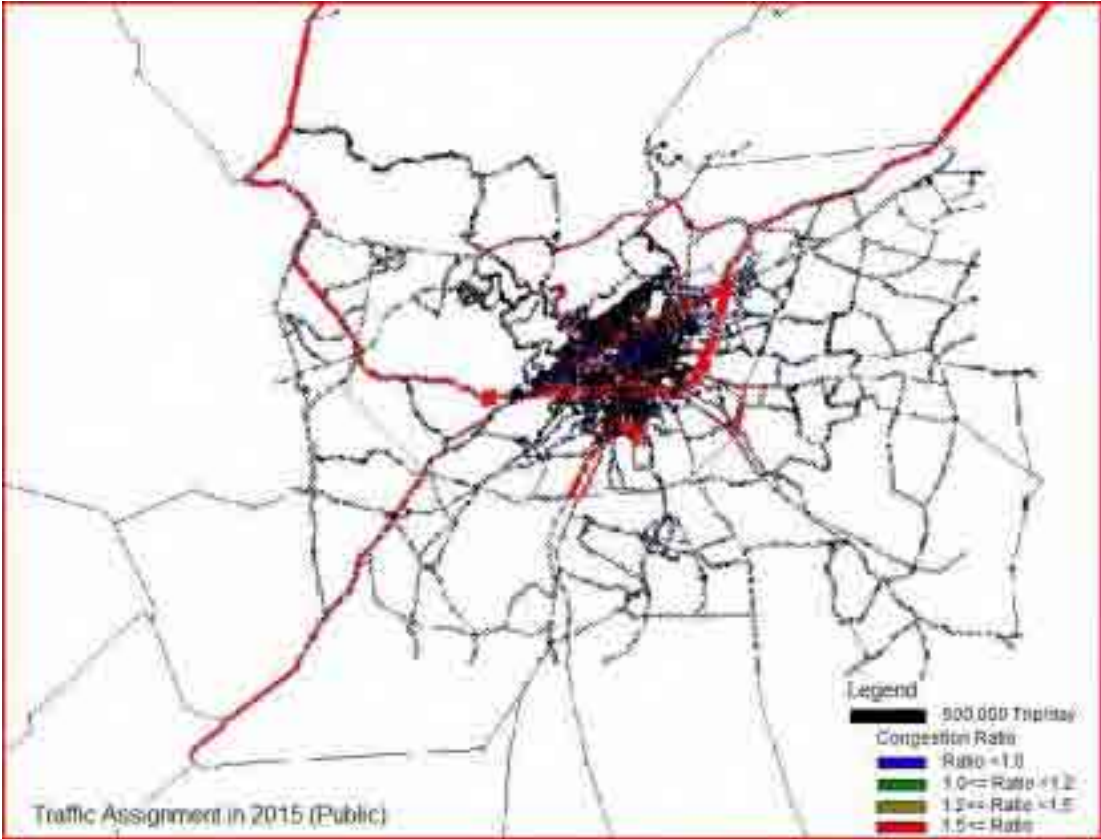


Figure 7.11 (1) Results of Traffic Assignment in 2025 (Public)

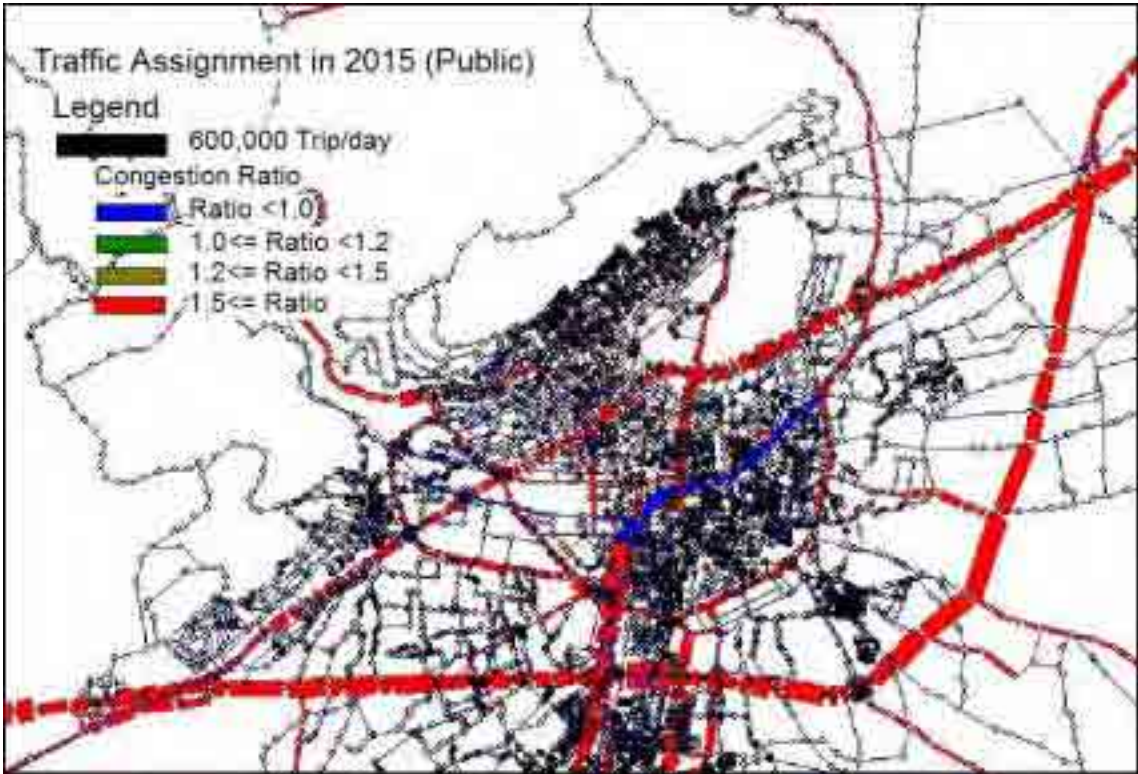


Figure 7.11 (2) Results of Traffic Assignment in 2025 (Public)

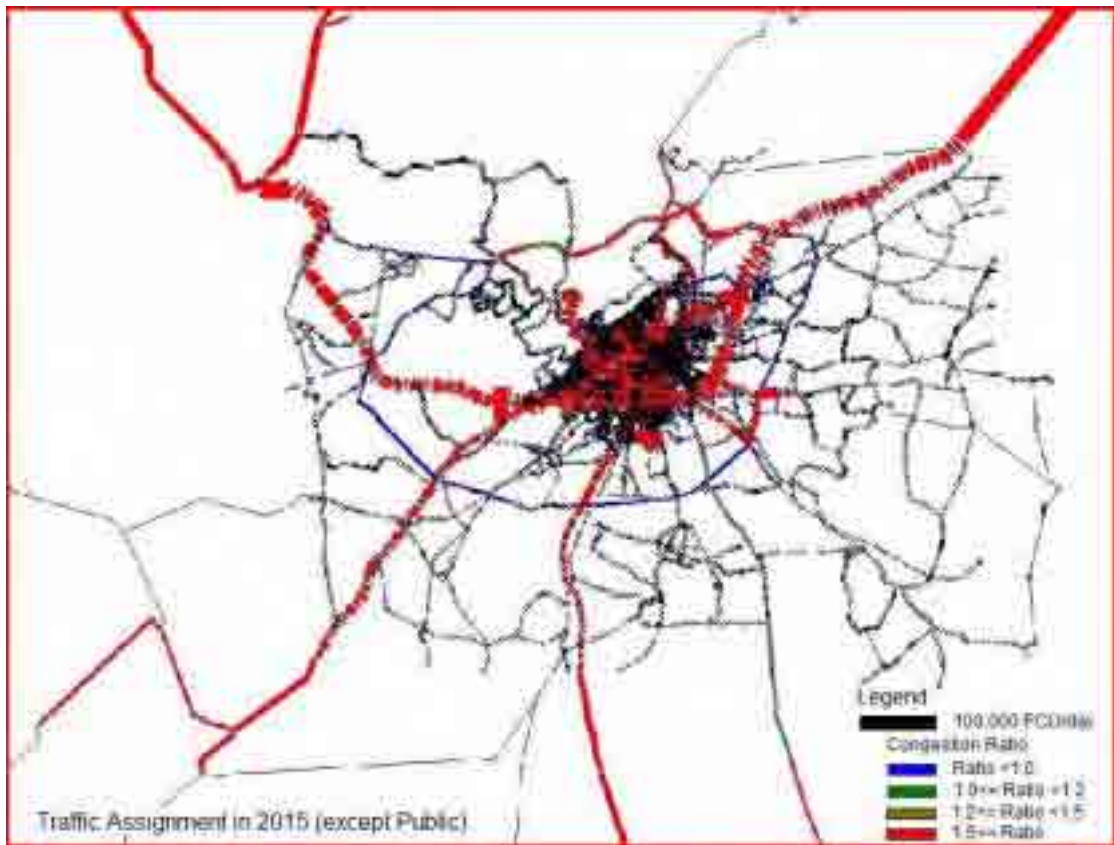


Figure 7.11 (3) Results of Traffic Assignment in 2025 (except Public)

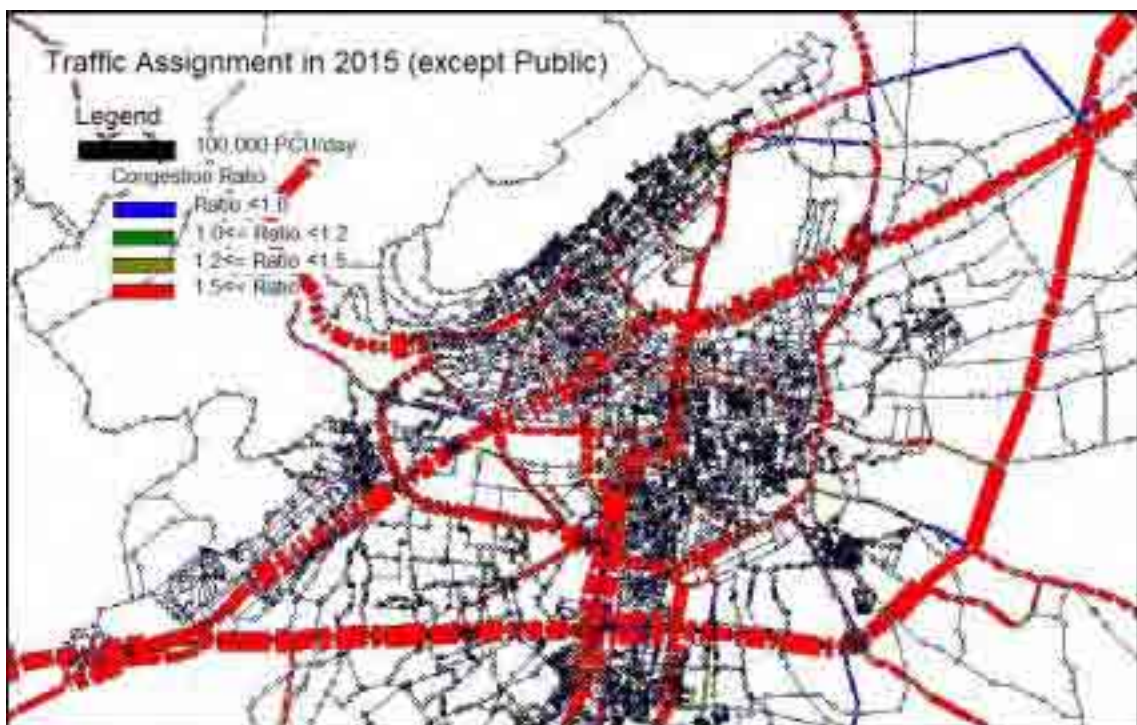


Figure 7.11 (4) Result of Traffic Assignment in 2015 (except Public)

(5) Transportation planning for the DMA urban development

1998 JICA Transport Master Plan

The Transportation Master Plan (TMP) for the Damascus city was conducted by the Damascus governorate, supported by JICA, from 1997 through 1998. It aimed to improve the transport conditions in the city by resolving the chronic traffic congestion. The Plan comprises a plan for the artery urban transport system, public transportation plan, and traffic management plan. Under the plan for the urban artery system, especially the improvement of the inner ring road was proposed. The planning horizon was taken to be up to the year 2015, and no structural changes in traffic pattern and modal division were assumed during this period.

Implementation of the Plan has been generally delayed. This is due to the escalation of construction costs, concerns for preservation of urban heritage, and reduction in the budget of the governorate transport department. Especially, the implementation of the inner ring road improvement has been delayed.

Changes after the 1998 JICA TMP

Other than the continued traffic congestion in the Damascus city due partly to the delay in the implementation of the 1998 JICA TMP, the following changes occurred after the 1998 JICA TMP:

- 1) increase in traffic between the Damascus city and Rural Damascus due to the urban sprawl of the city into the neighboring nahiyas of Rural Damascus,
- 2) increase in traffic volume on the 2nd ring road caused partly by the delay in implementation of the improvement of the inner ring road, and
- 3) inflow and settlement of a large number of Iraqi refugees.

These changes make it necessary to plan for the improvement of transport conditions in and around the Damascus city in a broader geographic context. Even if the transport conditions are improved in the city by the implementation of the 1998 JICA TMP, additional measures need to be taken to improve the transport conditions in a larger area with better traffic distribution for lower economic transaction costs.

DMA Master Planning

The urban development master planning for the DMA aims to improve the distribution of economic activities, employment opportunities and population within the context of a much larger geographic area around the Damascus city. This will improve the transport conditions in and around the Damascus city. For these purposes, the DMA has been defined large enough to allow the regulation of urbanization and traffic patterns.

Specifically, there are two broad ways to improve the transport conditions in the Damascus city in the broad geographic context. One is to suppress the commuter traffic to be attracted to the city. The other is for the through traffic to make detour, avoiding passing through the city.

The creation of new cities as more or less self-sustained cities with sufficient employment opportunities would be a method to realize the first condition. The provision of an outer ring road would help to realize the second condition. The planned development of sub-centers just outside the city as multi-functional urban centers would contribute to both conditions.

Along with the sub-center development, the third ring road is proposed to deal with the further increase in the traffic around the city. The increase in traffic on the 2nd ring road due partly to the delay in the inner ring road improvement indicates the continued pressure of increasing traffic as the urbanization proceeds from the city to its immediate neighborhood.

The trunk bus system is proposed together with the outer ring road to deal with long-leg traffic around the Damascus city for commuting and other purposes. This should be combined with the urban transport system in the city. Within the city, a metro system is planned to be established to improve the transport conditions especially within the second ring road. A feasibility study has been carried out for the first lines, green and red lines. While the alignments have been proposed for both lines, the exact locations of stations and operating specifications are yet to be determined. The re-routing of standard bus services as distributors serving between stations and bus stops, therefore, should be determined after these specifications are finalized for the metro system. Also, another link of the regional and the urban transport systems by rail between the commuter trains and the metro system should be examined in the near future.

(6) DMA transportation plan

DMA artery transport system

The DMA artery road system consists of the second and the third ring roads, the outer ring road, and radial roads (Figure 7.12). The second ring road will be completed with the new eastern section and the improvement of the northern section. The third ring road will be constructed to improve the links between the six sub-centers proposed by the Master plan. The outer ring road will be constructed as the new artery for inter-regional and international traffic, and also serve to link the four new cities proposed by the master plan.

The radial roads will be selectively upgraded to improve the links between the Damascus city center and the outer areas. Specifically, the radial roads linking the city with the airport, Al Kissweh and the southern region, and Qatana and the southwestern area will be strengthened. The proposed new cities will be served by both the outer ring road and the upgraded radial roads, respectively. Major terminals will be established at the cross-roads between the outer ring road and the northeast-southwest highway for inter-regional bus services.

The existing railway system consisting of the national railway (GESR) and the Al Hijaz railway (GEHR) will be improved, particularly those sections close to the city center as commuter lines, and linked with the Metro lines, once completed.

Damascus city transportation plan

The Damascus city artery transport system consists of the inner ring road, the second ring road, primary trunk roads, and new transport system to be introduced in the medium term (Figure 7.13). The inner ring road will be improved as planned by the 1998 JICA TMP, and the second ring road completed with its eastern section. Selected primary trunk roads will be upgraded to provide effective links for the northeast-southwest and the north-south traffic. The new transport system may take the form of the Metro linked effectively with the existing railway lines. The proposed Metro green and red lines serve respectively the east-west and the north-south traffic as shown.

Parking capacity needs to be much expanded as recommended by the 1998 JICA TMP. Within the city, a total of some 50,000 parking spaces need to be provided. Of this total, some 10% may be provided in the city center area. Candidate sites for new parking areas are illustrated in Figure 7.14. Parking no.1 and no.4 were proposed by the 1998 JICA TMP and implemented. Parking nos.2, 3, 6 and 10 are located at sporting fields or in huge roundabouts. Parking no.5, 7 and 9 are located on the Barada river bank. Large traffic generation and attraction are expected at these parking sites for high occupancy, if the parking charges are reasonable. Additional parking spaces will be provided outside the city center, possibly along the proposed metro alignments.

Implementation schedule

The implementation schedule of the projects constituting the DMA artery road network and the urban transport system of the city has been prepared as shown in Table 7.7. In addition to these physical measures, traffic management needs to be improved. Specifically, area traffic control system should be introduced as recommended by the 1998 JICA TMP.

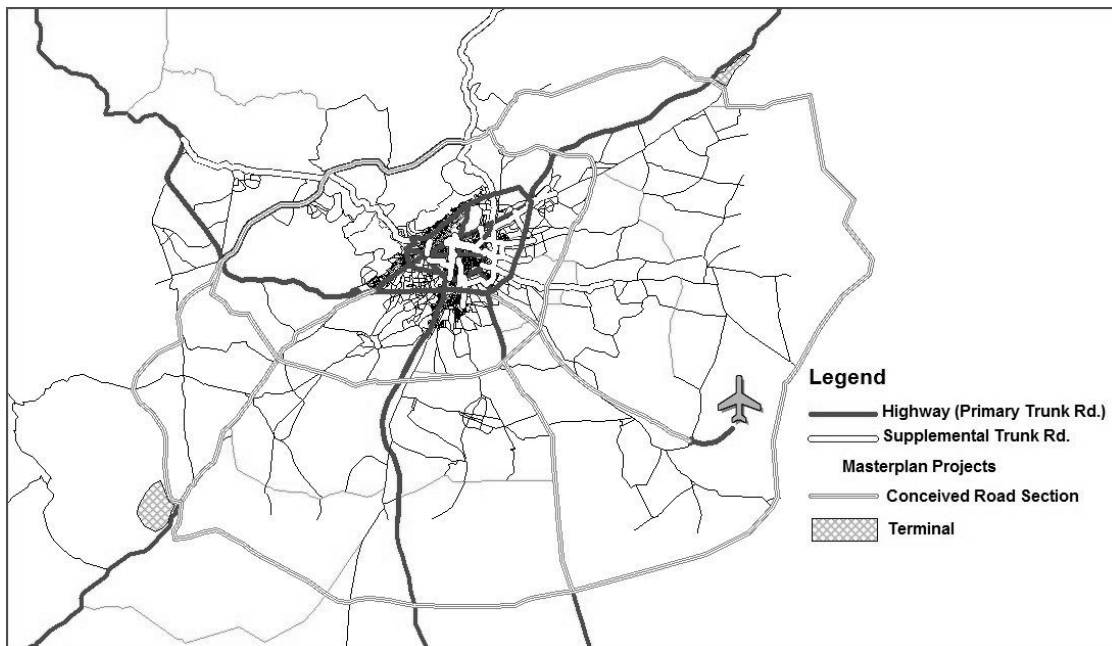


Figure 7.12 DMA Artery Road System

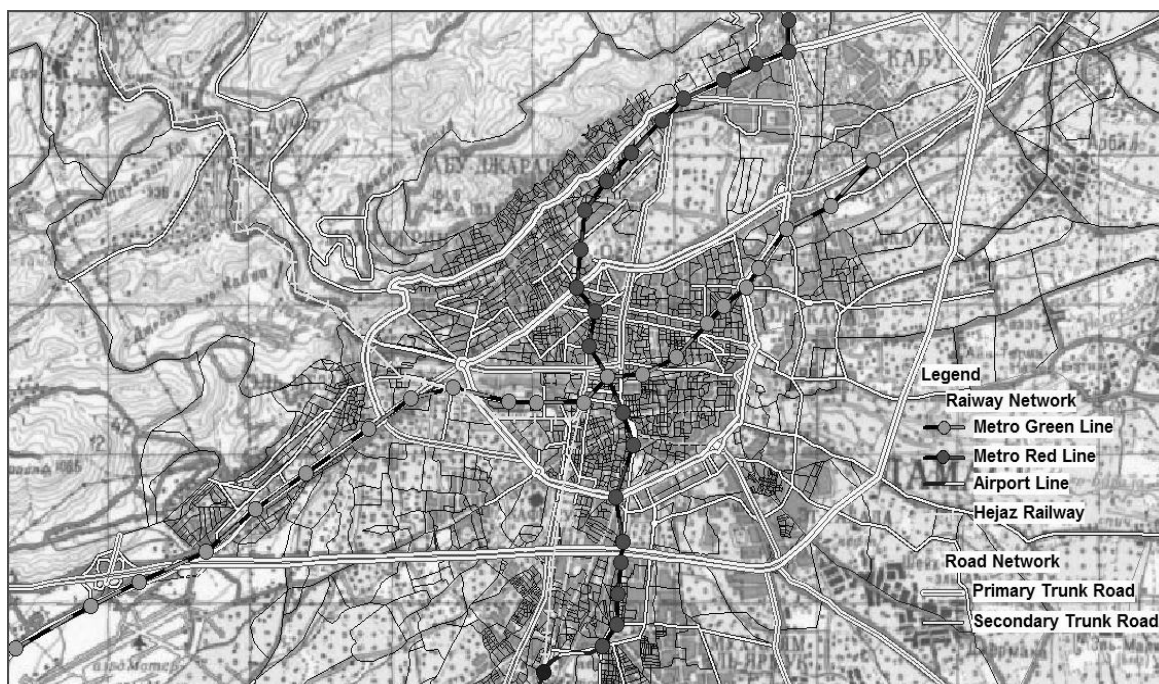


Figure 7.13 Damascus City Artery Transport System

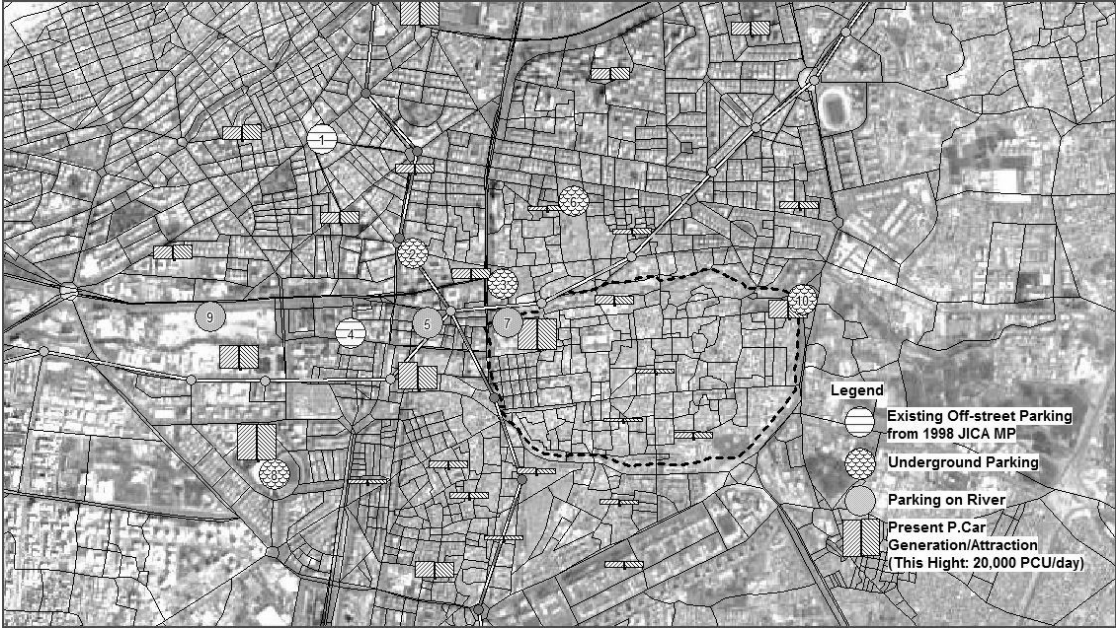


Figure 7.14 Candidate Site for New Parking Area

Table 7.7 Project Specifications and Implementation Schedule

No	Sub No	Category	Project Name	Sub Project Name	Sub Name	Distance (km)	Target Year	Remarks
1		Road	3rd Ring Road		Total	73.270	2015	Trunk Bus Optical Fibre(North only) 6 lanes 80 km/h
					EXISTING	21.078		
					UPGRADE	38.351		
2		Road	Outer Ring Road		Total	151.633		Trunk Bus Optical Fibre 6 lanes 80 km/h
					EXISTING	39.959		
					UPGRADE	29.928		
	1			North Section	Sub-total	40.724	2015	21.078 km of EXISTING and 1.876 km of NEW are common with 3rd Ring Road
					EXISTING	38.848		
					UPGRADE	0.000		
	2			West Section	Sub-total	21.344	2025	
					EXISTING	0.000		
					UPGRADE	6.691		
	3			South Section	Sub-total	23.054	2025	
					EXISTING	0.000		
					UPGRADE	0.000		
	4			East Section	Sub-total	66.511	2025	
					EXISTING	1.111		
					UPGRADE	23.237		
3		Road	2nd Ring Road		Total	17.380		
					EXISTING	0.000		
					UPGRADE	7.260		
	1			South Bypass	Sub-total	7.260	2015	Fly Over
					EXISTING	0.000		
					UPGRADE	7.260		
	2			North Bypass	Sub-total	10.120	2025	Fly Over
					EXISTING	0.000		
					UPGRADE	0.000		
4		Road	Inner Ring Road		Total	2.814		
					EXISTING	0.000		
					UPGRADE	2.814		
	1			North Section	Sub-total	2.814	2015	Elevated Road between Umawiyeen Square and Russian Embassy
					EXISTING	0.000		
					UPGRADE	2.814		
	2			South Section	Sub-total	0.000	2015	Intersection Upgrade by 1998 MP (No Cost Estimation in this Study)
					EXISTING	0.000		
					UPGRADE	0.000		
5		Road	Trunk Bus Route	Between North Terminal and South Terminal	Total	49.764	2015	
					EXISTING	0.000		
					UPGRADE	49.764		
6		Road	Airport Road	Between South Bypass and Airport IC	Total	17.680	2025	Widening from South Bypass to Airport IC 8 lanes 80km/h
					EXISTING	0.000		
					UPGRADE	17.680		
7		Road	Damascus-Quneitrah Road	Between South Bypass and Qatana	Total	10.360	2015	Widening 4 lanes 80km/h to 6 lanes 80km/h
					EXISTING	0.000		
					UPGRADE	10.360		
8		Road	Radial Road (South-East Direction)	Between South Bypass and Airport IC	Total	17.210	2015	Widening from 3rd Ring Road to Outer Ring Road 6 lanes 60km/h
					EXISTING	0.000		
					UPGRADE	17.210		
9		Rolling Stock	Trunk Bus				2015	300
							2025	300
10		Terminal & Depot	South Terminal				2015	Capacity 100 Bus
11		Terminal & Depot	North Terminal				2015	Capacity 120 Bus
12		Traffic Management	ATC (Area Traffic Control)				2025	No Cost Estimation
13		Traffic Management	Under Ground Parking				2025	No Cost Estimation

7.2.2 Water supply and sewerage plan

(1) Projection of drinking water demand

Method

The demand for drinking water is calculated as the unit water demand multiplied by the service population. The total water demand may be taken from the consumption record, and the service population may be substituted by the census population. Then the calculated unit water demand reflects unaccounted-for-water consumed by those not registered as formal consumers. As there are a large number of non-registered consumers in the DMA due to the increasing number of refugees as well as informal residents, the gross unit water demand is assumed based on the recorded water consumption and the census population, and the projected population is multiplied by the assumed unit demand to calculate the total demand for drinking water.

Unit drinking water demand

The Syrian government aims at achieving the 80ℓ/capita/day unit consumption of drinking water during the 10th Five Year Plan period on the basis of the actual service population including non-registered population. The Ministry of Housing and Construction (MOHC) has planning standards for unit water consumption as summarized in Table 7.8. These standards represent the total unit consumption at city or village level, and thus may not be applicable to larger areas encompassing several settlements of different socio-economic characteristics examined by the Study.

Table 7.8 Standard Unit Water Consumption

Community Population	LCD	Remark
1 to 5,000	75	
5,000 to 10,000	100	
10,000 to 25,000	125	
25,000 to 50,000	150	
50,000 or more	175	Note: R-DAWSSA conditions it "as studied"

Source: MOHC and R-DAWSSA

1) Damascus governorate

The socio-economy of the Damascus governorate is well established, and the unit water consumption is expected to stay at a similar level as present. Following the method outlined above, the average unit consumption for piped water in the Damascus governorate is set at 250ℓ/capita/day up to 2025 based on the calculation for 2004 shown below.

Items	Unit	In DAWSSA area
A. Consumed water per year for 2004	1000m ³	151,499
B. Census population for 2004	1000 persons	1,662
C. Unit Average Consumption (A/B)	ℓ/capita/day	250

Source: DAWSSA's data for water volume and Census 2004 for population, but area is adjusted to DAWSSA's service area.

2) Rural Damascus governorate

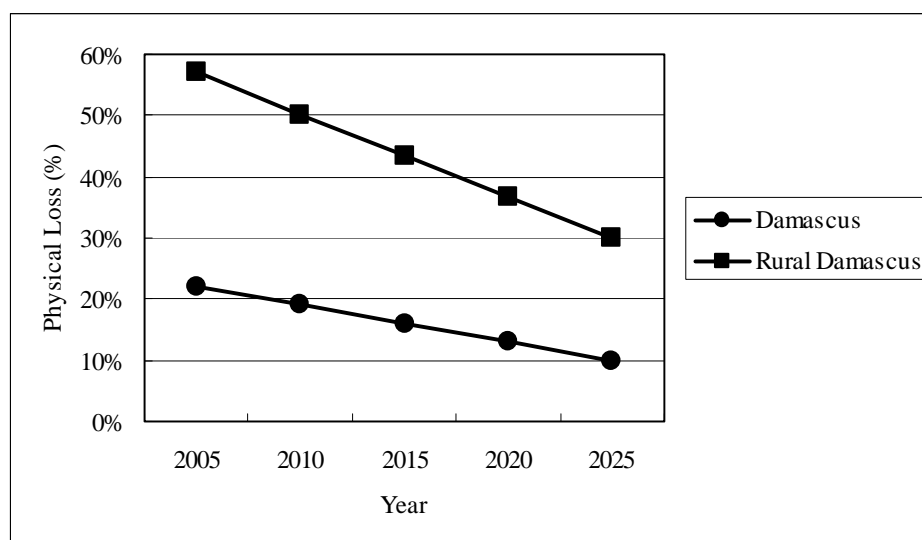
The socio-economy of Rural Damascus is developing rapidly so that the present unit water consumption of 109ℓ/capita/day would certainly increase. The unit water use would vary for central community and surrounding settlements in different nahiyas. Based on the assumption of the unit rates applicable to different areas, the overall unit rate has been determined by nahiya according to the population levels as summarized below.

Nahiya population	ℓ/capita/day
1 to 100,000	100
100,001 to 200,000	125
200,001 to 400,000 or more	140
400,001 or more	145

Source: JICA Study Team

3) Unaccounted-for-water

The physical loss ratios in the DAWSSA and R-DAWSSA water supply systems are expected to be reduced steadily through continued efforts by the respective water supply administrations. The reduction is assumed for DAWSSA and R-DAWSSA as shown in Figure 7.15.



Source: JICA Study Team

Figure 7.15 Reduction of Loss Ratios of DAWSSA and R-DAWSSA Water Supply Systems

Projected water demand

The unit demand for municipal water is calculated based on the assumptions above for different years, and the total water demand is projected by applying the unit demand to the projected population for Damascus and Rural Damascus in different years as summarized in Table 7.9. Details are given in the sector report (a separate volume)

Table 7.9 Summary of Projected Average Municipal Water Demand

Area	Average Demand							
	2010		2015		2020		2025	
	1000 m ³ /day	Million m ³ /year	1000 m ³ /day	Million m ³ /year	1000 m ³ /day	Million m ³ /year	1000 m ³ /day	Million m ³ /year
Damascus Governorate	502	183.2	504	184.0	502	183.2	500	182.5
Rural Damascus Governorate	645	235.6	702	256.4	747	272.7	798	291.6
Total DMA	1,147	418.8	1,206	440.4	1,249	455.9	1,298	474.1

Remark: As the target physical loss rate is decreased, demand for Damascus is on the downward trend.

Source: JICA Study Team

Peak demand for water supply

The capacity of water supply facilities should be planned in accordance with the peak demand in consideration of the demand variation during any period of time. The peak demand factor is set at 1.4 and 1.8 times the projected average demand for Damascus and Rural Damascus, respectively.

(2) Municipal water supply plan

Planning conditions

The basic conditions for the water supply plan are summarized below.

No.	Items	Condition
1	Target Year	2025
2	Service Area	DMA
3	Service Population (census based)	6 million
4	Average Volume of Water Supply	1,298,000 m ³ /day or 474.1 million m ³ /year
5	Peak factor for Max. water flow	1.4 for Damascus and 1.8 for Rural Damascus

Source: JICA Study Team

In addition, the following specific conditions apply to the plan.

- 1) The water resources of the Barada/Awaj basin are allocated on the priority basis to drinking water for Damascus and Rural Damascus.
- 2) The water transfer from other basins is not considered as an option up to 2025.
- 3) The remaining water resources together with treated sewage and groundwater recharged by it will be used for industrial and irrigation purposes.
- 4) The groundwater polluted with nitrogen will not be utilized as sources of drinking water.

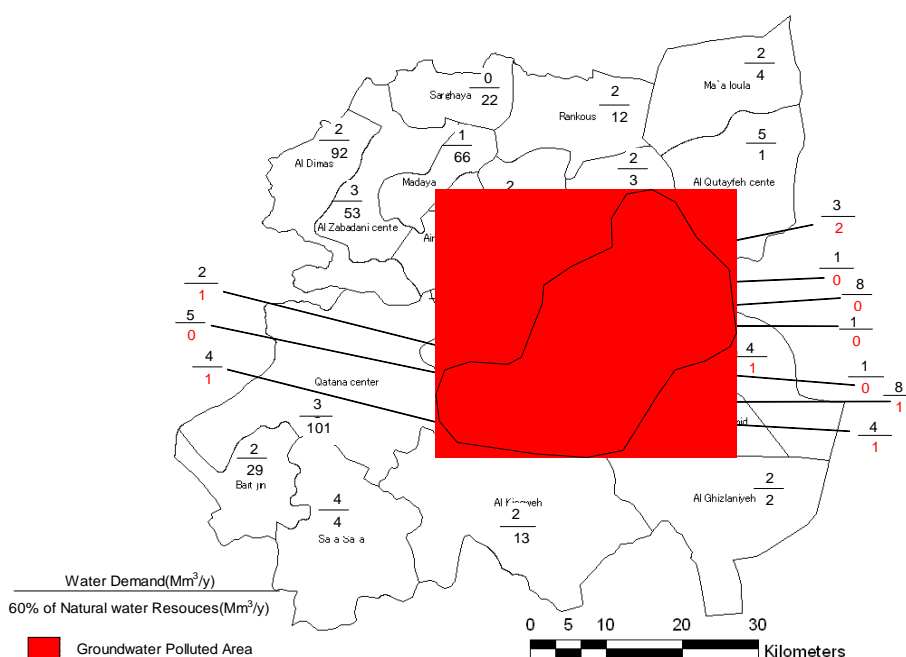
Water demand-supply balance

The availability of natural water resources defined as the 60% firm yield and the projected water demand are compared in Figure 7.16. The following are observed from the figure.

- 1) The Damascus governorate has a large amount of deficit for natural water resources as

compared with its water demand.

- 2) While the Ghouta area has some water resources of its own, but the quality with high nitrogen contents makes it difficult to use as sources for drinking water.
- 3) The water supply plan, therefore, should address the needs to secure water for the Damascus governorate and its surrounding nahiyas mainly in the east and the southeast of the city.
- 4) The total natural water resources available for the DMA is 480million m³/year on the firm yield basis after deducting the resources outside the DMA and 474million m³/year after deducting the polluted groundwater, practically the same as the projected water demand in 2025.



Source of natural water resources: Annual Report 2005 of WRIC, but 60% of them and converted to nahiya's areas.

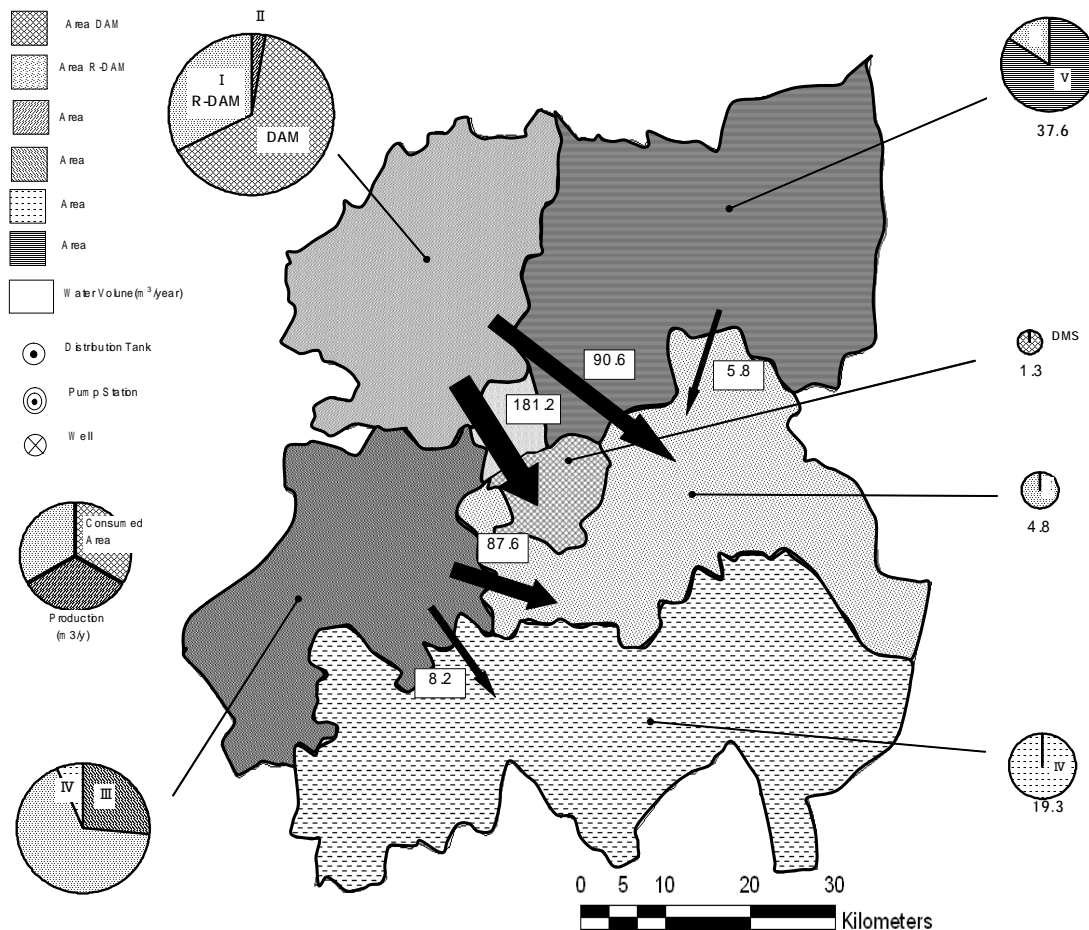
Figure 7.16 Comparison between Water Demand and Natural Water Availability

Water sources

The DMA may be classified into five areas with respect to water balance conditions as follows.

Area I	Damascus governorate and Ghouta area	Serious shortage of natural water resources to meet large demand
Area II	Northwestern part of the DMA	Large water resource endowments exceeding the demand
Area III	Southwestern part of the DMA	Ample water resource endowments exceeding the demand
Area IV	Southern part of the DMA	Limited natural water resources far short of the demand
Area V	Northern part of the DMA	Sufficient natural water resources to meet the demand

Water sources for different areas are identified as shown in Figure 7.17. Area II is the water source for Area I at 272m³/year including the current production and transmission system of DAWSSA. Area III is the water source for Area I at 87.6m³/year and also for Area IV at 8.2m³/year. Area V is also planned to supply Area I at 5.8m³/year. In addition, the water transfer from the Yarmouk basin to Al Kissweh at 1.4million m³/year is expected as currently planned by R-DAWSSA.

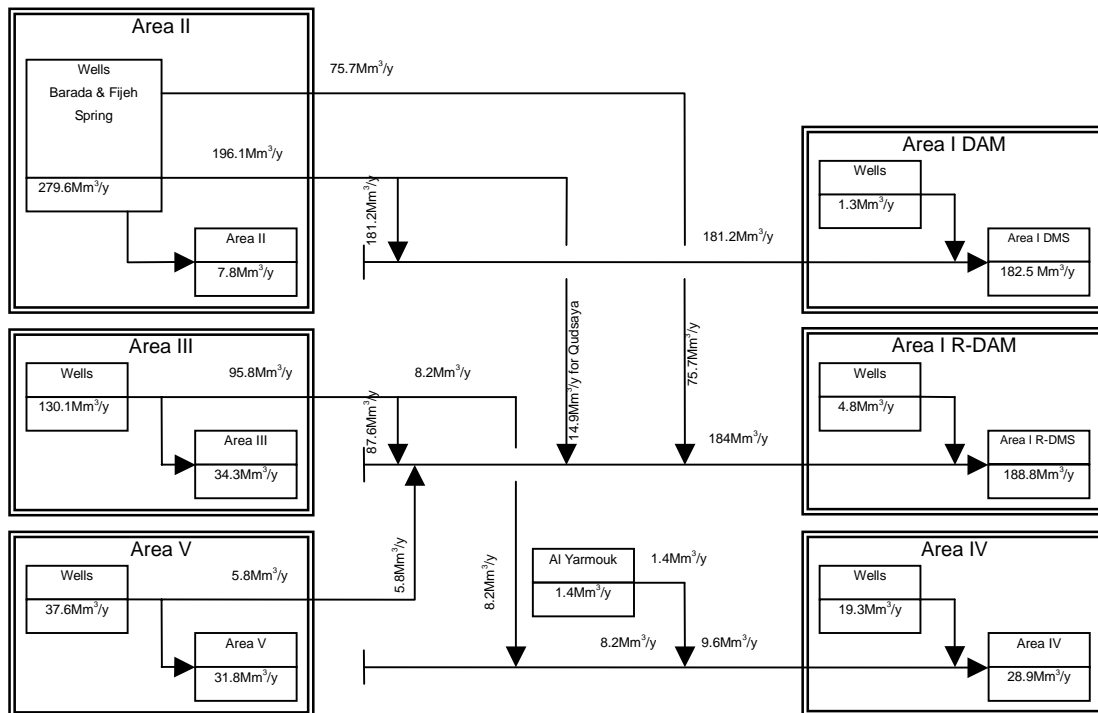


Source: JICA Study Team

Figure 7.17 Planned Water Transfers between Areas

Water supply facilities

The overall flow of water in the municipal water supply system for 2025 is illustrated in Figure 7.18. The plan for facilities in the system is presented below.



Source: JICA Study Team

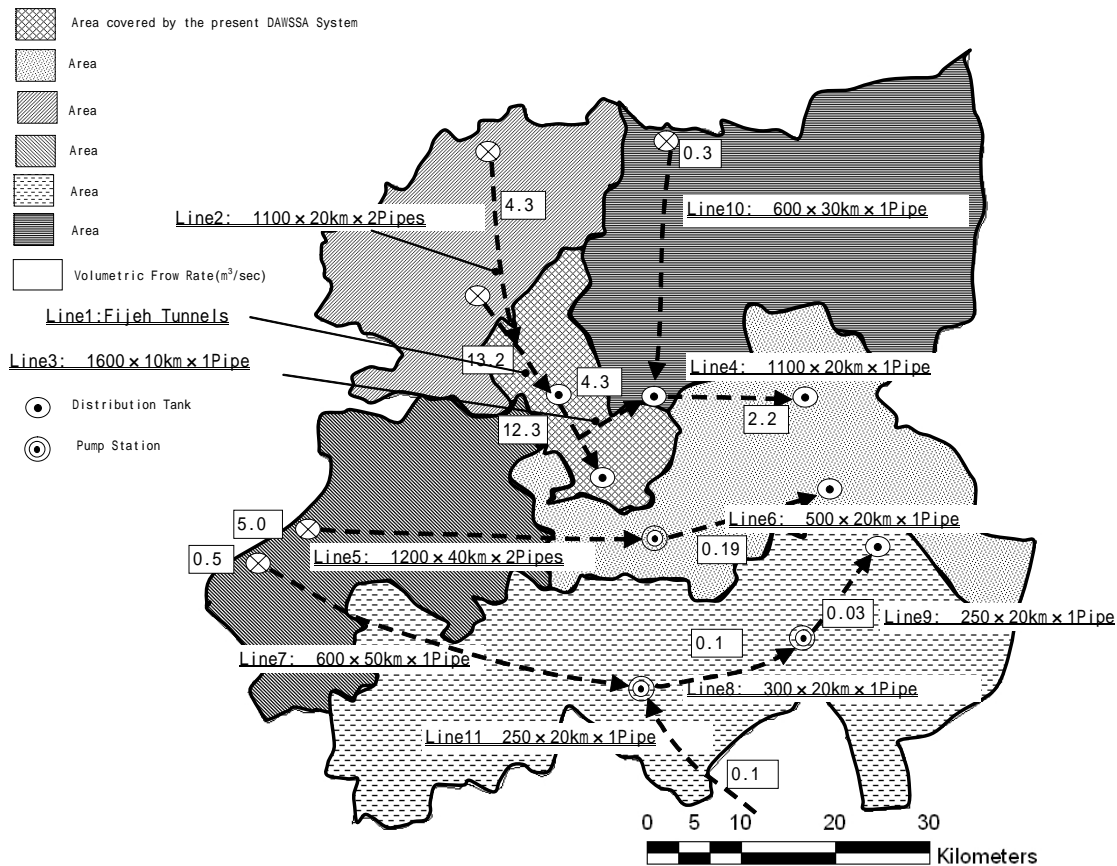
Figure 7.18 Flow of Water in Drinking Water Supply System in 2025

1) Water sources development

The maximum water production at some 25m³/sec will be required in 2025 to meet the peak demand for Damascus and Rural Damascus. As the existing water production capacity is about 14m³/sec, additional capacity of over 10m³/sec would be necessary. Additional water sources should be developed particularly in Area II and Area III serving Area I. It is estimated that additional 931 well facilities may be provided by 2025, assuming the average yield of a well is 15ℓ/sec, of which 796 wells may be located in Area II and Area III. Four additional wells are planned to be provided for water to be transferred from the Yarmouk basin as planned by R-DAWSSA.

2) Water transmission

The water transmission necessary for the water supply plan is shown in Figure 7.19. The following elements are included.



Source: JICA Study Team

Figure 7.19 Planned Water Transmission System for the DMA

- i) The maximum amount of water to be transmitted from Area II to Area I is $13.2\text{m}^3/\text{sec}$, which can be transmitted by the existing Fijeh tunnels having the capacity of $14.8\text{m}^3/\text{sec}$.
- ii) The new pipeline of diameter 1,600mm planned by DAWSSA originally to convey the water to be transferred from the coastal area can be used for conveying the water from Area II to Area I within Rural Damascus
- iii) The water from Area II can be conveyed by gravity as the water sources are located in mountain areas.
- iv) To supply Area I within Rural Damascus, two supply bases need to be established in Ma'araba and Babbila for further transmission/distribution to other areas.
- v) The supply base for Area IV should be located in Al Kissweh for transmission / distribution of the water from Area III.

3) Water distribution

The upgrading of water distribution is proceeding for the service area of DAWSSA, supported by Kuwait, to secure the maximum water flow at $12.5\text{m}^3/\text{sec}$. This would satisfy the

requirement for the projected water demand. The major components of the ongoing DAWSSA plan are summarized below.

The majority of existing distribution networks of R-DAWSSA need to be replaced to reduce the physical losses. It is estimated that about a half of the existing pipelines need to be replaced covering the area of 500km² more or less over the period up to 2025.

Moreover, reservoir capacity needs to be increased to ensure 8-hours demand by 2025, increased from the existing capacity of 3-4-hours demand. DAWSSA and R-DAWSSA plan to construct a large reservoir of 100,000m³ storage capacity at Ma'araba to receive the water from the coastal area. This reservoir is effectively utilized to receive the water from Area II for transmission to Area I, but the size may be reduced to 50,000m³. Instead, another reservoir of 50,000m³ storage capacity should be constructed in Babbila to receive the water from Area III for distribution to Area I.

In addition to these reservoirs in Ma'araba and Babbila, 81 water reservoirs of varying size would be necessary in the distribution system. For the reservoirs of 2,000m³ capacity, pumping facilities should be provided as they would be placed on the ground.

(3) Water supply for other uses

As described above, the water supply based on the firm yield would utilize some 500million m³/year, leaving 350million m³/year for other uses. Also, treated sewage would be available for additional 350million m³/year or 70% of the consumed water. A total of some 700million m³ water may be available annually on the average. In a drought year, the availability may be reduced to about 500million m³.

Large industrial areas are planned with 9,000ha in Adra and 1,400ha in Al Kissweh for the planned population of 380,000 and 100,000, respectively. The total water demand is roughly estimated to be 31million m³ in Adra and 9million m³ in Al Kissweh for a total of 44million m³ annually.

The remaining water of 656million m³ on the average may be used for irrigation. Assuming the unit irrigation water of 9,000m³/ha, over 70,000ha may be irrigated. In a drought year, the irrigable area may be reduced to 50,000ha. Of the total irrigable area, close to 80% are located in the Ghouta area and its eastern vicinities.

(4) Sewerage plan

Damascus governorate

The existing sewerage of DAWSSA covers the Damascus governorate and Qudsaya of Rural Damascus, and has the capacity of 485,000m³/day on the average. The projected water

consumption in the service area is 500,000m³/day. Thus, the existing sewerage is sufficient for the sewage to be generated in 2025 in terms of quantity.

The Adra sewage treatment plant applies activated sludge process, which is effective to reduce BOD to the 20mg/ℓ level. The process, however, is not effective to remove nitrogen components consisting of NH₄-N and NO₃-N to below 35mg/ℓ required by the discharge regulation for land. The nitrogen concentration in the treated sewage should be reduced to below 23mg/ℓ required for irrigation water.

The upgraded process would require three times longer retention time and thus three times larger space for the aeration tank in the present sludge drying yard. Unless additional land is secured for the purpose, mechanical drying system for sludge may be introduced at higher costs.

Rural Damascus governorate

A sewerage master plan is being prepared for Rural Damascus by another JICA study, which categorizes the sewerage system into on-site system and off-site system. The on-site system is applied to smaller settlements with low population density. It would rely on the natural decomposition of organic wastes, which would have minimal environmental effects due to low concentration of polluting elements.

For urbanized areas and population centers, modern off-site systems will be established. The quality of the treated sewage should be strictly in compliance with the discharge standards.

(5) Watershed protection plan

Area II and Area III account for 85% of the total natural water resource endowments in the DMA. It is vitally important to protect the areas from indiscriminate development in order to ensure the adequate recharge of groundwater and the protection of its quality. Contamination of groundwater near the Fijeh springs by nitrogen has already been reported.

Designation of a watershed protection area is proposed as shown in Figure 7.20. Types and magnitude of developments allowed in this area should be carefully determined and enforced. More strict regulations should be introduced for sewage discharges, water extraction and solid waste disposal in this area. Use of fertilizer and agro-chemicals should be controlled. Associated with any development, proper land protection measures should be implemented such as terracing, slope protection and tree planting.

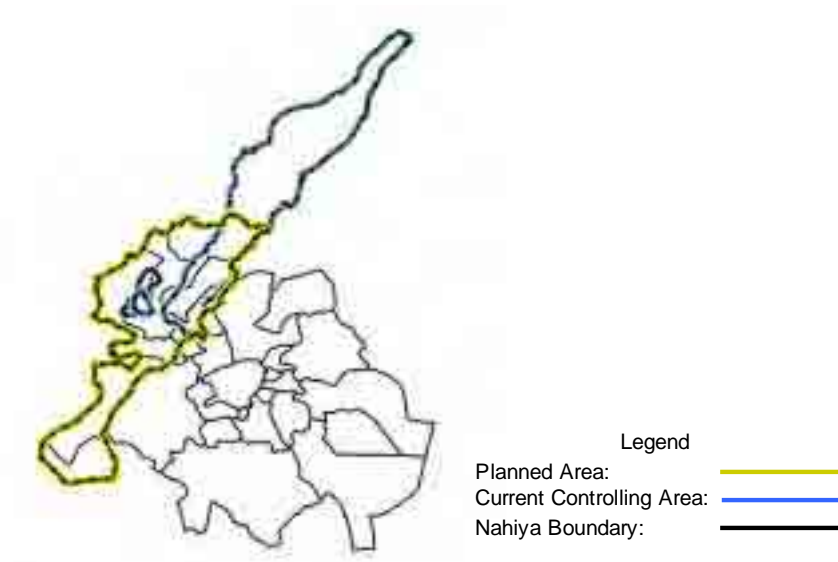


Figure 7.20 Proposed Watershed Protection Area

(6) Institutional measures

In addition to the development/improvement of physical facilities, institutional measures should be taken to realize such water supply and sewerage services that would support the sustainable development of the DMA. These measures are related to the demand side management to suppress the water demand, improvement in the supply capacity, and broader environmental quality improvement.

Water tariff rationalization

The unit water use per capita at present is rather high for the piped water supply in the DMA which faces acute water shortages. It is essential to suppress the water demand by effective demand side management. The water tariff for the DAWSSA and the R-DAWSSA systems should be revised to reduce the unit water use in the DAWSSA service area and to suppress its growth in the R-DAWSSA service area. The upper bound for the water and sewerage tariff currently effective for DAWSSA should be removed. The sewerage tariff should be introduced in the R-DAWSSA service area as its system is improved following the ongoing master plan study.

At present, no water charges apply to irrigation uses, and each user can use water up to his/her water right free of charge. Lump sum water charges should be introduced according to the water right payable only for non-drought years. In a drought year as determined by the Government, the water charges should be exempted or reduced. This measure should be combined with improved management of well registration and strict enforcement of penalties for non-registered wells.

Incentive measures for water-saving irrigation

The total water demand is suppressed most effectively by promoting the water-saving irrigation methods as the irrigation is by far the largest water consumer of all the sectors. The unit water use for irrigation may be reduced from 15,000m³/ha/year by conventional irrigation methods to 9,000m³/ha/year by drip irrigation. Provision of credit for irrigation facilities and technical extension for crop selection are among the measures to be taken. The introduction of the water charges on a lump sum basis as proposed above would also help to encourage farmers for the conversion to water-saving irrigation methods.

Institutional links between DAWSSA and R-DAWSSA

The DAWSSA water supply system at present covers already part of Rural Damascus, and it is expected to be extended further to cover more nahiyas in Rural Damascus. As the water supply system of R-DAWSSA is improved, increasing numbers of sub-systems serving different settlements would be integrated for service efficiency. For better management of the integrated water supply systems, institutional links between DAWSSA and R-DAWSSA should be strengthened.

It may be ideal to establish a single water district to take charge of the combined service areas of DAWSSA and R-DAWSSA, but as the first step, coordination mechanism should be installed between the two administrations to discuss and resolve common issues. As a substantive step toward the integrated management, a common database should be established and the SCADA system installed in the DAWSSA system extended to R-DAWSSA. Also, a common policy decision making body should be established to guide and supervise the planning and management activities of the two administrations.

Control of development in watershed protection area

Development activities in the proposed watershed protection area should be strictly controlled. Detailed land use plans should be prepared in line with the master plan for the DMA to designate areas where only careful developments would be allowed. Any development plan in such areas should incorporate measures to minimize possible negative effects including land improvement such as terracing, slope protection and tree planting.

A new development tax may be introduced to encourage only such developments that would be viable even with additional costs of the tax. The tax revenue should be utilized for further improvements of the watershed through tree planting and other land improvement measures.

Introduction of ambient environmental standards

The discharge standards are established in Syria for polluted air and water and applied

uniformly to land and water bodies irrespective of their locations. In reality, possible effects of any discharges would depend on the locations of pollution sources. Standards for ambient environmental quality should be introduced to pursue more cost-effective pollution control.

Application of such ambient environmental standards is more important in the Barada/Awaji basin. As it is a closed basin without any outlet of water flowing out, any polluting elements tend to be concentrated. This is particularly true when recycle-oriented urbanization is pursued as recommended for the DMA. Use of fertilizer and agro-chemicals should be more carefully controlled as well as nitrogen contents in the treated sewage. As a prerequisite, a more effective monitoring and evaluation system should be established with the participation of farmers and residents.

7.2.3 Social infrastructure plan

The development of social infrastructure supports the realization of the three objectives established in Chapter 5 for the DMA urban development. Provision of adequate social services is important part of the human security, and also a necessary condition to realize the economic efficiency pursued by the master plan for the DMA. To pursue the concept of the cultural city, the base for cultural activities by residents of the DMA need to be strengthened. A social infrastructure plan as part of the DMA master plan covers health facilities, education facilities, cultural centers and green parks, most essential for decent social/living environment.

(1) Health facilities

The plan covers two types of health facilities: primary health care facilities (PHCFs) and hospitals. PHCFs include health centers, comprehensive clinics and specialized clinics. For each type of health facilities, planning conditions are clarified, and necessary new facilities are proposed for Damascus governorate and Rural Damascus governorate within the Study area.

1) Primary health care facilities

Planning conditions

PHCFs provide primary health services such as maternity, vaccines and inoculations, dentistry, medical consultation and diagnostics, and pharmaceutical services. Patients at PHCFs are not admitted for overnight care or operations. Typical PHCF have 22 rooms and a built-up area of 600m².

In 2005, 89 PHCFs existed in the Damascus governorate, representing the service coverage of 17,440 persons per PHCF based on the 2004 population. In addition, one health center and two specialized clinics have been introduced, and two health centers will be opened by 2008 to make the total number 94. It is proposed that the present service level, at 18,000 per

PHCF, would be maintained throughout the planning period up to 2025.

In Rural Damascus, there were 149 PHCFs in 2005 for the service coverage of 15,554 persons per PHCF based on the 2004 population. The Health Directorate of the Rural Damascus governorate proposed additional 27 health centers in the 10th Five Year Plan (2006-10). Of this total of 176 PHCFs, 149 are in the Study area. The service targets are set at 13,500 persons per PHCF in 2010, 13,000 in 2015, 12,500 in 2020 and 12,000 in 2025.

Proposed PHCFs

As no data are available on the distribution of PHCFs operated by the private operators and institutes, the planning conditions are applied to the Damascus governorate as a whole rather than each service department. For the projected population of 1,800,000 in the Damascus governorate in 2025, a total of 100PHCFs will be necessary at 18,000 persons per PHCF. Thus, six new PHCFs need to be introduced. These should be located in the eastern part of the city as shown below, where the service coverage is relatively low at present.

Phase	Service departments in Damascus city
By 2020	Jobar, Qadam, and Yarmouk(1)
2020-25	Qaboun, Shaghour, and Yarmouk(2)

As Rural Damascus is a large governorate and each nahiya has several settlements, the planning conditions are applied to each nahiya. For Rural Damascus as a whole, a total of 226 new PHCFs will be required by 2025. Breakdowns by nahiya and phase are shown in Table 7.10.

Table 7.10 Planned New PHCFs in Rural Damascus

Mantiqa/ Nahiya	2010	2015	2020	2025	Total
RDG Total	82	40	47	57	226
CENTER Mantiqa	48	19	22	23	112
DOUMA Mantiqa	11	9	8	12	40
AL QUTAYFEH Mantiqa	0	0	1	2	3
AL TALL Mantiqa	3	4	5	7	19
AL ZABADANI Mantiqa	0	0	0	0	0
QATANA Mantiqa	8	5	6	9	28
DARAYA Mantiqa	12	3	5	4	24

Source: Estimate by the JICA Study Team

2) Hospitals

Planning conditions

Hospitals provide a wide range of health services from diagnostics and medicines dispensing to treatment, surgeries, intensive care and ambulatory services. They are operated by the Ministry of Health (MOH), Ministry of Higher Education (university hospitals), and the private sector. For the planning purposes, specifications of new hospitals set as shown in Table 7.11.

Table 7.11 Specifications for New Hospitals

Hospital types (Beds)	Number required	Area (m ²)	
		Total floor	Site
100 Beds	1	2,410	4,050
110 Beds	1	2,650	4,460
200 Beds	2	3,600	8,100
210 Beds	1	3,780	8,500
220 Beds	1	3,960	8,910

Source: Estimate by the JICA Study Team

In the Damascus governorate, there existed 51 hospitals with the combined bed capacity of 4,899 in 2005. This corresponds to the service level of 3.2 beds per 1,000 persons based on the 2004 population. In addition, MOH is currently constructing five new hospitals for expected completion by 2009 as shown in Table 7.12. Considering the international standards and the leading role of the city in providing quality health services, the service level of 4.0 beds per 1,000 persons is aimed at for the year 2025.

Table 7.12 New Hospitals under Implementation in Damascus City

Hospital	Service Department	Beds	Opening
1) General	Al Midan SD	500	2007
2) Mental Health	Al Mazzeh SD	100	2009
3) General	Al Yarmouk SD	100	2009
4) Obstetrics & Pediatrics	Al Shaghour SD	450	2009
5) Internal	Sarouja SD	350	2009

Source: Directorate of Health, DG

In Rural Damascus, 45 hospitals existed in 2005 with the combined bed capacity of 2,394. This corresponds to the service level of 1.1 beds per 1,000 persons based on the 2004 population. In addition, MOH is constructing or planning to construct 14 hospitals with 896 beds for completion by 2009. The target service level is set at 2.0 beds per 1,000 persons by 2025 through 1.0 in 2010, 1.25 in 2015 and 1.75 in 2020.

Proposed hospitals construction

In the Damascus governorate, the access to hospitals is ensured by favorable transportation so that the expansion of the bed capacity is planned for the governorate as a whole rather than for each service department. The following conditions are reflected in the location of new hospitals.

- i) There is a lack of hospital beds in the eastern part of the city as shown in Figure 7.21.
- ii) No hospitals shall be constructed in Old Damascus due to difficulty in securing suitable land as a large number of beds are already available in the neighboring service department of Qanawat.
- iii) The same consideration applies to Jobar, that can be supported by the large bed

- capacity in Sarouja.
- iv) For all other service departments, new hospitals should be distributed to satisfy the service level of 2.0 beds per 1,000 persons.
- v) Considering the difficulty in locating suitable sites and the high population density, large hospitals with the minimum 100 beds are proposed.

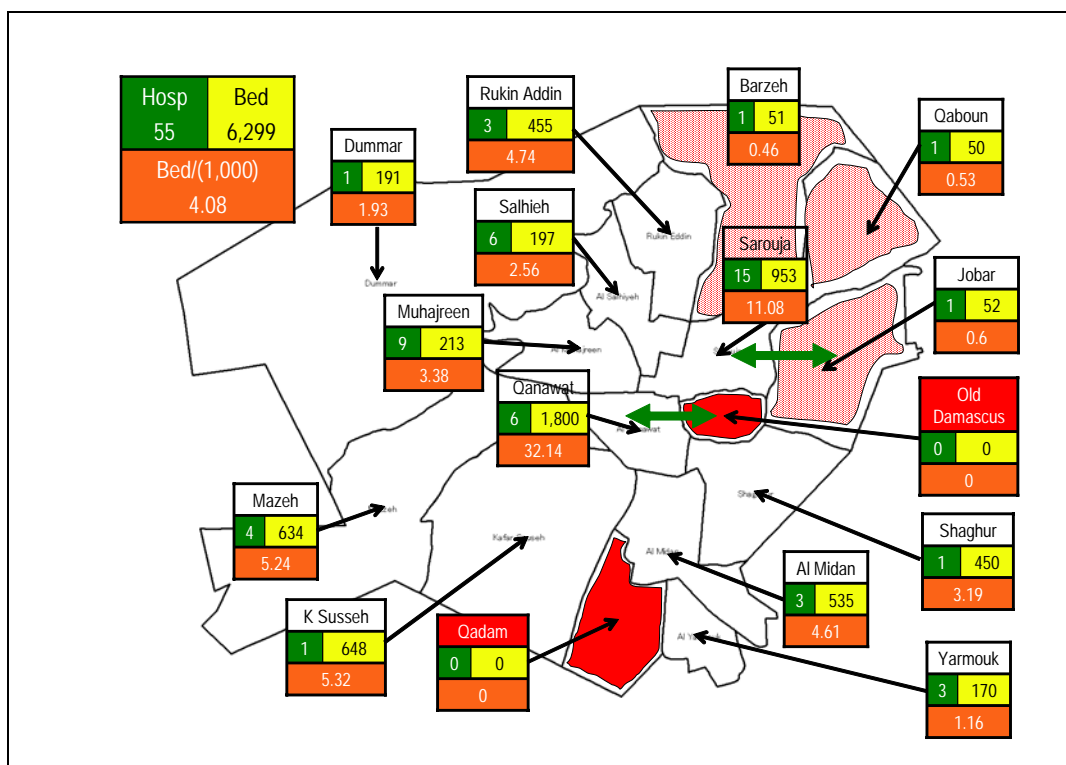


Figure 7.21 DG Service Departments where New Hospitals are required

New hospitals required in the Damascus city are summarized in Table 7.13. As shown, new hospitals are required in the service department of Qadam, Barzeh, Yarmouk and Al Qaboun, where there exist significant shortages of hospital beds at present. New hospitals are proposed also in Dummar, where the population is projected to increase by 1.63 times by 2025.

Table 7.13 New Hospitals Required in Damascus City

Service Department (SD)	New hospitals required - No. (Bed)				Bed/1,000 persons
	2010	2015	2020	2025	
Damascus Governorate	1(220)	2(320)	2(300)	1(200)	4.13
(1) Rukin Eddin SD	No new hospitals proposed				4.75
(2) Al Muhajireen SD	No new hospitals proposed				3.61
(3) Al Mazzeh SD	No new hospitals proposed				4.39
(4) Barzeh SD		1(210)			2.07
(5) Jobar SD	No new hospitals proposed				0.55
(6) Sarouja SD	No new hospitals proposed				10.36
(7) Old Damascus SD	No new hospitals proposed				0.00

Service Department (SD)	New hospitals required - No. (Bed)				Bed/1,000 persons
	2010	2015	2020	2025	
(8) Al Qanawat SD	No new hospitals proposed				30.00
(9) Al Midan SD	No new hospitals proposed				2.90
(10) Al Shaghour SD	No new hospitals proposed				2.96
(11) Dummar SD			1(100)	1(200)	3.11
(12) Qadam SD	1(220)				2.03
(13) Kafar Souseh SD	No new hospitals proposed				3.86
(14) Al Qaboun SD			1(200)		2.19
(15) Al Salhiyeh SD	No new hospitals proposed				2.56
(16) Yarmouk SD		1(110)			2.03

Source: Estimate by the JICA Study Team

As Rural Damascus has a large territory and each nahiya has several settlements, the target service level should be satisfied at the nahiya level. The required bed capacity in each nahiya shall be further allocated to hospitals based on the habitable area and the net population density in each area expected in 2025. Accordingly, all the nahiyas are classified into three zones as indicated in Figure 7.22. For nahiyas in Zone A of large habitable areas, small hospitals are proposed to ensure the accessibility. For nahiyas in Zone C of high population density, large hospitals are proposed for the concentrated population. For nahiyas in Zone B of intermediate characters, medium size hospitals are proposed.

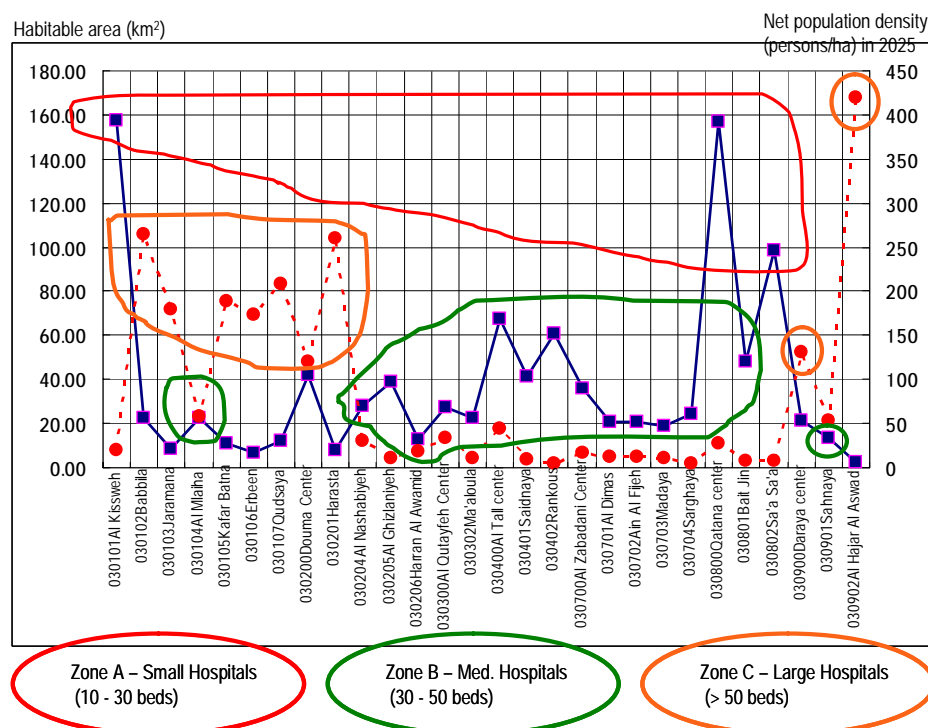


Figure 7.22 Classification of Nahiyas by Habitable Area and Population Densities

A total of 146 hospitals need to be constructed in Rural Damascus by 2025. More details are summarized in Table 7.14.

Table 7.14 Plan for New Hospitals in Rural Damascus

Mantiqa/ Nahiya	New Hospitals number				
	2010	2015	2020	2025	Total
A. Distribution by Hospital Location					
RDG Total	28	28	50	40	146
CENTER Mantiqa	12	12	18	16	58
DOUMA Mantiqa	3	3	5	3	14
AL QUTAYFEH Mantiqa	1	1	1	1	4
AL TALL Mantiqa	1	2	6	6	15
AL ZABADANI Mantiqa	3	1	3	0	7
QATANA Mantiqa	7	7	11	11	36
DARAYA Mantiqa	1	2	6	3	12
B. Distribution by Hospital Type					
1. 10 Bed Hospitals	1	3	1	1	6
2. 20 Beds Hospitals	6	10	5	5	26
3. 30 Beds Hospitals	9	5	17	19	50
4. 40 Beds Hospitals	2	4	11	6	23
5. 50 Beds Hospitals	1	0	0	0	1
6. 60 Beds Hospitals	5	6	8	4	23
7. 80 Beds Hospitals	1	0	8	2	11
8. 100 Beds Hospitals	3	0	0	3	6

Source: Estimate by the JICA Study Team

(2) Education facilities

The plan covers four levels of education: kindergarten, basic 1, basic 2 and secondary. The secondary education consists of general secondary and vocational secondary. Planning conditions for education facilities are clarified, and necessary new facilities are proposed for the Damascus city and Rural Damascus.

1) Damascus governorate

Planning conditions

The target enrollment levels are set for schools in the Damascus governorate as shown in Table 7.15, reflecting the Government policy to improve them for kindergarten and secondary levels.

Table 7.15 Target Enrollment Levels for Schools in Damascus City

Year	Kindergarten (KG)	Basic 1 (B-1)	Basic 2 (B-2)	Secondary
2004	20%	110%	110%	51%
2010	25%	100%	100%	60%
2015	30%	100%	100%	65%
2020	40%	100%	100%	70%
2025	50%	100%	100%	75%

Source: Estimate by the JICA Study Team

The following additional conditions are set for education facilities planning.

- i) Following the policy of the Education Directorate of the Damascus governorate, public schools of 2-shift and in rented buildings should be eliminated for basic education; this implies the elimination of 1,803 class rooms.

- ii) The average number of students per classroom is set at 36, as compared to 33 for kindergarten, 36 for basic and 27 for secondary education at present in the Damascus city.
- iii) For all the education levels, sufficient number of classrooms should be provided in each service department, according to the Education Department policy.
- iv) To reduce the number of new schools construction to a more reasonable level, larger schools with additional floor are adopted as follows:
Kindergarten and basic 1: 18 classrooms/school; ground floor + two floors, and
Basic 2 and secondary: 24 classrooms/school; ground floor + three floors.
- v) For basic 2 and secondary, the distribution of schools is determined on a broader basis rather than for each service department to reduce the number of schools required.

Proposed new school facilities

Based on the planning conditions set forth, the required numbers of new schools are determined as summarized in Table 7.16. As shown, a total of 228 new schools will be required by 2025.

Table 7.16 Number of New Schools Required in Damascus City by 2025

Level Service Department	KG				Basic 2				Basic 1				Secondary			
	'10	'15	'20	'25	'10	'15	'20	'25	'10	'15	'20	'25	'10	'15	'20	'25
Total DG	9	7	15	16	30	15	14	14	19	12	8	18	26	8	8	9
Rukin Eddin	1	0	1	1	2	1	1	1	1	1	0	1	1	0	0	0
Al Muhajreen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Mazzeh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Barzeh	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1
Jobar	0	0	1	1	0	1	1	1	0	0	0	1	3	0	0	0
Sarouja	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Old Damascus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Qanawat	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Al Midan	0	0	1	2	0	0	0	0	0	0	0	0	1	1	1	1
Al Shaghour	1	1	1	1	0	1	1	1	0	1	1	2	2	1	1	1
Dummar	0	1	2	2	3	3	2	2	1	3	2	2	2	1	1	1
Qadam	2	1	1	1	3	3	3	2	1	2	1	3	4	1	1	1
Kafar Souseh	3	1	2	3	10	3	3	2	8	2	2	3	5	1	1	1
Al Qaboun	1	1	2	2	6	2	2	2	4	2	1	2	3	1	1	1
Al Salhiyeh	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0
Al Yarmouk	1	1	1	1	5	0	0	1	4	0	0	1	4	1	1	1
Total Schools by Categories	Total Schools by Level				KG				47	Total Schools by 5-year period				2010		84
					Basic 1				73					2015		42
					Basic 2				57					2020		45
					Secondary				51					2025		57
					Sub-Tot				228					Sub-Tot		228

Source: Estimate by the JICA Study Team

2) Rural Damascus

Planning conditions

The target enrollment levels are set for schools at different levels in Rural Damascus as shown in Table 7.17, reflecting the government policy. Other planning conditions are set forth as follows.

- i) Following the policy of the Education Directorate of the Rural Damascus governorate, public schools of 2-shift and in rented buildings should be eliminated for basic education; this implies the elimination of 2,378 class rooms.
- ii) The average numbers of students per classroom is set at 32 for kindergarten and 36 for all other levels, compared to 31 for kindergarten, 33 for basis and 28 for secondary at present in Rural Damascus.
- iii) Considering the large territory of the Rural Damascus governorate with dispersed settlements, each nahiya should satisfy the service levels for all the education levels.
- iv) To reduce the number of new schools construction to a more reasonable level, larger schools with additional floor are adopted as follows:
Kindergarten and basic 1: 18 classrooms/school; ground floor + two floors, and
Basic 2 and secondary: 24 classrooms/school; ground floor + three floors.

Table 7.17 Target Enrollment Levels for Schools in Rural Damascus

Year	Kindergarten (KG)	Basic 1 (B-1)	Basic 2 (B-2)	Secondary
2004	12%	101%	101%	29%
2010	20%	100%	100%	40%
2015	30%	100%	100%	55%
2020	40%	100%	100%	65%
2025	50%	100%	100%	75%

Source: Estimate by the JICA Study Team

Proposed new school facilities

Based on the planning conditions set forth, the required numbers of new schools at different levels are determined as summarized in Table 7.18. As shown, a total of 1,193 new schools will be required by 2025.

Table 7.18 Number of Schools Required in Rural Damascus by 2025

Level	KG				Basic 2				Basic 1				Secondary											
Nahiya	'10	'15	'20	'25	'10	'15	'20	'25	'10	'15	'20	'25	'10	'15	'20	'25								
Total RDG	31	100	91	33	48	85	95	51	73	87	95	51	92	93	104	64								
CENTER	17	56	54	19	22	39	43	24	32	36	40	20	37	38	41	26								
DOUMA	7	17	15	7	11	20	24	11	14	20	22	11	18	20	23	12								
AL TALL	0	5	3	0	4	7	8	3	8	9	9	4	11	12	13	8								
ZABADANI	1	2	2	0	0	1	1	1	1	1	1	1	1	1	1	1								
QATANA	3	8	7	1	5	9	10	6	9	11	12	8	14	14	16	10								
DARAYA	3	12	10	6	5	8	8	6	7	9	10	6	8	7	8	6								
QUTAYFEH	0	0	0	0	1	1	1	0	2	1	1	1	3	1	2	1								
Total Schools by Categories	Total schools by Level				KG				244				Total schools by 5-year period				2010				255			

Source: Estimate by the JICA Study Team

(3) Cultural centers

Cultural centers are constructed by respective governorates and handed over to the Ministry of Culture for operation by the Cultural Directorate in each governorate. The plan proposes the introduction of comprehensive cultural facilities in sufficient space for main cultural activities such as theater hall of some 350 seating capacity, library, internet rooms, and rooms for institutes operated by the center as well as offices for administration and management.

1) Damascus governorate

At present, there are six cultural centers in the Damascus governorate, of which five are owned by the Cultural Directorate of the governorate. All of them have sufficient space to offer all the required services. The service level of 260,000 persons per cultural center is considered adequate by the department in charge of the Ministry of Culture.

In view of the large population increase expected in the service departments of Dummar, Al Qaboun and Barzeh, however, three new cultural centers are proposed to be established by 2025. Also, another new center is proposed in Al Midan currently deprived of such facilities. With the construction of these four new centers, the service level will become 180,000 persons per cultural center. The cultural center in Al Midan may be constructed by 2010, followed by ones in Dummar by 2015, Al Qaboun by 2020 and Barzeh by 2025.

2) Rural Damascus

At present, there are 115 cultural centers in Rural Damascus within the Study area. The service level is 13,700 persons per center. Of these centers, however, only seven, allocated in the mantiqa centers, are completely owned by the Cultural Directorate and constructed as complete cultural centers. Others are small and 32 centers are located in rented premises. A

new cultural center is under construction in Harasta.

While the number of the existing cultural centers is considered sufficient by the department in charge of the Ministry of Culture, eight new cultural centers are proposed to be established in all the nahiyas where the population is expected to exceed 100,000 by 2025. Construction schedule is for cultural centers in Babbila and Qudsaya by 2010, Kafar Batna and Jaramana by 2015, Mlaiha and Erbeen by 2020 and Nashabiyeh and Sahnaya by 2025.

(4) Green parks

The Damascus governorate defines a green park as a sizable land area with greenery created or preserved together with various facilities for use by the general public. Private gardens attached to restaurants or tourist facilities are not included. The parks are operated by respective governorates. Green areas around intersections are tended by relevant governorates, and are therefore included in the parks defined here. This definition is adopted by many cities which suffer from area shortages. The plan aims at ensuring the green park area of 2-3m² per capita. In new planning areas, a larger area per capita (about 10m²/capita) is promoted.

1) Damascus governorate

There are about 840 parks operated by the Damascus governorate, covering an area of 2.6km² in total. These are located in 10 service departments out of 16. The plan proposes to increase the park area to 3.0m² per capita by 2025. The total area of the parks will be 5.4km², corresponding to about 5% of the gross area of the Damascus city. The distribution of the parks by service department is summarized in Table 7.19.

Table 7.19 New Green Parks Planned in Damascus City

Service department	Unit	2010	2015	2020	2025
1) Target	m ² /cap	2.0	2.3	2.6	3.0
2) New Area by service department					
Damascus city	m ²	1,407,589	623,170	496,180	725,338
Rukin Eddin	m ²	35,678	29,890	30,110	40,400
Al Muhajireen	m ²	0	0	0	0
Al Mazzeh	m ²	0	0	0	16,670
Barzeh	m ²	96,307	44,460	44,900	57,540
Jobar	m ²	174,800	32,200	32,720	42,280
Sarouja	m ²	0	0	0	0
Old Damascus	m ²	51,400	9,780	10,060	13,660
Al Qanawat	m ²	117,200	18,730	18,770	25,300
Al Midan	m ²	0	0	0	65,088
Al Shaghour	m ²	152,687	49,770	51,830	68,600
Dummar	m ²	105,030	77,000	78,000	97,000
Qadam	m ²	61,487	40,230	40,250	50,720
Kafar Souseh	m ²	0	210,070	75,860	99,400
Al Qaboun	m ²	189,600	44,770	47,210	60,120
Al Salhiyeh	m ²	148,400	24,790	24,670	32,840

Service department	Unit	2010	2015	2020	2025
Al Yarmouk	m ²	275,000	41,480	41,480	55,720

Source: Estimate by the JICA Study Team

2) Rural Damascus

There are about 95 parks operated by respective municipalities of Rural Damascus, covering in total an area of 0.39km². This corresponds to the per capita park area of only 0.19m². The mantiqas of Al Zabadani and Qutayfeh have no green park. The plan propose to increase the per capita park area to 2.0m² by 2025. The total area of the parks will be 28.4km² accounting for 1.0% of the habitable area of Rural Damascus. The distribution of new park area by nahiya is shown in Table 7.20.

Table 7.20 New Green Parks Planned in Rural Damascus

Nahiya	Unit	2010	2015	2020	2025
1) Target	m ² /cap	0.5	1.0	1.5	2.0
2) New Area by nahiya					
Rural Damascus	m ²	963,433	1,741,614	2,343,100	2,965,200
Center	m ²	515,908	765,200	975,400	1,195,300
Douma	m ²	204,950	367,100	473,050	584,650
Al Tall	m ²	80,500	132,200	207,650	318,950
Al Zabadani	m ²	58,800	66,600	73,800	81,400
Qatana	m ²	0	157,764	298,600	432,900
Daraya	m ²	66,775	203,850	251,050	270,950
Qutayfeh	m ²	36,500	48,900	63,550	81,050

Source: Estimate by the JICA Study Team

7.2.4 Urban heritage restoration and use plan

Important urban and architectural heritage in the DMA consists of the Old City of Damascus and other historical areas, characteristic urban structure outside the Old City, and the heritage of the Ghouta areas in Rural Damascus. The first kind of heritage is the priority target for restoration and preservation, but the other two kinds of heritage are also essential part of the unique urban fabric and environment in the DMA. The characteristic urban structure of the Damascus city should not be undermined by new road alignments and other structures such as parking, intersections and over-head pedestrian crossings as well as some modern architecture of concrete and glass. Encroachment on the Ghouta areas should be prevented not only to ensure the sufficient greenery in the urban area, but also to preserve the heritage there.

The urban heritage restoration and use plan presented here deals with both the historical areas in the Damascus city and its urban structure and the heritage in Rural Damascus. The preservation of the Ghouta areas is treated separately in other sections as well as part of broader issues related to water balance analysis and land use planning.

(1) Basic concept and strategy

Basic concept

The urban heritage restoration and use plan would have to satisfy seemingly mutually contradictory requirements of the past, present and future. On the one hand, it would have to observe the historical background of each heritage area as a matter of course. The urban heritage areas that can be identified now have clear identity in the modern history of early twentieth century as shown in Figure 7.23. The identities may be rapidly dissipated unless deliberate efforts are made to preserve them.

On the other hand, the urban heritage restoration and use plan would have to observe also the needs of residents in each heritage area today and in the future. The preservation would be meaningless unless it would contribute to the betterment of living environment for the residents, and the restoration would not be sustained without the cooperation of the residents.

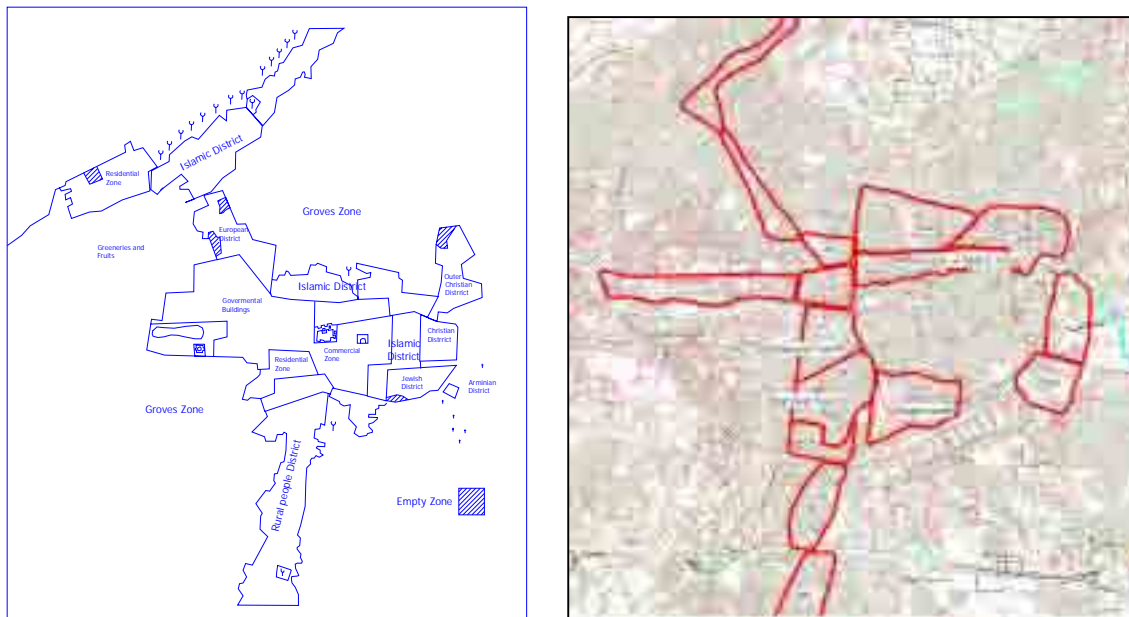
Strategy

The strategy for urban heritage restoration and use, therefore, should have the following components:

- 1) proactive rather than passive protection of the urban heritage, and
- 2) participatory planning for restoration and use of the urban heritage.

As the urban heritage constitutes integral part of the urban living environment, its protection has inevitable effects on the urban life of the residents. Such effects should be made positive so that the protected heritage would serve the needs of the residents. The best way would be to protect the heritage through its use to benefit the residents for proactive protection rather than passive protection. Commercial use is a possibility such as the use of old residential compound for a restaurant as was once popular in Old Damascus. Often, however, such commercial use benefits mainly non-residents at the cost of the residents in terms of traffic congestion, noise and other problems. More emphasis should be placed on social and cultural use such as community forum and cultural facilities.

Planning for preservation and restoration of any heritage area should, in principle, be undertaken by the participatory approach. This is for two pragmatic reasons. First, the participatory planning is a cost-effective way to utilize limited resources in the public sector. Second, the management of any urban heritage area cannot be ensured without the support of residents there. If a restoration and use plan for a heritage area is prepared through active participation of the residents there, incorporating their needs to improve the living conditions as well, the plan would have much better chance to be implemented with their participation again.



Distribution of Peoples of Various Backgrounds in Damascus in 1937

Location of Urban Heritage Areas

Figure 7.23 Distribution of People of Various Backgrounds in 1937 and Heritage Areas at Present

(2) Planning concepts

Economic efficiency

Of the three planning concepts pursued through the DMA master planning, economic efficiency represents a common concept in the modern urban planning practices. The idea is to reduce the economic transaction costs by establishing such urban structure that would facilitate the flow of people and goods. It often leads to such an urban road network that would cater for car traffic at the sacrifice of safe pedestrian movements as is happening already in the Damascus city.

This modern concept appears to contradict with the traditional Arab planning concept. According to the Arab planning concept for a city, self-contained and self-sufficient quarters constitute the basic units of the city. Such integrated quarters contain all the functions necessary for comfortable urban life accessible by pedestrian movement. It is inevitable that car traffic is given priority in the modern city planning, but the key issue is how to ensure balance between the efficient vehicular movement and safe pedestrian movement.

Human security

The Arab city planning concept of quarters would naturally ensure the second planning concept of human security. Within each quarter, safe pedestrian movement is ensured to access all the essential urban functions. In fact, the social and commercial activities are integrated within the quarter. This kind of way of life itself is a heritage. The key issue is how to preserve

it to maintain the identity of the Damascus city.

Zoning for urban land use by function is a common tool of the modern urban planning to promote the economic efficiency. Certainly, industrial areas should better not be mixed with residential areas for social and environmental as well as economic reasons. Strict application of such a functional division of urban land use is becoming less popular even in the modern urban planning, and mixed use of urban land has been given a new value. This is effectively a reflection of the Arab planning concept.

Cultural city

The concept of cultural city should contribute directly to the urban heritage restoration and use planning. It may be pursued at different levels. At the individual residents' level, the quarters as the basic units of the city should contain some cultural function as well. For urban heritage areas, this requirement may be easily satisfied if the restored heritage is used for cultural purposes. The urban heritage areas, however, should be considered as common property of all the city residents. The restored heritage, therefore, should be accessible by residents in other areas as well.

The Old City and its surrounding areas should be taken together as the most significant urban heritage in the DMA. More cultural functions should be vested to the area, including some serving a wide range of international visitors. They may include various museums, major library and theatre that are accessible by the city residents and visitors alike. Moreover, the walled area of Old City should offer a venue for communications between peoples of widely different cultural backgrounds. This function is indeed the most important one in making the DMA cultural city as it truly deserves.

(3) Proposed measures

Fundamental measures for Old Damascus and its surroundings

Many and various entities are undertaking planning and implementation works in different areas and for different objects in Old Damascus. This piecemeal approach would not ensure the optimal restoration and use of the most significant heritage in the DMA. Also, no consensus exists for the treatment of the areas around Old Damascus. The areas should not be treated merely as a buffer zone to ensure the protection of the walled area. The economic and social interactions between the areas inside and outside the wall are vital part of the Old Damascus heritage.

These areas outside the wall may be called collectively as the peripheral heritage area (PHA). The PHA has the following important functions in the urban development of the city as a whole:

- 1) location for commercial functions that cannot be located in Old Damascus,
- 2) additional heritage areas expanding/augmenting or complementing the heritage value of Old Damascus,
- 3) provision of much needed parking space in the central part of the city, and also as a prerequisite to making Old City vehicle-free zone, and
- 4) mixed use areas with both residential and commercial functions for lively urban communities to attract visitors as well.

The following constitute the fundamental measures for the restoration and use of the heritage of Old Damascus and the PHA:

- i) Define the integrated heritage area encompassing both the entire Old Damascus and the PHA, and establish legal framework to treat the entire area on an equal base, incorporating the World Heritage Site requirements for Old Damascus.
- ii) Prepare a comprehensive management plan for this integrated heritage area as mandated by the World Heritage through coordination between related Government agencies as well as the Damascus governorate and extensive consultation with a wide range of stakeholders,
- iii) Establish through the management planning a unified entity for the management of the integrated area.
- iv) Initiate a participatory planning process for the PHA, following the initiative of the Master Plan Study conducted for the DMA,
- v) Prepare integrated restoration and use plans for selected areas of the PHA by the participatory approach,
- vi) Implement the plans in steps, while the similar kinds of plans are prepared in steps for other areas, and
- vii) Follow the same procedure for other heritage areas to plan for, and implement integrated restoration and use plans.

Specific measures for Old Damascus

A simple survey conducted as part of the Study has clarified that Old Damascus is seen by the dominant majority of city residents and experts as the living place as well as a place for tourism rather than commercial areas (Annex to this sub-section). Large majorities of citizens and experts identify cultural aspects as the core value of Old Damascus. These residential, cultural and some social functions should be emphasized in the restoration and use of Old Damascus.

More specifically, the ban on commercial uses of old residential complexes should be continued, but more residential, cultural and social uses should be encouraged. The following

measures are recommended.

- 1) Prepare a stage-wise improvement plan for utilities and infrastructure by quarter of the integrated area;
- 2) Introduce a subsidy scheme for restoration of old residential complexes for residential purposes such as boarding houses for students and cultural and social uses;
- 3) Apply the subsidy scheme quarter by quarter on priority basis; and
- 4) Provide technical guidance for such restoration and use to ensure proper methods, design and materials would be applied.

Participatory planning for historical areas

As mentioned above, any restoration work for an urban heritage area should benefit the residents there so that it would be supported by them. This is an essential condition to ensure that the restored heritage would be properly managed by the residents. Therefore, the urban heritage restoration and use plan should be prepared by the participatory approach. Under the guidance of heritage experts preferably from the same area of concern, the participatory planning may be conducted in the following way.

- 1) Convene a workshop to clarify the core value of the heritage as perceived by the residents and also important functions to be established or strengthened by using the heritage;
- 2) Conduct a household socio-economic survey to clarify existing conditions in, and problems faced by the community;
- 3) Conduct a survey on land ownership and use, and building conditions and use;
- 4) Prepare an existing land use map with all the buildings;
- 5) Formulate a urban heritage restoration and use plan, verify it at a community workshop, and revise it as necessary; and
- 6) Prepare a detailed plan for urban heritage restoration and use based on the revised plan.

Heritage restoration in Rural Damascus

Human existence in Rural Damascus is as old as that in the Damascus city itself. In particular, Ghouta as the oasis or planted area as it means together with the totality of its historical, religious and urban monuments is comparable to a major city for its richness of heritage. Houses in Ghouta are built traditionally from local materials such as stones, mud and wood, and particularly, the eastern Ghouta is rich in poplar wood. Many of these traditional houses and green areas, however, have disappeared and replaced by modern buildings that do not necessarily conform to the traditional architecture.

To prevent the further degradation and even extinction of the heritage of Rural Damascus, areas with relatively rich heritage remaining should be identified and utilized to establish heritage parks. Some historical monuments and traditional houses may be transferred from their

original locations to the areas selected for heritage parks to enhance the attractiveness. The establishment of a heritage park would provide an opportunity to document the remaining heritage throughout Rural Damascus and enhance the awareness of the citizens for the heritage value.

Other related measures

Along with the measures recommended above, the following measures should be taken in steps to broaden the support base for urban heritage restoration and use.

- 1) Conduct a campaign to raise the awareness of the city residents for preservation and restoration of urban heritage,
- 2) Establish a database for urban heritage in the DMA including not only historical architecture but also residential zones with historical houses, and
- 3) Make the database accessible by all the related organizations.

The participatory planning would be effective also in raising awareness of residents for heritage preservation and restoration. The database would be established in steps as the surveys are conducted for different heritage areas as part of the participatory planning.

Annex to sub-section 6.2.4: Results of the Photo-Voice Survey

A simple survey, called a photo-voice survey was conducted to identify the value of Old Damascus and issues it faces as seen by residents and experts, and to collect some photos showing the value and problems. The survey covered 30 experts and 100 ordinary citizens. The results were compiled separately for experts and citizens as follows.

Questions and answers	(Unit: %)	
	Answers by experts	Answers by citizens
How do you see Old Damascus?		
1.Place for living	100	81
2.Place for tourism activities	100	84
3.Place for shopping	27	59
4.Place for worship	13	40
5.Place for research	70	36
6.Place for commercial activities	27	22
What is the real value of Old Damascus in your opinion?		
1.Millenia history(national identity)	63	60
2.Mixed religions	53	53
3.Cultures	70	79
4.Commercial center(employment opportunities)	13	1
5.Architecture(for study etc.)	77	55
Do you think it necessary to protect Old Damascus?		
1.All of it in its original shape	93	88
2.Historical monuments only	7	1
3.Not necessary	0	0
What is the main issue to be solved for Old Damascus?		
1.Financial(high costs of maintenance & rehabilitation)	57	60
2.Legal	50	57
3.Services(poor infrastructure & utilities)	40	81

The following may be observed.

- (1) Old Damascus is seen as a place for living as well as for tourism by both experts and citizens.
- (2) Old Damascus is seen as a place for shopping by 59% of citizens but hardly as a commercial center.
- (3) The cultural value is attached by the largest numbers of experts and citizens as the core value of Old Damascus.
- (4) Architecture and historical value also received supports of the majority of citizens as the value of Old Damascus.
- (5) Poor infrastructure and utilities are considered as the most serious issue facing Old Damascus by citizens.

7.3 Development Programs and Projects

7.3.1 Development plan for the DMA

The urban development of the DMA is planned with the three objectives established in Section 5.2:

- (1) To realize the economic development potentials fully in the DMA to lead sustainable development of the Syria's economy;
- (2) To improve the social/living environment in the DMA to ensure decent life for residents and visitors; and
- (3) To enhance the cultural value of the DMA to realize active and dynamic society through attracting people of different backgrounds.

These objectives are pursued under the three planning concepts of (i) economic efficiency, (ii) human security and (iii) cultural city. In order to attain the objectives, specific projects and programs have been formulated in line with the planning concepts. Nine broad programs have been defined under two initiatives: the urban structure transformation initiative, and living environment improvement initiative, corresponding largely to the first two objectives. Another program has been formulated for urban heritage restoration and use, corresponding largely to the third objective.

The proposed programs are listed below.

- I. Urban Structure Transformation Initiative
 1. Artery transport network development program
 2. New cities development program
 3. Multi-functional urban centers development program

- II. Living Environment Improvement Initiative
1. Informal housing areas formalization program
 2. Controlled urban and agricultural development program
 3. Social infrastructure program
 4. Urban renewal program
 5. Water supply and sewerage improvement program
 6. City transport system improvement program
- III. Special Program for Urban Heritage Restoration and Use

The correspondence between each program and the three planning concepts is indicated in Table 7.21. Each program/project is outlined.

Table 7.21 Correspondence between Proposed Programs and Planning Concepts

Program	Economic efficiency	Human security	Cultural city
1.Artery transport network development			
2.New cities development			
3.Multi-functional urban centers development			
4.Informal housing areas formalization			
5.Controlled urban & agricultural development			
6.Social infrastructure			
7.Urban renewal			
8.Water supply and sewerage improvement			
9.City transport system improvement			
Special program for urban heritage			

: strong relevance; : relevance

Source: JICA Study Team

7.3.2 Urban structure transformation initiative

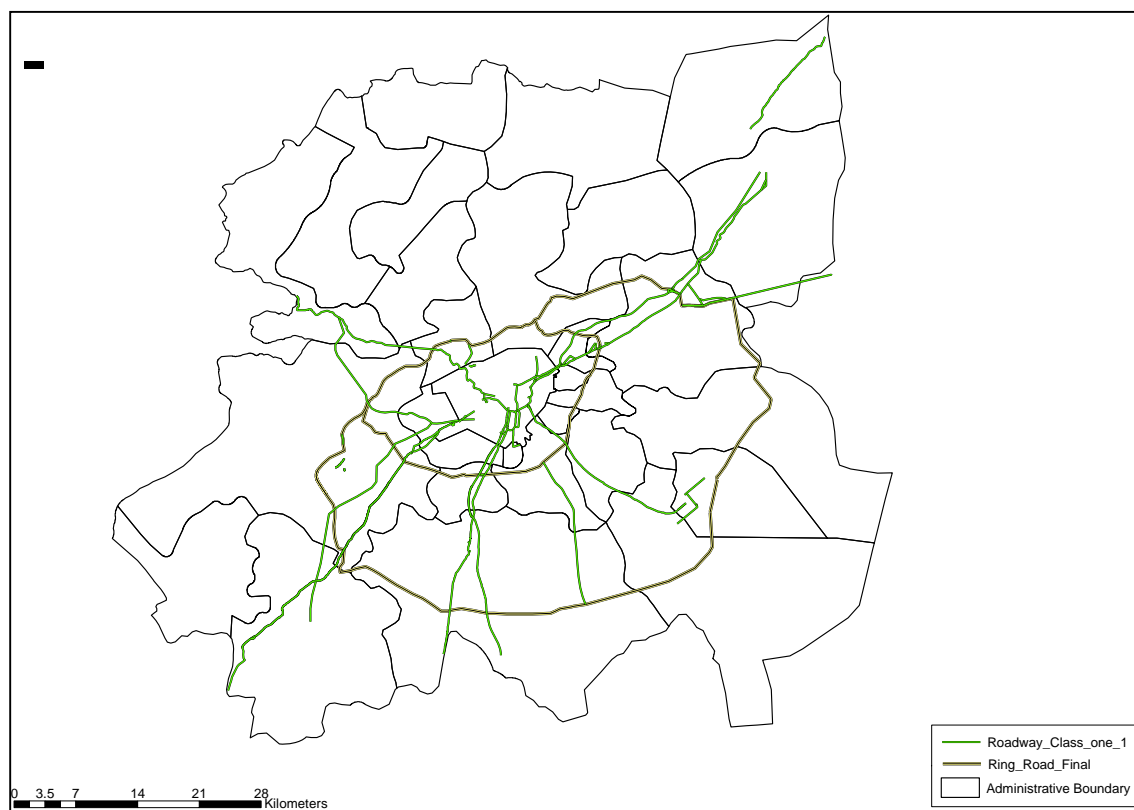
(1) Artery transport network development program

This program aims at transforming the artery transport network of the DMA in the medium to long terms in order to decongest the Damascus city and at the same time to consolidate the DMA development cluster defined in Section 3.2 with improved links between the DMA and the Southern, Central and Mediterranean regions. The program consists of the following projects (Figure 7.24).

- 1.1 Outer ring road development
- 1.2 Radial roads upgrading
- 1.3 Second ring road establishment
- 1.4 Third ring road establishment
- 1.5 Damascus-Quneitra road development

The outer ring road is instrumental in strengthening the links between the DMA and other regions as well as decongesting the DMA in the long run. Other projects would help to reduce

the urbanization pressure on the Damascus city and its vicinities by strengthening the links



between the proposed new cities and multi-functional urban centers just outside the city.

Figure 7.24 Artery Transport Network Development Program

(2) New cities development program

The program is to establish the following four new cities as self-contained and self-reliant cities to offer employment opportunities as well as residential spaces (Figure 7.25). Most residents in each new city would find employment opportunities in the city so that they would not add to commuting traffic to/from the city.

- 2.1 Adra industrial city development
- 2.2 Qatana IT city development
- 2.3 Government city development
- 2.4 Al Kissweh industrial city development

These city areas are located 15-25km from the Damascus city center, closer to rural uplands, forests, agricultural lands and tourism areas. Therefore, carefully planned development should be pursued. Each new city should grow into a self-reliant multi-functional city with distinct characteristics, respectively to develop complementary to one another to reduce the urbanization pressure on the city and its conurbation areas together.

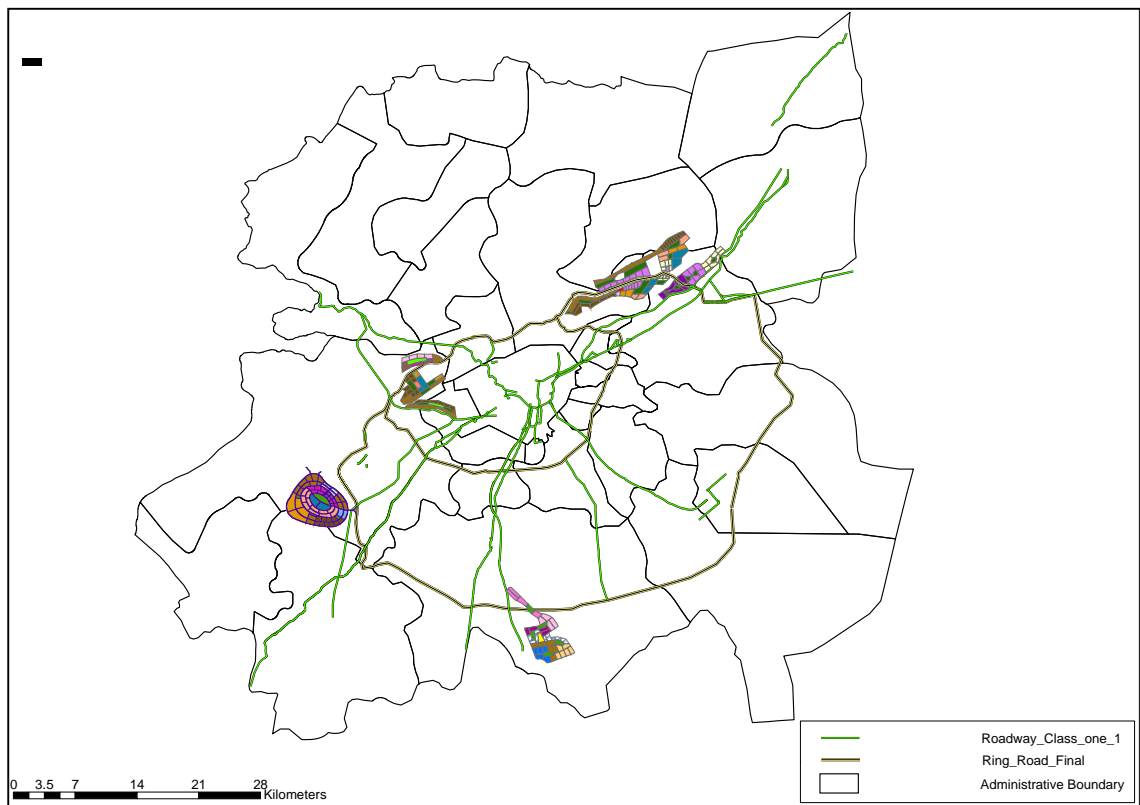


Figure 7.25 New Cities Development Program

Adra industrial city

The city, initiated by the Government, is to establish a huge industrial site along the northeastern development axis. Near the site are located several land lots for future development. These land lots should be developed in a comprehensive way to offer more advanced functions as well as residential and industrial functions. They include science parks, R&D centers, software parks and other higher education and training facilities that would help to enhance the competitive edge of the Syrian economy. A preliminary plan for the new city is given in Table 7.22 and illustrated in Figure 7.26.

Table 7.22 Preliminary Plan for Adra Industrial City

Land area	1,920ha		
Planned population	100,000		
Planned employment	100,000		
Land use		ha	%
Research park	10 blocks	100	3
Industrial zone	6 blocks	240	7
Product market zone	5 blocks	250	7
Commercial core	2 blocks	40	1
Commercial district	21 blocks	660	18

Academic zone	2 blocks	100	3
Urban green parks	14 parks	510	14
Low density residential area	4 blocks	180	5
Medium density residential area	18 blocks	540	15
High density residential area	16 blocks	380	10
Mixed use area (dominantly residential)	4 blocks	160	4
Mixed use area (mainly commercial)	2 blocks	80	2
Trunk roads		400	11

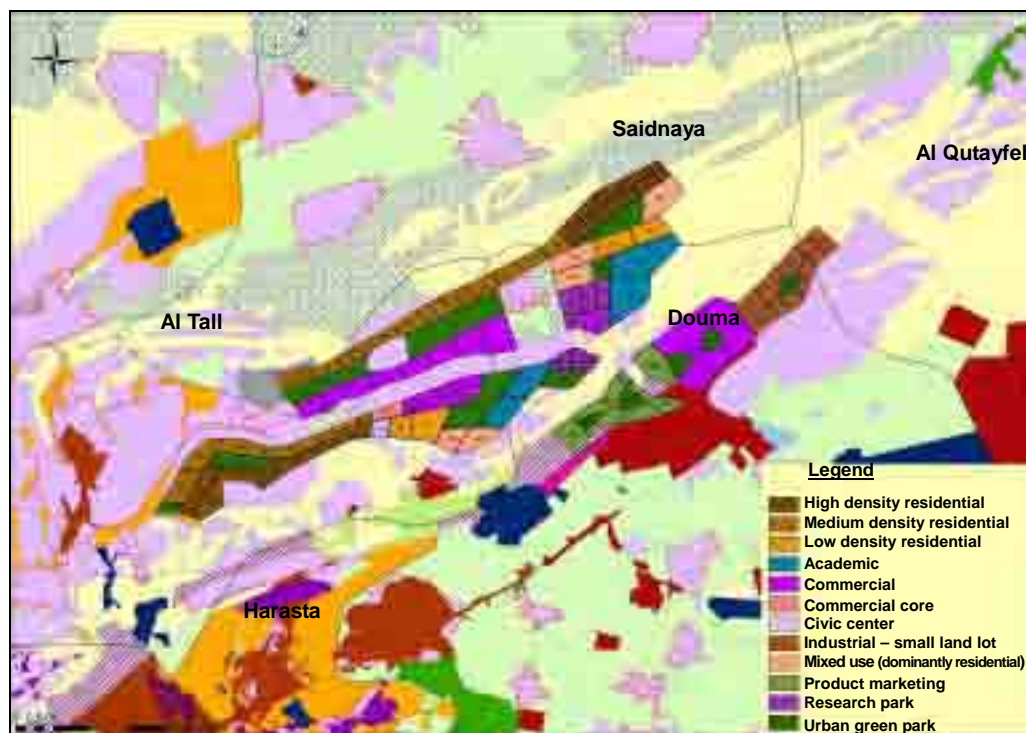


Figure 7.26 Adra Industrial City

Qatana IT city

The location of the IT city has been selected near the Qatana city in view of the beautiful landscape, ample water and large land availability through consultation with the present and the former city mayors. Planned development should aim at making the Qatana IT city a “Silicon Valley in Syria”. IT and other high-tech industries, higher education institutes and R&D facilities should be invited to locate in the city. The location of the city has been carefully selected, avoiding military areas and facilities while ensuring the good access from the Damascus city. A preliminary plan for the new city is given in Table 7.23 and illustrated in Figure 7.27.

Table 7.23 Preliminary Plan for Qatana IT City

Land area	2,950ha		
Planned population	200,000		
Planned employment	140,000		
Land use		ha	%
IT enterprise zone	11 blocks	477	16

Commercial core	2 blocks	57	2
Commercial district	9 blocks	197	7
Academic zone	2 blocks	191	6
Urban green parks	5 parks	182	6
Low density residential area	4 blocks	477	16
Medium density residential area	14 blocks	589	20
High density residential area	10 blocks	271	10
Mixed use area (dominantly residential)	4 blocks	114	4
Mixed use area (mainly commercial)	2 blocks	92	3
Civic center zone	4 blocks	7	0.2
Trunk roads		283	10

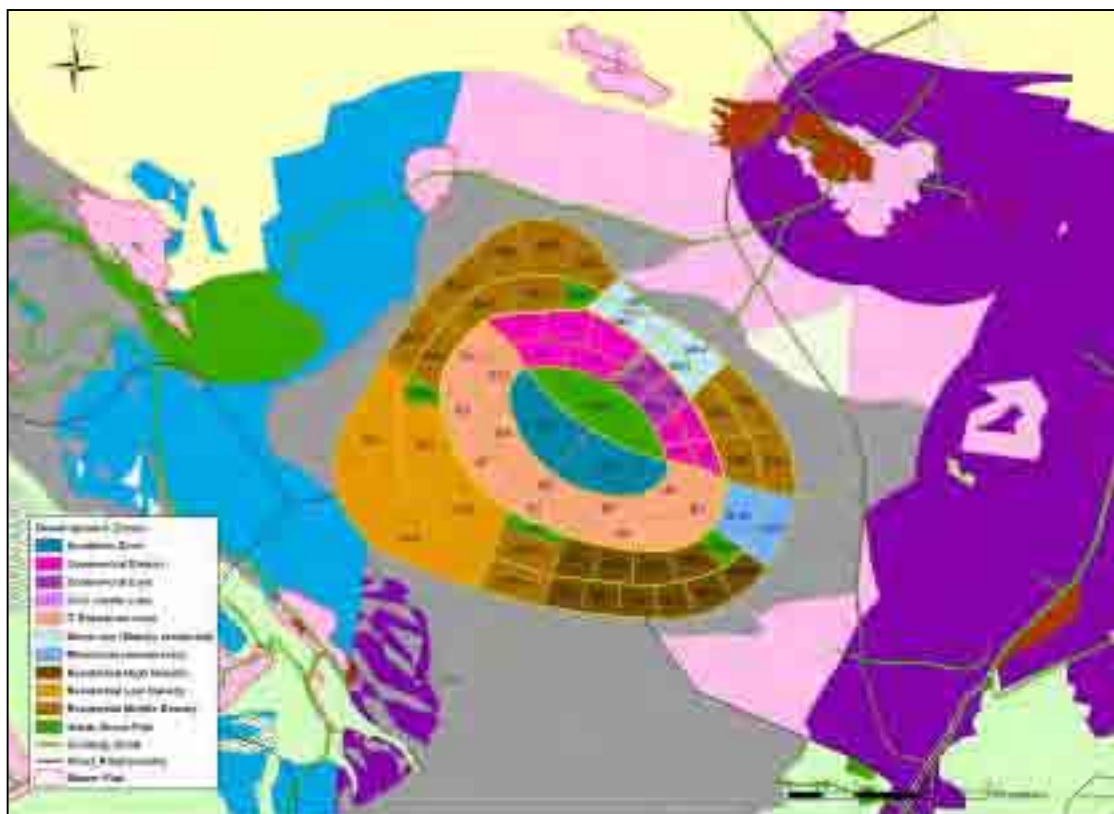


Figure 7.27 Qatana IT City

Government city

Alternative sites for the relocation of government functions currently proposed by the Government were examined, including Mu'adamiyeh, the wetland in the west (Ramdan) and the area along the north ring road near the Adra industrial city. The Government is also planning to establish a “diplomatic town” in Qudsaya some 20-30 minutes drive from the city center. The site is considered superior to other alternatives as it is strategically located along the north ring road, and also close to the intersection between the north ring road and the Damascus - Lebanon road. Considering these favorable conditions, it is recommended that proposed relocation of government functions from the city center should be integrated into this new city. The government functions to be relocated may include the Parliament, supreme/lower court, offices

of political parties, branch offices of the media, governorate liaison offices and others. Ministries may be located in a designated zone. A preliminary plan is given in Table 7.24 and illustrated in Figure 7.28.

Table 7.24 Preliminary Plan for Government City

Land area	1,820ha		
Planned population	180,000		
Planned employment	50,000		
Land use		ha	%
Central Government office zone	9 blocks	65	4
Ministry office zone	5 blocks	50	3
Commercial core	1 block	30	2
Academic zone	2 blocks	115	6
Urban green parks	5 parks	180	10
Low density residential area	2 blocks	60	3
Medium density residential area	14 blocks	420	23
High density residential area	14 blocks	350	19
Sport & recreation area	2 blocks	140	8
Trunk roads		220	12

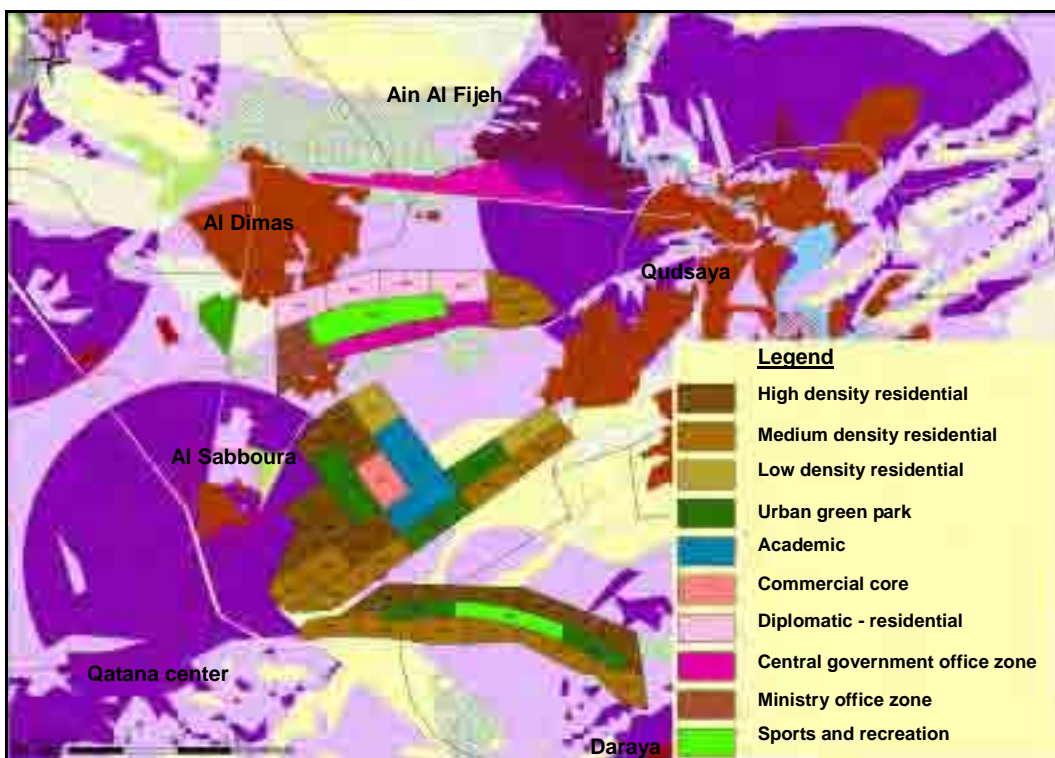


Figure 7.28 Governmental City

Al Kissweh industrial city

Urbanization has been proceeding with some industries along the development axis from the Damascus city to Dara’aa in recent years. The dynamism expected to continue may be utilized to establish another industrial city in the south. More urban services and market

oriented industries should be located in the city, but not water intensive industries, which may be guided into the Yarmouk basin in the south. The new city should be located, avoiding military areas and facilities, and informal housing areas. A preliminary plan is given in Table 7.25 and illustrated in Figure 7.29.

Table 7.25 Preliminary Plan for Al Kissweh Industrial City

Land area	3,860ha		
Planned population	280,000		
Planned employment	180,000		
Land use		ha	%
Industrial zone (large land lot size)	4 blocks	160	8
Industrial zone (medium land lot size)	4 blocks	200	10
Industrial zone (small land lot size)	4 blocks	160	8
Business park/market zone	9 blocks	180	9
Mixed use zone	5 blocks	200	10
Commercial core	1 block	40	2
Vocational training zone	1 block	40	2
Urban green parks	5 parks	250	23
Medium density residential area	6 blocks	240	19
High density residential area	6 blocks	240	19
Trunk roads		250	13

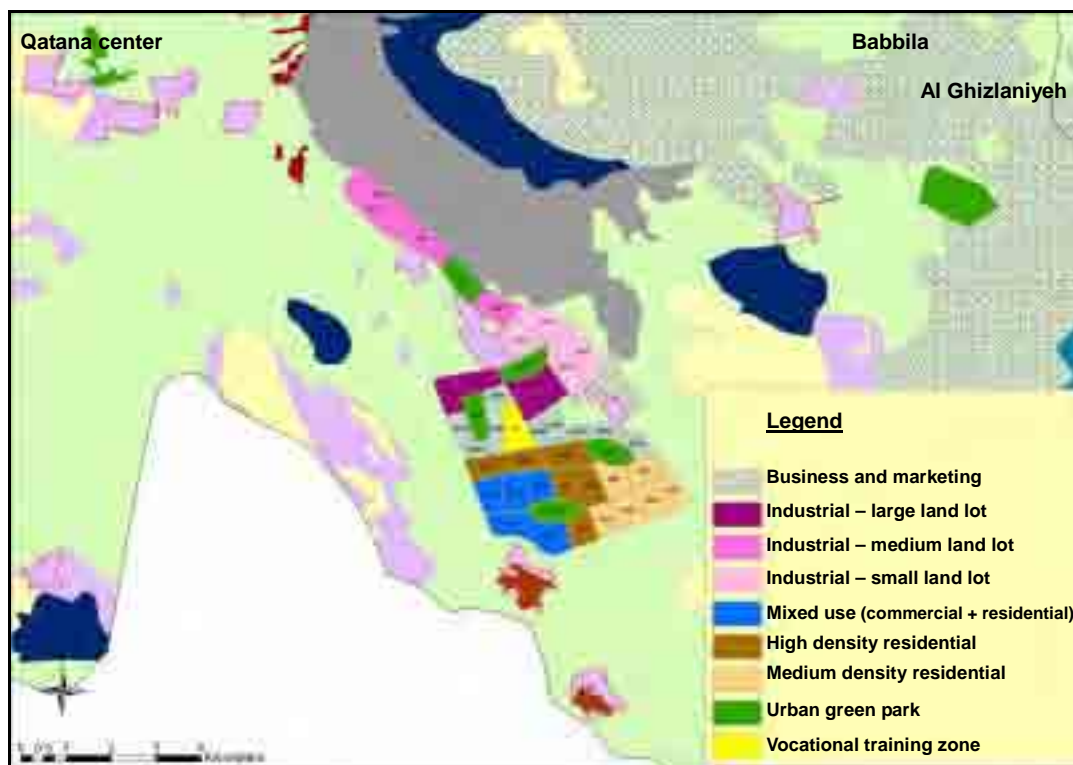


Figure 7.29 Al Kissweh Industrial City

(3) Multi-functional urban centers development program

The program is to establish the following six urban centers in the immediate vicinities of the Damascus city with multiple functions for employment, shopping, education and other

urban purposes so that the residents would not need to go to the city for these purposes (Figure 7.30).

- 3.1 East business and commercial center
- 3.2 Southeast tourism and cultural center
- 3.3 South mixed use urban center
- 3.4 Southwest international communication center
- 3.5 Northwest social development center
- 3.6 North suburban business center

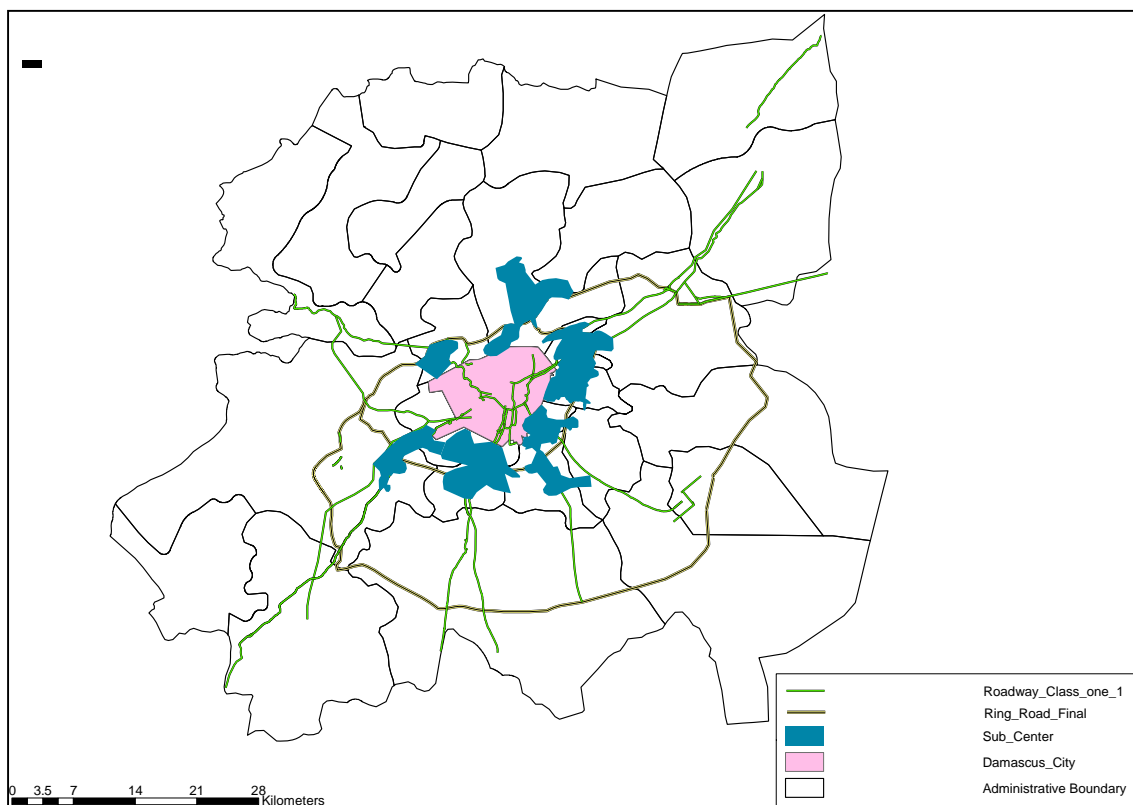


Figure 7.30 Six Multi-functional Urban Centers

These areas are already urbanized mainly by spill-over of population from the Damascus city, and therefore, they have developed primarily as residential areas. The program aims to equip these areas with multiple functions for residents. Important functions would be different depending on the background and characteristics of each area. More important functions conceived for each area are summarized in Table 7.26.

Table 7.26 Urban Functions of Six Multi-functional Urban Centers

Urban function	East	Southeast	South	Southwest	Northwest	North
Business center						
Office park						
Free trade zone						
Industrial testing and R&D center						

Urban function	East	Southeast	South	Southwest	Northwest	North
Showroom for industrial goods						
Trade center						
Up-market shopping						
Large-scale shopping mall						
Entertainment						
Hotels & restaurants						
Tourism services						
Green park with sporting/cultural facilities						
Higher education						

: most important; : important

Source: JICA Study Team

East business and commercial center

This center encompasses the three major municipalities of Harasta, Douma Center and Erbeen, and also Kafar Batna and Ain Tarma (Figure 7.31). The advantages of the center include its location along the northeast corridor and between the Damascus city and the Adra industrial city, and the expected function of Harasta as the new location for the Rural Damascus governorate head offices. Erbeen has developed as an industrial base for wood products, food processing and other consumer goods, and therefore, the entrepreneurship, capital and human assets are available in the center.

More important functions for the center are the business center related to government offices to be located such as consultancy, professional services and other personal/business services, and up-market shopping. Other functions include the industrial testing and R&D center, showroom for industrial goods, trade center, and entertainment such as cinemas and theme restaurants. Some existing industries would be relocated, and the land made available would be used for urban renewal to realize better mixed use development. Also, informal housing areas should be formalized.

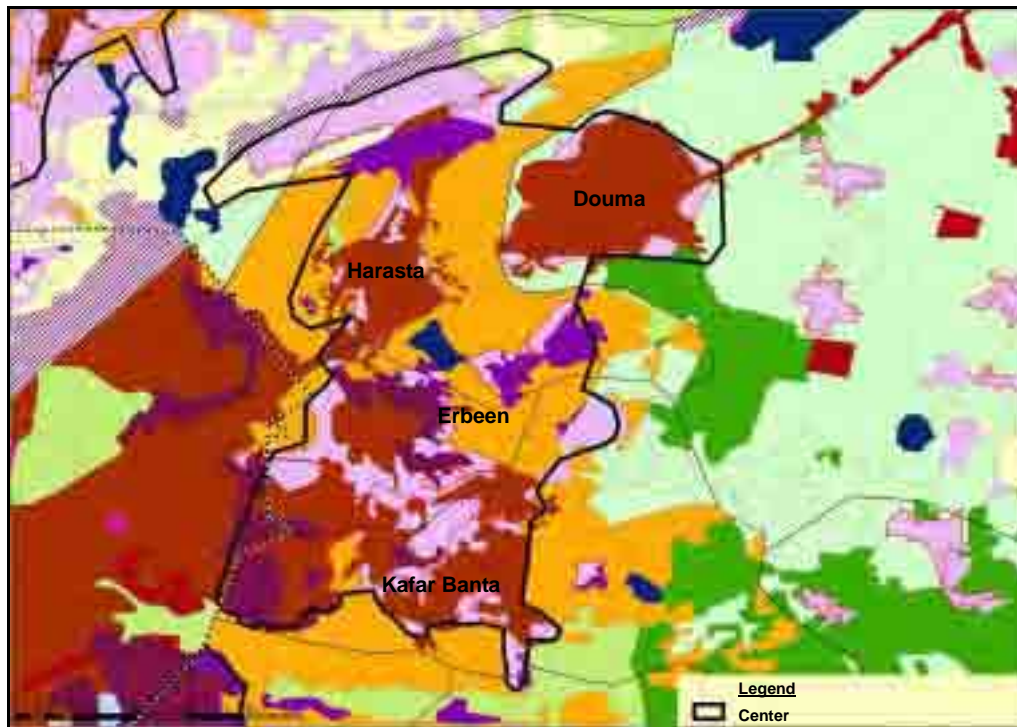


Figure 7.31 East Business and Commercial Center

Southeast tourism and cultural center

This center covers the municipalities of Jaramana, Babbila and Al Sayda Zainab, and also part of Kafar Batna (Figure 7.32). The area used to be an industrial area, and many industries still remain mixed with residential areas. These industries should be relocated, and the land made available should be used for urban renewal. Al Sayda Zainab is a famous religious tourist spot for foreign and domestic tourists.

Main functions for the center are oriented to popular commercial and tourism activities such as large scale shopping malls, hotels and lodging facilities, tourist information center, and green parks with sporting facilities. Also provided may be a business center, showrooms for industrial goods after the relocation of related manufacturing activities, and entertainment facilities. Informal settlement areas should be formalized as well.

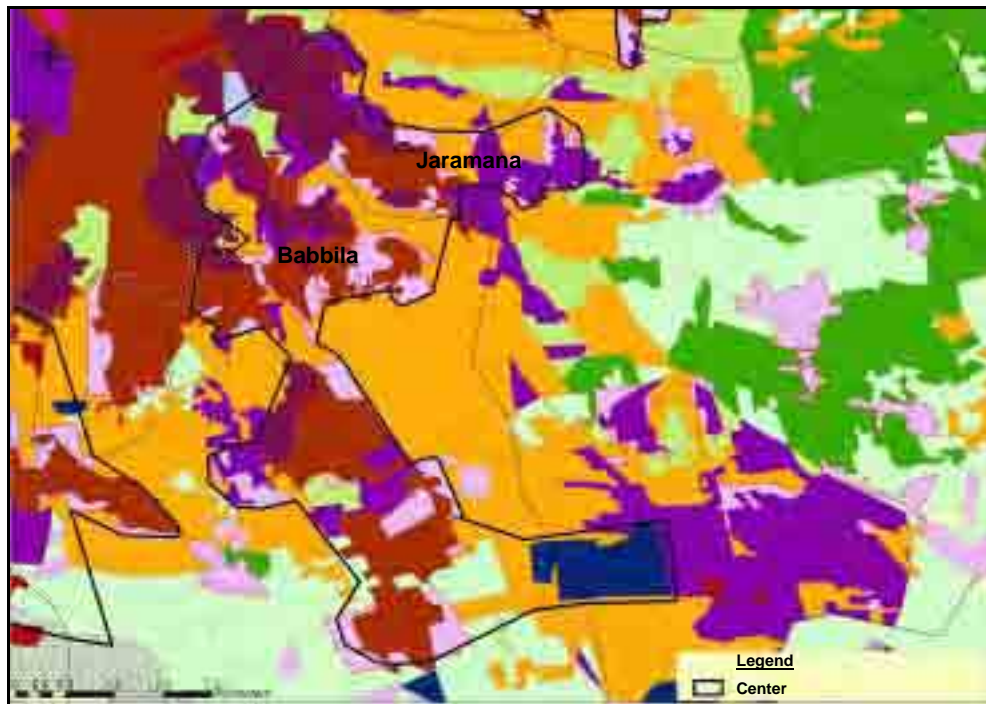


Figure 7.32 Southeast Tourism and Cultural Center

South mixed use urban center

This center encompasses Daraya, Sahnaya, Sbaineh and Ashrafiyet (Figure 7.33). Industrial establishment accumulation in the southern part of the Damascus city has been extending into Sahnaya and Daraya. mixed with residential development. The un-orderly urbanization is causing various environmental problems including the discharge of inadequately treated sewage into agricultural land. Daraya is known for furniture manufacturing, that constitutes part of the urban landscape with many wood processing factories, workshops and sales shops for furniture.

The urban development of this center should be planned along the development axis extending from the city to Daraya, but large scale mixed use development should be realized in the central part of Daraya through selective relocation of existing industries and urban renewal for urban environmental management. Development of a sewage treatment plant is a prerequisite as well as formalization of informal housing areas. Main functions of the center are large scale shopping centers and a business center.

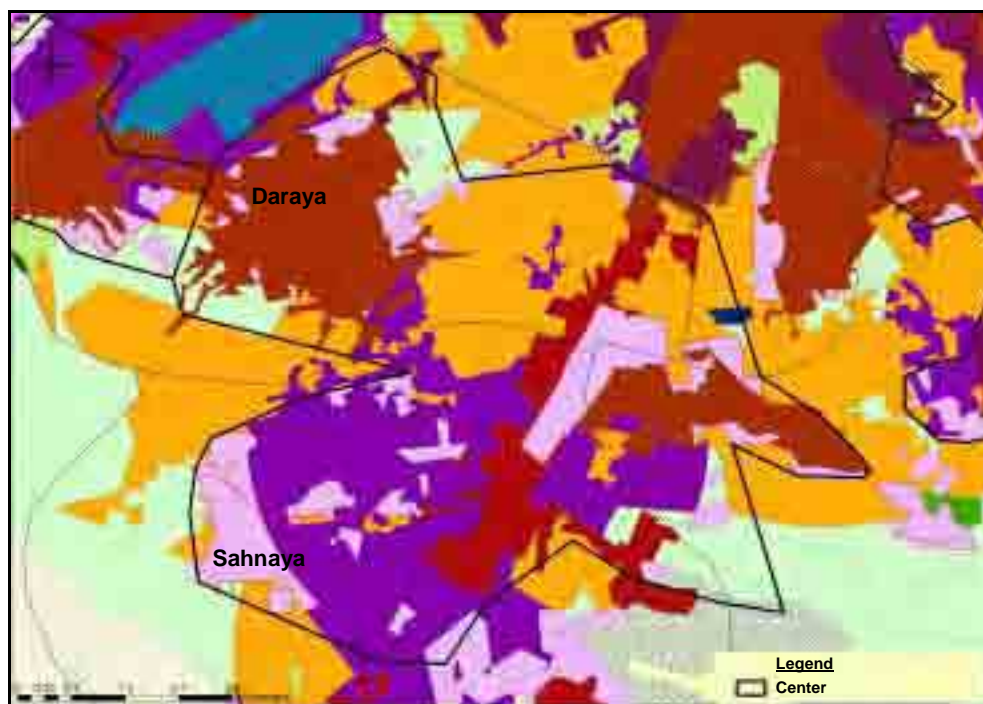


Figure 7.33 South Mixed Use Urban Center

Southwest international communication center

This center is located in Mwadamiyet and Jdaidet Artouz along the development axis linking the Damascus city and Qatana-Quneitra (Figure 7.34). Mwadamiyet is adjacent to Mazzeh of the city, and thus the development of this center tends to be affected by the characteristics of the Mazzeh development, which shows comparatively modernized type of urban development. Mwadamiyet is considered as one of candidate sites for location of government functions, but informal settlements are encroached on its vacant land.

The center should be equipped with high class urban functions such as up-market shopping, five/four star hotels and service apartments, and international restaurants. A free trade zone may also be located in the center. Other functions include a business center, office park, and tourism services as well as a green park with sporting facilities. Also, informal settlements need to be formalized.

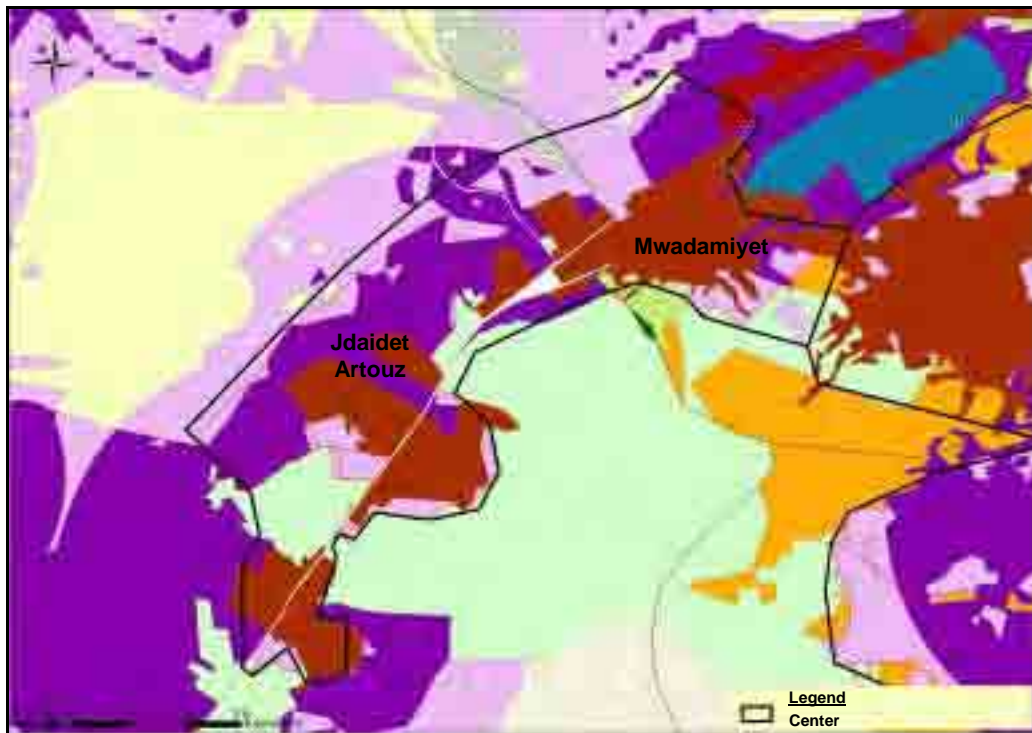


Figure 7.34 Southwest International Communication Center

Northwest social development center

This center occupies part of Qudsaya and Al Hameh (Figure 7.35). Qudsaya was recently developed as a new town mainly for residential purposes. The initial development has well established, and the Government has started planning for the expansion on the land already acquired. Centering around the residential function vested originally to the Qudsaya new town, a multi-functional urban center should be developed.

Main functions of the center are entertainment, shopping and education including higher education. Shopping malls should also be provided. Old districts of Qudsaya may be constantly modified to realize better mixed use urban spaces. Urban renewal and formalization of informal settlements would also be undertaken.

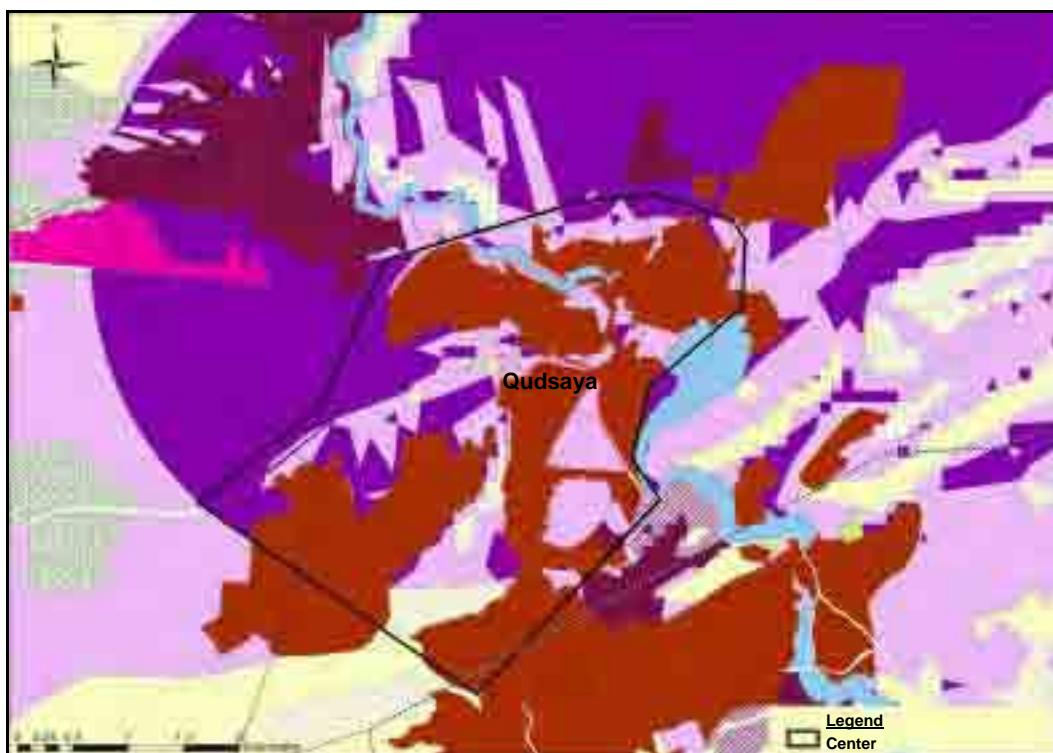


Figure 7.35 Northwest Social Development Center

North suburban business center

This center covers the settlements of Ma`araba, Al Tall and Mnin along the northern development axis (Figure 7.36). Although the Qassyoun mountain serves as a natural barrier to urbanization from the Damascus city, many residents in Al Tall commute to the city. The north ring road constructed passing between Al Tall and Ma`araba has further facilitated the commuting and also changed the urbanization potentials of this center. Mnin, located to the north of Al Tall used to be a recreation area with five natural springs, which have been almost dried up.

As the main functions of this center, suburban office parks and large scale shopping malls may be provided. A business center and entertainment facilities may also be developed. The natural environment of Mnin may be restored and used for tourism. Informal settlements should be formalized.

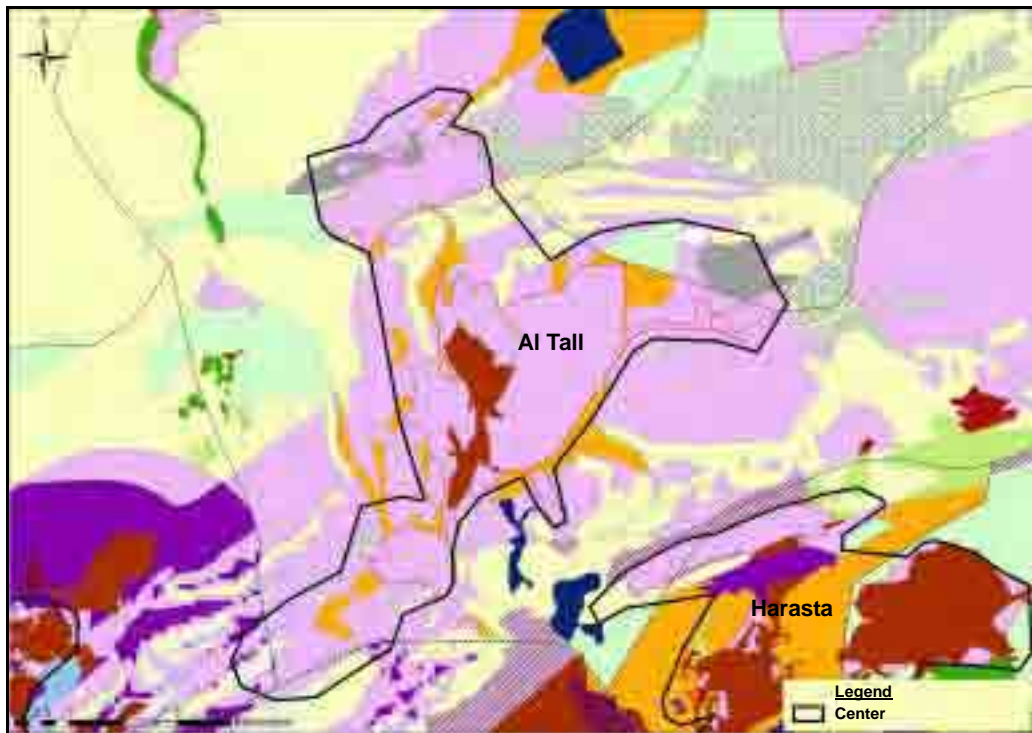


Figure 7.36 North Suburban Business Center

7.3.3 Living environment improvement initiative

(1) Informal housing areas formalization program

There exist about 30 informal housing areas in the Damascus city with some half a million population. They cover the land area of 1,300ha more or less to make the average population density about 380/ha. The population density, however, is as high as 800/ha in some areas. These areas should be formalized as a matter of principle, except the area with severe physical constraints such as large slope, geological faults and limited water availability. For these latter areas, the improvement of access is the priority for disaster preparedness. Most informal housing areas to be formalized are located in seven service departments in the city, covering in total some 970ha.

In formalizing some informal housing areas, mixed residential and industrial areas should be resolved, and dangerous houses and buildings should be eliminated. The areas vacated by industries and dangerous buildings may be used to provide additional multi-story housing and/or public facilities to improve the living conditions. Some of physically acceptable houses and buildings may be improved as well.

In Rural Damascus, the informal housing areas cover about 1,300ha in 12 nahiyas. Of this total, some 1,070ha are located in seven nahiyas in the immediate vicinities of the

Damascus city. These areas are subject to formalization. These areas are included in the six multi-functional urban centers proposed to be strengthened. Therefore, the formalization of these informal settlements constitutes important part of the multi-functional urban centers development program.

Participatory approach should be taken as a matter of principle to plan and implement the formalization of each settlement. This is a cost-effective way to utilize the limited resources in the public sector, and necessary to cover the large area identified above. It may start with a problem identification workshop, followed by the participatory formulation of a community development project to solve the identified core problem. The project thus formulated would have a better chance to be implemented and managed by the support of the local community. Organizational strengthening of the community for the continual planning and implementation is an important part of the participatory approach.

In all of the above, relocation should be avoided as much as possible. If relocation cannot be avoided, the same living conditions as before and the access to job opportunities should be ensured or otherwise the sufficient financial compensation should be made. These fundamental conditions be established by law

(2) Controlled urban and agricultural development program

The program introduces a new control mechanism to guide the urbanization so that the greenery in and around the conurbation areas of the city will be preserved as much as possible, and the agricultural areas maintained outside the conurbation areas. The program contains the following five projects for different types of land uses (Figures 7.37, 7.38 and 7.39).

- 5.1 Productive urban greenery development
- 5.2 Sports and cultural complex development
- 5.3 Heritage parks establishment
- 5.4 Cooperative agricultural development
- 5.5 Controlled watershed area development

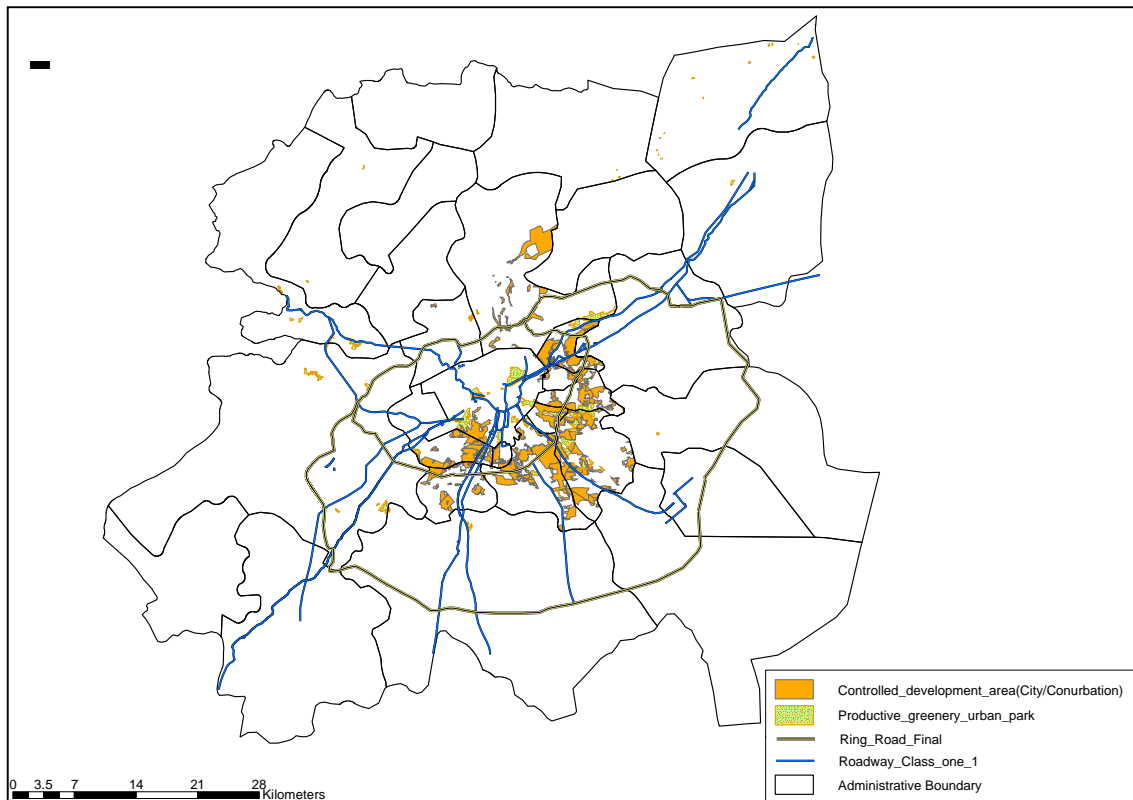


Figure 7.37 Controlled Urban and Agricultural Development Program Area

Productive urban greenery development

The remaining agricultural areas in the peripheries of the city and its conurbation should be maintained as much as possible to ensure healthy ecological balance and offer additional greenery with recreational opportunities for urban residents. The best way to preserve the greenery is to encourage the development by the private sector under very strict conditions rather than imposing a ban on land developments or acquiring the land by the government.

Existing tree-planted areas should be maintained by all means, while some agricultural land used for cereals and other field crops would be inevitably converted to urban uses. To enhance the productivity of such tree-planted areas, additional economic activities should be introduced in addition to orchards and olive plantations. Cultivation of vegetables under the shade of tree crops, already practiced in some areas, should be more encouraged as well as picnicking and other recreational activities. For this purpose, the orchards may be developed into tourism orchards with additional facilities. Similarly, tourism ranches may be developed based on some existing livestock raising areas. Greenhouse agriculture may also be promoted to produce high value crops including fresh vegetables and berries, ornamental plants, flowers, and seedlings.

The Government should establish a building code to limit the land coverage ratio of facilities for sizable areas to be developed for these purposes. At the same time, the

Government should introduce a subsidy scheme to support the provision of additional facilities necessary to convert the existing agricultural land into tourism orchards or ranches. The subsidy scheme should be introduced only for the areas designated by the directional land use plan of the DMA as the controlled development area (city/conurbation). Also, the improvement of access roads to such tourism areas would help to make them more successful. Such public investments would be justified as the tax revenue from the tourism orchards and ranches would increase with the appreciation of the land value as well as increased income.

Sports and cultural complex development

Some of the remaining greenery may be developed for sports and cultural complex by either the private sector or the Government. The Government initiative should be limited to such areas that cannot be effectively covered by the private initiative and the public development is considered indispensable to protect the valuable greenery. The development by the Government may follow the model of the East Park in the Damascus city. The same subsidy scheme and a similar building code should apply to the areas to be developed by the private sector. Candidate locations are identified as the following for further consideration (Figure 7.37):

- 1) Area between Jaramana/Al Mlaiha and Ain Tama/Kafar Batna, and
- 2) Area to the east and the south of Al Hajar Al Aswad.

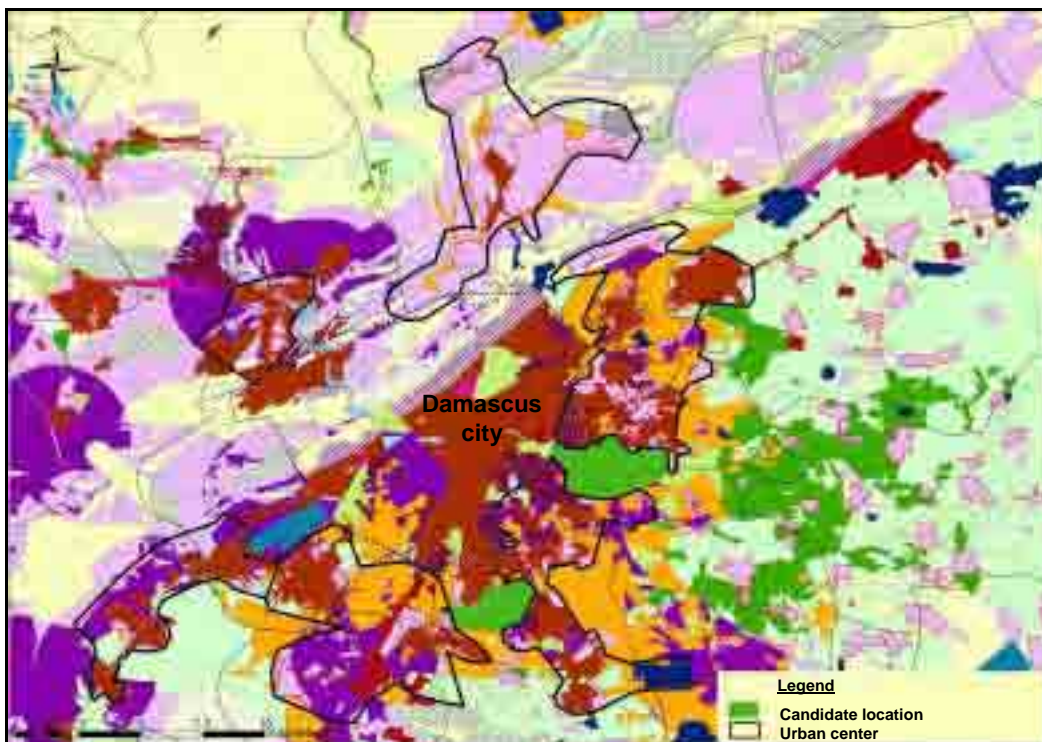


Figure 7.38 Candidate Locations for Sports and Cultural Complex Development

Heritage parks establishment

Another type of development where the public development would be justified to protect the remaining greenery is to establish heritage parks in the Ghouta area. While the urban heritage in and around Old Damascus has been receiving attention, the heritage in Rural Damascus has been largely neglected. In particular, the Ghouta as the oasis, or the planted area as the name means, with its historical, religious and social background as well as monuments and traditional houses is the heritage by itself comparable to the city for its richness.

A heritage park should be established in such an area of the Ghouta still having rich heritage remaining but threatened by the urbanization pressure. The public sector initiative would be justified as coordinated efforts of related public organizations would be indispensable first in identifying the areas to be developed into the heritage parks. Some historical monuments and traditional houses may be transferred from the original locations to the areas selected for heritage parks for preservation and use as part of the park attractions. Use of heritage parks by the citizens would certainly help to enhance their awareness for the rich heritage that they have inherited over millennia, and have positive effects on the new buildings to be constructed by the private developers.

Cooperative agricultural development

The agricultural sector in the DMA should be transformed and serve as the model for high value-added agriculture that can survive in the global economy. To realize this idea, concerted efforts are necessary by farmers and the governments. Various support services by the governments should better be provided to cooperatives rather than individual farmers for effectiveness. Especially, small farmers should be organized into cooperatives and agricultural extension services provided to the cooperatives for new crops or cropping patterns, modern irrigation techniques, use of fertilizer and agro-chemicals, and marketing. Low interest credit or some tax incentives should be provided to small farmers with each cooperative providing joint guarantee instead of collateral requirements.

Provision of a comprehensive support package to small farmers may aim at establishing a cluster of all the related activities, encompassing primary production, processing, research and development, and marketing for urban and export markets. The project should adopt a participatory approach first to formulate a plan for introducing new crops and modern technology, identifying water sources for irrigation and managing irrigation water use, and marketing the produce. Introduction of credit, repayment through sales of products, and financial management are also important aspects of participatory planning. Through the participatory planning, more viable and accountable cooperatives would be identified and strengthened.

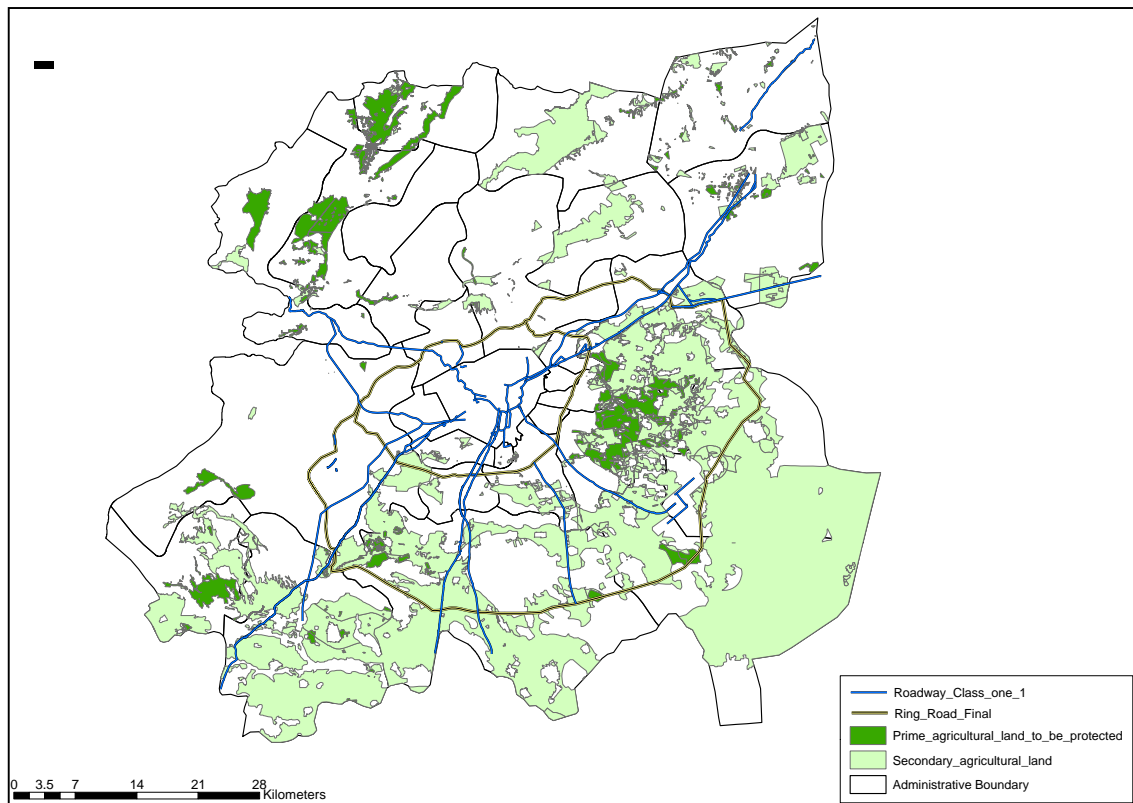


Figure 7.39 Cooperative Agricultural Development Project Area

Controlled watershed area development

The DMA depends almost exclusively on the water resources of the mountain range in the west and the northwest of the Damascus city. Protection of these resources will be critically important for the sustainable development of the DMA. In the watershed area, some undesirable urban developments have been taking place, and contamination of groundwater near the Fijeh springs by nitrogen has already been reported.

A watershed protection area should be designated in this area as shown in Figure 7.40. Types and magnitude of developments allowed in this area should be designated and enforced by law. Developmental activities should be confined to areas identified by the DMA land use plan as the controlled development areas in the watershed. Proper land protection measures to be implemented associated with any development should also be specified. More strict regulations should be introduced for sewage discharges, water extraction and solid waste disposal. Use of fertilizer and agro-chemicals should be controlled.

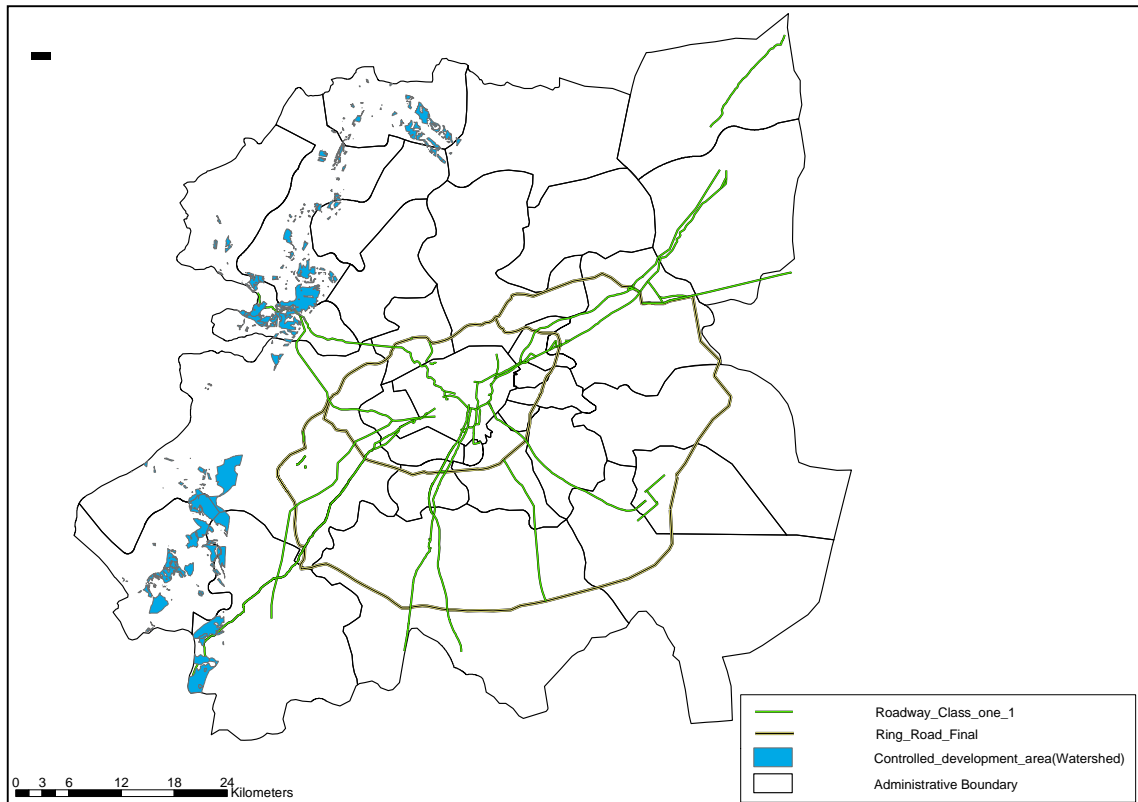


Figure 7.40 Controlled Watershed Area Development Project Area

(3) Social infrastructure program

To improve the living environment in the DMA, the provision of various social infrastructure needs to be consistently expanded to cover the increasing population. Moreover, the quality of social services should be upgraded to meet more sophisticated needs of the residents and visitors as essential conditions for the DMA to become the center for high grade social services. This program contains the components for general education and health facilities, higher education institute, hospitals, and cultural centers as follows.

- 6.1 Education facilities expansion and improvement
- 6.2 Higher education institute establishment
- 6.3 Health care facilities expansion and improvement
- 6.4 Hospitals development
- 6.5 Cultural centers development

The education facilities expansion and improvement project and the health care facilities expansion and improvement project are to provide adequate facilities for general education and health services for the increasing number of residents, and would be implemented in stages as described in sub-section 7.2.3. The higher education institute establishment project aims to establish a new education institute to support the knowledge-based and ICT-oriented industrial

development with strong R&D functions. The hospitals development project is to establish additional hospitals or upgrade existing ones for some specialized health care. The cultural centers development project would establish four additional cultural centers in the Damascus city and eight centers in Rural Damascus to provide comprehensive facilities for all the major cultural activities.

(4) Urban renewal program

Urban renewal or redevelopment in connection with industrial relocation is an important part of establishing the multi-functional urban centers in the east, southeast and south. Also within the Damascus city, urban renewal or redevelopment is necessary in some service departments. In Al Shaghour and Al Qadam, urban renewal should be undertaken to resolve the industrial and residential mixed land use. Selective urban renewal would be necessary for the old settlement areas in Jobar, central area in Sarouja and eastern part of Al Qanawat. In planned area of Rukin Eddin, land readjustment may be effective to integrate informal urban fabric into the formal urban area.

Various methods are available for renewal or redevelopment of already urbanized areas such as land re-adjustment. The applicability of each method depends on local conditions such as land ownership, demographic structure, income levels and institutions as well as physical conditions. Different methods should be utilized initially for different areas in line with the existing institutions related to urban development to derive lessons on their applicability. Institutional arrangements may be modified as necessary for wider application of more effective methods.

(5) Water supply and sewerage improvement program

The DMA urban development is planned without assuming the water transfer from other basins. This program is to utilize the local water resources of the Barada/Awaj basin most effectively, while maintaining the inter-basin water transfer as the long-term option. The program consists of the following projects.

- 8.1 DAWSSA water supply expansion and improvement
- 8.2 R-DAWSSA water supply and sewerage development
- 8.3 Adra sewage treatment plant tertiary treatment
- 8.4 Water and sewage tariff rationalization

DAWSSA water supply expansion and improvement

This project encompasses the development of water sources, new pipelines and reservoirs to transmit and distribute the piped water to the Damascus city and its eastern and southeastern neighbors in Rural Damascus. The water sources and major reservoirs are located in Rural

Damascus.

Additional wells should be provided in the northwestern part of the DMA to produce $10\text{m}^3/\text{sec}$ water, which should be transmitted to the city and its vicinity by the 1,600mm pipelines as already planned by DAWSSA. New supply bases need to be established in Ma'araba and Babbila with a reservoir of $50,000\text{m}^3$ storage capacity each for transmission and distribution of the water to the service areas within Rural Damascus. Additional reservoirs of smaller capacity would also be provided, some with pumping capacity. The upgrading of the DAWSSA distribution network should follow the ongoing works supported by the Kuwait fund.

R-DAWSSA water supply and sewerage development

The development of R-DAWSSA water supply and sewerage should follow the ongoing master plan study supported by JICA. In principle, water supply systems should be developed together with corresponding sewerage systems, and integrated area-wide as much as feasible. Replacement of old pipelines would be necessary covering the area of 500km^2 more or less.

The water source in the southwestern part of the DMA would be developed, and to transmit and distribute the water, a supply base with a reservoir would be required in Al Kissweh. Also, four wells would be developed in the Yarmouk basin to supply water of 1.4million m^3/year for Al Kissweh.

Adra sewage treatment plant tertiary treatment

The existing DAWSSA sewerage system has the capacity of $485,000\text{m}^3/\text{day}$, which is considered sufficient to cover the service area by 2025. The sewage is treated at the Adra treatment plant with activated sludge process to reduce BOD to $20\text{mg}/\ell$ level, sufficient for discharge into irrigation canals and land. However, the total nitrogen level is higher than required even for irrigation water. Tertiary treatment is planned to be introduced for the Adra sewage treatment plant with the initial capacity of $30,000\text{m}^3/\text{day}$.

The project is to introduce the tertiary treatment to the existing plant at Adra in steps not only to further reduce the BOD level but also to reduce the total nitrogen in the treated sewage. This would involve extended aeration as well as chemical treatment. As prerequisites, all the industries discharging wastewater into the DAWSSA sewerage should be relocated into the Adra industrial area and possible sources of nitrogen contents in the sewage removed. Then, the treated sewage from the Adra plant can be used as industrial process water, and the tertiary treatment of industrial wastewater should be introduced in steps.

Water and sewage tariff rationalization

As the water supply system is improved as outlined above, the demand side management would be increasingly more important to suppress the growth of water demand. The ongoing

efforts to revise the water and sewage tariff should be pursued to rationalize the tariff. Lump sum water charges should be introduced for irrigation water uses in accordance with the water right. This should be combined with improved management of well registration and strict enforcement of penalties against non-registered wells.

(6) City transport system improvement program

The project is to improve the urban transport system of the Damascus city in line with the regional road network to be strengthened by the artery transport network development program. The program consists of the following projects.

- 9.1 Inner ring road improvement
- 9.2 City roads improvement
- 9.3 Underground parking development
- 9.4 Metro development

Inner ring road improvement

This project will improve the northern section of the existing ring road for about 2.8km length. An elevated road will be constructed between the Al Umawiyeen square and the Russian embassy.

City roads improvement

The project aims to improve the road link between the north and the south bus terminals. It involves the upgrading road sections of 49.8km. Also, the terminal facilities would be improved to increase the capacity to 100 buses for the south and 120 buses for the north terminals. Other road sections should be improved as planned by the 1998 JICA TMP.

Underground parking

The project is to increase the parking capacity especially in the central part of the city significantly. In view of the difficulty in acquiring the land for parking structures, underground parking should be adopted widely. In addition to the underground parking in buildings to be newly constructed, existing city parks should be utilized for the purpose. In such a case, the location and structure of the parking should be such that the future construction of the metro railways would be facilitated. Also, multi-layer parks and parking should be adopted for some areas such as the greenery areas on both sides of the Shukry Al Qouwatly street.

Metro development

Two lines of the metro railway system have been studied at the feasibility level, but detailed plans are still to be worked out. The provision of underground parking spaces as mentioned above, which is more urgently needed, should be in line with future alignments of

the metro to lead the way as a precursor.

7.3.4 Special program for urban heritage restoration and use

This program has been formulated to promote the restoration and use of urban heritage mainly in the Damascus city as described in sub-section 7.2.4. It consists of the following measures.

- (1) Old Damascus and the periphery heritage areas management planning
- (2) Old Damascus utilities improvement
- (3) Old residential complexes restoration and use
- (4) Participatory historical areas planning
- (5) Heritage value awareness campaign
- (6) Heritage database establishment

Under the Old Damascus and the periphery heritage area management planning, a comprehensive management plan is prepared by involving a wide range of stakeholders, and through the planning, a unified management body is established for the implementation of the plan. The Old Damascus utilities improvement project would be implemented in stages, following the priority to be established by its plan. The Old Damascus residential complexes restoration and use project would be implemented in line with the prioritized improvement of the utilities.

The participatory historical areas planning would be conducted, following the case study undertaken as part of the DMA master planning. The heritage value awareness campaign should be conducted by mobilizing the stakeholders involved in the management planning for Old Damascus and the periphery areas and the participatory planning for historical areas. The heritage database establishment is undertaken by compiling the results of the participatory planning as a base.

7.4 Environmental and Social Considerations

7.4.1 Assessment of possible adverse effects of proposed projects and programs

All the proposed projects and programs have been assessed at the preliminary level for possible adverse effects. Many of them, in fact, will have positive effects as they have been formulated in line with the three planning concepts: economic efficiency, human security and cultural city. Nevertheless, some of them may involve limited negative impacts on social and/or natural environment. The assessment here, as it is preliminary, looks only into possible adverse effects. It would help to formulate mitigation measures in the subsequent stage of

project/program development.

The results of the IEE at this stage are summarized in Table 7.27. Possible environmental effects are assessed by project or program into four categories as commonly done for other JICA projects and most other projects: A for serious impact expected; B for some impact expected; C for extent of impact unknown; and D for no impact expected. Only negative impacts are identified, although the proposed projects and programs would involve many and varied positive impacts.

7.4.2 Possible impacts and mitigation measures

For those projects and programs for which possible adverse effects have been identified, more specific impacts are described by project or program. Positive impacts are also described. For negative impacts, mitigation measures are proposed.

(1) Artery transport network development program

Impacts

All the projects have the common impacts as follows:

- 1) There may be some people who would need to be resettled associated with road expansion and/or new alignments;
- 2) Some environmental pollution may be involved during construction;
- 3) The traffic congestion and air pollution would be reduced or future congestion and air pollution avoided; and
- 4) Efficient public transportation would be made available.

The rating of possible negative impacts is provided in Table 7.28 (1). Only the possible involuntary resettlement is rated “B”: some impact is expected. Minor effects may be involved in misdistribution of benefits and damages, cultural heritage, topography, soil erosion, hydrology, landscape, and noise pollution, although the extent of impact is unknown at this stage.

Mitigation measures

The people who may be affected by the projects should be informed of the proposed projects and involved as much as possible in the further project development. Proper compensation should be made for losses to be incurred on the part of those to be relocated so that their livelihood would not be undermined by the project implementation. The relocation and resettlement plan should be prepared by the participatory approach reflecting their preference.

Possible adverse effects on local topography, hydrology, and landscape would be minimized or even turned into positive effects, if proper road alignments and design are adopted.

Possible effects on the cultural heritage in the Ghouta area would also be minimized similarly. Alternatively, some cultural heritage may be relocated and re-established in the proposed heritage park.

To minimize the air and noise pollution and soil erosion during the construction phase, proper construction methods should be adopted. Equal attention should be paid to pre-construction works to avoid other environmental pollution.

(2) New cities development program

Impacts

The following impacts would be involved in all the projects:

- 1) Some environmental pollution would be involved during the construction phase;
- 2) Local traffic congestion may be caused by the traffic to be generated by the new cities;
- 3) Local economy would be stimulated through generation of employment and livelihood opportunities; and
- 4) The new residential areas would accommodate people who may be relocated from some informal settlements or moved from the central part of the Damascus city.

The rating of possible negative impacts is provided in Table 7.28 (2). Wastewater discharge from industrial cities will increase, and some involuntary resettlement may be involved. Minor impacts may be involved in involuntary resettlement, misdistribution of benefits and damages, topography, soil erosion, hydrology, landscape, and air and noise pollution during the construction, although the extent of negative impacts are not known at this stage.

Mitigation measures

Possible air and noise pollution and soil erosion during the construction phase may be minimized by adopting proper pre-construction works and construction methods. Possible adverse effects on local topography, hydrology, and landscape would be minimized or even turned into positive effects, if proper design is adopted for new cities' infrastructure. The traffic congestion due to the new cities would be avoided by proper transportation planning including introduction of public transportation.

The Adra industrial city development and the Qatana IT city development may involve more significant environmental impacts due to their scale. The environmental impact assessment (EIA) should be conducted as a prerequisite for their full scale development, respectively. For the Adra new city, soil conditions and bearing capacity as well as water balance should be carefully examined by the EIA. For the Qatana new city, a transportation plan should be carefully prepared to avoid the future traffic congestion.

(3) Multi-functional urban centers development program

Impacts

The program aims to control the urbanization from the Damascus city to its immediate neighborhoods, and thus would have positive overall impact. Involuntary resettlement may be involved associated with urban renewal in some areas. Otherwise only some environmental pollution is anticipated during the construction phase such as soil erosion, and water and noise pollution (Table 7.28 (3)).

Mitigation measures

The people who may be affected by the projects should be informed of the proposed projects and involved as much as possible in the further project development. Proper compensation should be made for losses to be incurred on the part of those who may be relocated so that their livelihood would not be undermined by the project implementation. The relocation and resettlement plan should be prepared by the participatory approach reflecting their preference.

The possible environmental pollution during the construction of buildings can be minimized by proper pre-construction works and construction methods.

(4) Informal housing area formalization program

Impacts

The program aims to improve the living conditions of residents in informal housing areas through formalizing them. As such, it will have positive overall impact. The rating of possible negative impacts is provided in Table 7.28 (4). Other than possible involuntary resettlement, no clear and adverse impacts are foreseen, but care should be taken for those who may be relocated and resettled as a result of the formalization.

Mitigation measures

The participatory approach should be taken as proposed by the Master Plan to plan for the formalization by informal housing area. By utilizing vacant land for initial development under stage-wise improvement plan, and adopting relatively high density with multi-story housing, the relocation needs should be minimized. In case where the relocation is inevitable, options should be clarified for relocation sites, and compensation determined such that their livelihood would not be undermined.

(5) Controlled urban and agricultural development program

The program will introduce a new mechanism to protect the remaining greenery around the urbanized areas by encouraging such development activities that would enhance the land productivity, while restricting types of activities and land coverage by developments. New

legislation or amendment to existing law would be necessary as proposed by the Master Plan. Only those developments that would not have adverse environmental impacts would be allowed to be implemented.

(6) Social infrastructure program

The program will improve the provision of education, health and cultural facilities. As such, no negative environmental impact is expected.

(7) Urban renewal program

Impacts

The program will cover such existing urban areas that have undesirable living conditions, including areas where residential and industrial land uses are mixed. The rating of possible negative impacts is provided in Table 7.28 (7). The relocation of industries would involve the needs to relocate those working there as well. Also, the development of the land thus vacated for residential purpose may cause social conflicts between the old and new residents. Some effects may be involved during construction of buildings such as air and noise pollution, and the urban renewal may change local hydrology and landscape.

Mitigation measures

The problems associated with the resettlement would be minimized by careful planning for both the urban renewal and the resettlement. The participatory approach should be taken as much as possible, involving leaving and staying residents. Opportunities should be given to the residents to upgrade their living standards to be made available by housing to be created through the urban renewal.

The environmental pollution during construction of buildings for urban renewal would be minimized by adopting proper pre-construction works and construction methods. Possible adverse changes in local hydrology and landscape would be avoided by careful planning, and the urban landscape may be improved by planned renewal.

(8) Water supply and sewerage improvement program

Impacts

The projects to improve the water supply and sewerage facilities would have varying impacts depending on the specific service areas to be determined for each project. The rating of possible negative impacts is provided in Table 7.28 (8). No clear and adverse impacts are foreseen except possible impact on local hydrology and water pollution, although the extent of impacts is not known at this stage.

More water will be extracted from the Barada/Awaj basin, and transferred to more remote

areas. Some water will be transferred from the Yarmouk basin to serve the Al Kissweh area. Local water balance will be changed as a result, including the quantity and quality of groundwater. Possible negative impact will be minimized by careful planning. Monitoring of groundwater quantity and quality should be intensified for the areas to be affected.

The tertiary treatment at the Adra sewage treatment plant would have positive impact by increasing the amount of water available for irrigation and industrial uses. The nitrogen contents in the treated sewage will be reduced to improve the groundwater quality. This, in turn, will have positive impact on the livelihood of rural people.

Mitigation measures

Possible negative impact on local hydrology would be minimized by careful planning. Monitoring of groundwater quantity and quality should be intensified for the areas to be affected.

(9) City transport system improvement program

Impacts

The following impacts are common to all the projects involved in the program:

- 1) There may be some people who should be resettled associated with expansion or realignment of the roads and the underground construction works;
- 2) Some environmental pollution may be associated with construction works;
- 3) The use of some public facilities and spaces may be temporarily disrupted by underground works;
- 4) The traffic congestion and air pollution would be reduced or future congestion and air pollution avoided; and
- 5) Efficient public transportation would be made available.

The rating of possible negative impacts is provided in Table 7.28 (9). Except for involuntary resettlement, only some minor effects may be involved in misdistribution of benefits and damages, cultural heritage, topography, soil erosion, hydrology, landscape, and noise pollution, although the extent of impact is unknown at this stage.

Mitigation measures

The people who may be affected by the projects should be informed of the proposed projects and involved as much as possible in the further project development. Proper compensation should be made for losses to be incurred on the part of those to be relocated so that their livelihood would not be undermined by the project implementation.

The underground parking development and the metro development would utilize public facilities and spaces as much as possible for construction such as existing roads, intersections,

and public green parks. Proper guidance and alternatives should be offered to pedestrians and traffic to minimize adverse effects to the urban lives and activities.

To minimize the pollution during the construction phase, proper construction methods should be adopted. Equal attention should be paid to pre-construction works to avoid other environmental pollution.

(10) Special program for urban heritage restoration and use

The projects in this program would not involve any negative impact except the Old Damascus utilities improvement (Table 7.28 (10)). Through the Old Damascus and peripheries heritage areas management planning, participatory historical areas planning, heritage value awareness campaign, and heritage database development, social capacity for heritage restoration and use would be enhanced. The restoration and use of old architecture and facilities supported by the residents would enhance the heritage value for tourism and related economic activities.

Some pollution and disruption of urban lives would be involved in the Old Damascus utilities improvement. The negative impact should be minimized through careful planning and stage-wise implementation.

7.4.3 Overall impacts of the planned urban development

The Damascus city faces serious traffic congestion, water shortages, illegal construction, degrading cultural value, deteriorating urban landscape, air pollution, and other problems as identified by the problem analysis (Section 5.1). These problems would only get worse unless proper measures are taken to change the urbanization directions and pattern.

The zero option or the without-project conditions may be characterized, among others, by the following:

- 1) The traffic conditions in the Damascus city would get worse even if the 1998 JICA TMP proposals are fully implemented with ever increasing commuting traffic;
- 2) The remaining greenery in the Ghouta area would practically disappear due to further encroachment by urbanization;
- 3) Water shortages in the Damascus city and its surrounding areas would get worse, and the idea of the trans-basin water diversion would revive; and
- 4) The agricultural activities in the eastern and the southeastern part of the DMA would further degrade with further reduction of the groundwater tables and degraded water quality.

The Master Plan has been formulated to avoid these major unfavorable phenomena. The Master Plan contains the measures to transform the spatial development pattern of the DMA to decongest the Damascus city, to improve the living environment for all the residents, and to

enhance the urban heritage for both the residents and visitors.

Some negative impacts may be associated with some proposed projects, including involuntary resettlements, but they may be mitigated by careful project development and construction activities as described above. All the residents would improve their living conditions if those to be resettled are also ensured to be better off through participatory planning for resettlement. All the proposed projects and programs would collectively contribute to the creation of the capital region characterized by economic efficiency, human security and cultural city as they have been formulated under these planning concepts.

Table 7.27 Preliminary Assessment of Possible Adverse Impacts of Proposed Projects and Programs

Project Title		Status	Assessment
I. Urban Structure Transformation Initiative			
1. Artery transport network development program			
1.1	Outer ring road development	New	B
1.2	Radial roads upgrading	Extended	B
1.3	Second ring road establishment	Extended	B
1.4	Third ring road establishment	Extended	B
1.5	Damascus-Quneitra road development	New	B
2. New Cities Development Program			
2.1	Adra industrial city development	Extended	A
2.2	Qatana IT city development	New	A
2.3	Government city development	Extended	B
2.4	Al Kissweh industrial city development	New	B
3. Multi-functional urban centers development program			
3.1	East business and commercial center	New	B
3.2	Southeast tourism and cultural center	New	B
3.3	South mixed use urban center	New	B
3.4	Southwest international communication center	New	B
3.5	Northeast social development center	New	B
3.6	North suburban business center	New	B
II. Living Environment Improvement Initiative			
4. Informal housing area formalization program		Extended	B
5. Controlled urban and agricultural development program			
5.1	Productive urban greenery development	New	D
5.2	Sports & cultural complex development	New	D
5.3	Heritage parks establishment	New	D
5.4	Cooperative agricultural development	New	D
5.5	Controlled watershed area development	New	D
6. Social infrastructure program			
6.1	Education facilities expansion & improvement	Extended	D
6.2	Higher education institute establishment	New	D
6.3	Health facilities expansion & improvement	Extended	D
6.4	Hospitals development	Extended	D
6.5	Cultural centers development	Extended	D
7. Urban renewal program		Extended	B
8. Water supply & sewerage improvement program			
8.1	DAWSSA water supply expansion & improvement	Extended	C
8.2	R-DAWSSA water supply & sewerage development	Extended	C
8.3	Adra sewage treatment plant tertiary treatment	New	C
8.4	Water and sewage tariff rationalization	Extended	D
9. City transport system improvement program			
9.1	Inner ring road improvement	Extended	B
9.2	City roads improvement	Extended	B
9.3	Underground parking development	Extended	B

9.4	Metro development	New	A
Special Program for Urban Heritage Restoration and Use			
1	Old Damascus & the PHA management planning	Extended	D
2	Old Damascus utilities improvement	Extended	B
3	Old residential complexes restoration & use	New	D
4	Participatory historical areas planning	New	D
5	Heritage value awareness campaign	New	D
6	Heritage database development	New	D

Assessment:

- A: serious impact is expected
- B: some impact is expected
- C: impact is unknown
- D: no negative impact is expected

Source: Assessment by the JICA Study Team

Table 7.28 Scoping for Environmental Impacts of proposed programs

(1) Artery transport network development program

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	Some people along the proposed road alignments may need to be resettled.
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to residents and those to be resettled.
8	Cultural heritage	C	Some cultural heritage in the Ghouta area may be affected.
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		N/A
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		N/A
Natural Environment			
13	Topography and Geographical feature	C	Some minor effects on local topography may be caused by road construction.
14	Soil Erosion	C	Some minor soil erosion may associate with road construction.
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		Positive effects are expected due to tree planting along new roads.
19	Meteorology		N/A
20	Landscape	C	Minor change in local landscape is expected with new road alignments.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during road construction.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration	C	Minor noise pollution may be caused during road construction.
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

(2) New cities development program

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	A few people in the proposed site for new cities may need to be resettled, but the extent unknown
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to local and new residents.
8	Cultural heritage		N/A
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		N/A
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		N/A
Natural Environment			
13	Topography and Geographical features	C	Some minor effects on local topography may be caused by new cities development.
14	Soil Erosion	C	Some minor soil erosion may associate with construction of new cities.
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		Positive effects are expected by tree planting and parks in the new cities.
19	Meteorology		N/A
20	Landscape	B	Some change in local landscape is expected with new cities development.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during construction of new cities.
23	Water Pollution	A	Wastewater discharge will increase from industrial cities
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration	C	Minor noise pollution may be caused during construction of new cities.
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom Sediment		N/A
30	Accidents		N/A

(3) Multi-functional urban centers development

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	Some people may need to be resettled associated with urban renewal, but the extent in unknown.
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to residents and those to be resettled.
8	Cultural heritage		Positive effects are expected for remaining cultural heritage in the Ghouta area.
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		N/A
12	Hazards (Risk)		N/A

	Infectious diseases such as HIV/AIDS		
Natural Environment			
13	Topography and Geographical features		N/A
14	Soil Erosion		N/A
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape	C	Minor change in urban landscape is expected with urban renewal.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during construction of buildings for urban renewal.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration	C	Minor noise pollution may be caused during construction of buildings for urban renewal.
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

(4) Informal housing area formalization

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	Some people may need to be resettled associated with formalization with lower density, but the extent is unknown.
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to residents and those to be resettled.
8	Cultural heritage		N/A
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		N/A
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		N/A
Natural Environment			
13	Topography and Geographical features		N/A
14	Soil Erosion		N/A
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape		Positive change in urban landscape is expected with formalization.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during construction of buildings for formalization.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration	C	Minor noise pollution may be caused during construction of buildings for formalization.
27	Ground Subsidence		N/A

28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

(7) Urban renewal

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	Some people may need to be resettled associated with urban renewal, but the extent is unknown.
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to residents and those to be resettled.
8	Cultural heritage		N/A
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		Positive effects are expected through the resolution of mixed residential and industrial land use
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		Positive effects are expected through the resolution of mixed residential and industrial land use
Natural Environment			
13	Topography and Geographical features		N/A
14	Soil Erosion		N/A
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape	C	Minor change in urban landscape is expected with urban renewal.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during construction of buildings for urban renewal.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		Positive effects are expected through the resolution of mixed residential and industrial land use
26	Noise and Vibration	C	Minor noise pollution may be caused during construction of buildings for urban renewal.
27	Ground Subsidence		N/A
28	Offensive Odor		Positive effects are expected through the resolution of mixed residential and industrial land use
29	Bottom sediment		N/A
30	Accidents		N/A

(8) Water supply and sewerage improvement

No.	Impacts	Rating	Brief Description
Social Environment: *Regarding the impacts on “Gender” and “Children’s Right”, might be related to all criteria of Social Environment.			
1	Involuntary Resettlement		N/A
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		N/A
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage		N/A

8	Cultural heritage		N/A
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		Positive effects are expected.
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		N/A
Natural Environment			
13	Topography and Geographical features		N/A
14	Soil Erosion		N/A
15	Groundwater		N/A
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to discharge of wastewater.
17	Coastal Zone(Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape		
21	Global Warming		N/A
Pollution			
22	Air Pollution		N/A
23	Water Pollution	C	Some water pollution may be involved due to discharge of wastewater.
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration		N/A
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

(9) City transport system improvement

No.	Impacts	Rating	a Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement	B	A few people along the proposed road alignments may need to be resettled, but the extent is unknown.
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		More intensive land use will be promoted.
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		N/A
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage	C	Variable benefits will accrue to residents and those to be resettled.
8	Cultural heritage	C	Some cultural heritage may be discovered during construction of roads and underground parking.
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		N/A
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		N/A
Natural Environment			
13	Topography and Geographical features		
14	Soil Erosion	C	Some minor soil erosion may associate with road construction.
15	Groundwater	B	Construction of underground parking and metro may affect the groundwater flow.
16	Hydrological Situation	C	Some minor changes may be involved in local hydrology due to changes in drainage conditions.
17	Coastal Zone(Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape	C	Minor change in urban landscape is expected with new road alignments.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during road

			construction.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		N/A
26	Noise and Vibration	C	Minor noise pollution may be caused during road construction.
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

(10) Special program for urban heritage restoration and use

No.	Impacts	Rating	a Brief Description
Social Environment: *Regarding the impacts on "Gender" and "Children's Right", might be related to all criteria of Social Environment.			
1	Involuntary Resettlement		N/A
2	Local economy such as employment and livelihood, etc.		Positive effects are expected.
3	Land use and utilization of local resources		N/A
4	Social institutions such as social infrastructure and local decision-making institutions		Positive effects are expected.
5	Existing social infrastructures and services		Access to existing facilities will be improved
6	The poor, indigenous and ethnic people		N/A
7	Misdistribution of benefit and damage		N/A
8	Cultural heritage		Positive effects are expected.
9	Local conflict of interests		N/A
10	Water Usage or Water Rights and Rights of Common		N/A
11	Sanitation		Positive effects are expected through the improvement of utilities in Old Damascus.
12	Hazards (Risk) Infectious diseases such as HIV/AIDS		Positive effects are expected through the improvement of utilities in Old Damascus
Natural Environment			
13	Topography and Geographical features		N/A
14	Soil Erosion		N/A
15	Groundwater		N/A
16	Hydrological Situation		N/A
17	Coastal Zone (Mangroves, Coral reefs, Tidal flats, etc.)		N/A
18	Flora, Fauna and Biodiversity		N/A
19	Meteorology		N/A
20	Landscape		Positive change in urban landscape is expected with urban renewal.
21	Global Warming		N/A
Pollution			
22	Air Pollution	C	Some air pollution may be caused during construction of utility facilities in Old Damascus.
23	Water Pollution		N/A
24	Soil Contamination		N/A
25	Waste		Positive effects are expected through the improvement of utilities in Old Damascus
26	Noise and Vibration	C	Minor noise pollution may be caused during construction of utility facilities in Old Damascus.
27	Ground Subsidence		N/A
28	Offensive Odor		N/A
29	Bottom sediment		N/A
30	Accidents		N/A

Rating:

A: Serious impact is expected.

B: Some impact is expected.

C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses.)

No Mark: No impact is expected. IEE/EIA is not necessary.

Source: JICA Study Team

Chapter 8 Institutional Measures for DMA Urban Development

8.1 Implementing Arrangements for DMA Urban Development

8.1.1 Need for better coordination and management

The bulk of the development programs and projects proposed by the Master Plan can be implemented within the capacities and competence of relevant existing administrations, respectively, including the Damascus governorate and the Rural Damascus governorate. To ensure timely implementation of mutually related projects, however, coordination between different implementing agencies should better be improved. Also, the project implementation and the development process should be more properly managed to ensure the realization of the transformation of urban economic and spatial structure according to the Master Plan, and the improvement of the better living environment for residents in the Damascus city and Rural Damascus. Also, for the restoration and use of urban heritage in the DMA, both governorates should work closely, and address to other related agencies in a coordinated manner.

Institutional arrangements would be necessary for the better coordination of related implementing agencies and better management of the project implementation and the development process. They should be built on the existing institutions as much as possible through selectively strengthening functions of the existing administrations rather than creating a new institution with all the necessary functions. Also, a new institution, when necessary, should be established in steps as the capacity of related administrations and their staff is enhanced rather than establishing the “ideal” institution from the beginning.

8.1.2 Possible options for institutional arrangements

In order to clarify the institutional requirements for the DMA urban development in the immediate and long-term future, possible options are first examined. The four distinct alternatives are:

- (1) Damascus Metropolitan Authority,
- (2) New governorate by merging the two governorates,
- (3) Damascus regional association, and
- (4) DMA council or commission.

The characteristics, advantages and disadvantages of each option are summarized in Table 8.1. The following are noted.

Table 8.1 Alternative Institutional Arrangements for DMA Urban Development

Alternative	Basic features	Advantages	Disadvantages
Damascus Metropolitan Authority	-Created by legislative measure as a legal entity -Autonomous with minimal supervision -Mandates, power and functions defined as created	-Most stable organization -Full authority to ensure coordinated development	-Need for tedious and meticulous process to establish -Danger of being politicized
New governorate	-Established by merging the two governorates -Same administrative status as the existing ones	-Minimal organizational re-structuring involved -Integration of experiences of the existing governorates	-Politically difficult as the number of governors and grant allocation are reduced
Damascus regional association	-Established as an umbrella organization of all the related administrations -Legal status needs to be defined	-Powerful enough if placed under the Office of the President -More stable than council/commission	-Difficult in ensuring balance between member agencies -Dependence on the executing arms of existing agencies
DMA council or commission	-Project-oriented organization with a project management office -Funding from member organizations -Mainly for coordination and project/investment promotion	-Easier and faster to establish	-Unstable and likely to be threatened by leadership turnover -Difficulty in securing funds for operation and maintenance

Source: JICA Study Team

The establishment of the Damascus Metropolitan Authority may be a long-term option that would deserve further examination. Creation of a new governorate by merging the two existing governorates, while conceptually simple, may not be a realistic option as it may be politically unacceptable. A simple fact is that the number of governors and the block grant from the central government would be reduced as a result. The Damascus regional association is relatively easy to establish, and will be powerful enough if it is placed under the Office of the President. It may be reduced to a mere forum without any executive power, and the execution would have to depend on existing agencies. The DMA council or committee is easiest to establish, and may have only coordination and project/investment promotion functions initially.

8.1.3 Recommendation

Of the four alternatives examined above, the Damascus regional association and the Damascus council are two realistic options that may be established in the nearest future. Difference between the two alternatives is mainly in the level of power and authority related to their legislative status. The association may be created as a legal entity and placed under the Office of the President, but then it would become in effect equivalent to the first alternative. The establishment of such an authority in the immediate future does not seem realistic as it would contradict the status of the two governorates. If, on the other hand, such an authority is

not vested, the association may become a mere forum or it may be dominated by the most powerful member organization.

The DMA council would be easy to establish and its functions may be expanded as it demonstrates its track records. First, the council may have only coordinating and limited management functions. Its functions may expand in steps to include planning, project and investment promotion, monitoring and evaluation, and eventually implementation of some types of projects as well. Then, it would become effectively the regional development authority. The council should better have a permanent project management office with fulltime staff from the beginning to ensure accountability for the Master Plan implementation through coordination between related agencies. It may be seen as a step to establishing the authority, but it is most important to establish it in the nearest future with the very fundamental function.

The Greater London Council may provide a model for the DMA council. In London, four jurisdictional levels are defined: 1) Metropolitan London, 2) Greater London, 3) Inner London, and 4) Central London. The DMA council may correspond to the second level, but this is not an administrative jurisdiction initially. It may cover the area of the Damascus city and the six urban centers to be strengthened according to the Master Plan. Its initial task would be to promote the Master Plan implementation through coordinating all the municipalities within the jurisdiction. The Greater London Council played very important roles for many years before it was abolished in 1980's by the Thatcher administration.

8.2 Urban and Regional Planning Institutions

8.2.1 Issues for urban planning institutions

(1) Existing practice and problems

A typical procedure for urban planning, development and control in a large municipality in Syria involves the following:

- 1) Preparation of a master plan based on detailed studies on all aspects of urban space and socio-economy;
- 2) Preparation of a detailed plan for any area covered by the master plan, specifying all the physical elements as well as land uses to be realized in the area in accordance with the master plan;
- 3) Expropriation of the land by the municipality; and
- 4) Implementation of the detailed plan totally by the public sector initiative.

All the steps in this procedure are supported by a strong legal base.

This rigid and prescriptive procedure faces the following problems in reality.

- i) Following the procedure prescribed in the law strictly, the preparation of the master plan takes a long time, and the plan may be outdated before it becomes effective especially in the face of rapid urbanization.
- ii) Detailed plans prepared for a large number of development areas cannot be implemented immediately, and some of them may become outdated as a result of rapid urban development.
- iii) Expropriation involving many and tedious processes takes often many years.
- iv) Implementation of the plans tends to be delayed due also to limited public sector development resources.

These problems represent the inefficiency in development administration and waste of resources in the public and the private sectors in several ways. Efforts to prepare the master plan that would turn out to be inefficient in realizing the desirable urban spaces and detailed plans that are not immediately implemented are largely wasted. The unrealized urban spaces represent opportunity costs or benefits foregone which could have been realized probably by the private sector. Long time and tedious procedure involved in expropriation represents another form of waste on both the public and the private sides involved in the process. Also, the expropriation under the present legal and institutional system tends to result in over-use of the expropriation by the public sector as a means for urban planning and development and misallocation of land resources through inefficient use of the land acquired.

The prescriptive system of urban planning, development and control may work if most developments are undertaken by the public sector initiative, and a strong and effective enforcement mechanism exists to ensure the private investments for urban development comply with the master plan. In reality, the operation of land market by the private sector does not follow the master plan, and the private sector plays significant roles in land development. Under the rapid urban development, it is necessary to provide housing, infrastructure, and other facilities and services to meet the growing demand irrespective of the presence of the effective master plan. It is ironical that the master planning following the legal requirements contributes to illegal developments.

(2) Ongoing efforts for reform

The reform of the existing legal and institutional system has been discussed for some time. In particular, more specific measures to improve the system have been proposed recently as part of the ongoing Municipal Administration Modernization (MAM) project (McAuslan, P. and Housam Safadi, *On urban planning in Syria: an overview with suggestions for reform*). For the reform to be effective and realistic, it should be in line with the planning culture of Syria

developed over decades through practices of urban planning, development and control. The following strengths and weaknesses are noted by the MAM study.

Strengths

- 1) Strong legal framework,
- 2) Rules which pay a good deal of attention to the rights of land owners,
- 3) Sensible and realistic approach to informal settlements, and
- 4) Commitment on the part of local administrations.

Weaknesses

- 1) Outdated form of plans which operate to inhibit development,
- 2) Over-complicated rules on land development which inhibit legal development and encourage informal development, and
- 3) Over-use of expropriation as a tool of planning and the unfair and inefficient levels of compensation payable on the expropriation.

A revised system for urban planning, development and control should be less prescriptive and more policy oriented, providing guidance and facilitation for the private investments in urban development. Particularly for master planning, over-specification is a bad policy as the conditions for development change often drastically over the planning horizon of 20 years or so. The plan, therefore, should be flexible and responsive to changing needs. To implement the plan in a flexible way, responding to changing needs, the plan needs to be guided by a long-term vision or development goal. Concepts and principles behind the goal or vision may be changed only when the changes in planning conditions justify. Under the goal or vision, more specific objectives, strategy and measures are introduced to address to specific needs of different areas.

Along the same conception, the MAM study suggests the following as a revised urban planning system.

An urban planning system should be equitable, flexible, positive, environmentally aware and efficient, and have as its main objective the informed guidance, facilitation and regulation of sustainable private sector-led urban development.

(3) Implication to DMA urban development

The practice and problems of current urban planning, development and control mentioned above typically apply to the DMA urban development. Lack of the effective master plan aggravates the problems in the DMA. A typical situation is observed related to expansion areas for urban or housing development. The situation is described by the MAM study as follows.

Expansion areas are acquired at agricultural use prices via Laws 60 of 1979 and 26 of 2000 whether the land is being used for agriculture or not. The public sector then sells the land off for private development with certain restrictions on the new private owners such as the ban on the land sales until the development. The inevitable effect of this approach is that once private land owners get wind of a possible designation of their land as an expansion area, they sell off the land for informal development as they can get a better price from would-be house owners who will build their own houses than they will ever get from the State via Laws 60 of 1979 and 26 of 2000.

Another more subtle effect of the lack of effective master plan is also pointed out by the MAM study as follows.

Where there is no ratified master plan or the plan is out of date, or there is a need to react to the pressure for development not provided for in the master plan, an inevitable element of discretion enters into the decision-making process on building licenses.So here too, master planning contributes to the inefficiencies and uncertainties of the development process.

8.2.2 Proposals for reform of urban and regional planning institutions

(1) Use of existing laws for the private sector-led urban developments

Private sector-led development

The proposals here, based on the MAM study, aim at promoting the private sector involvement in urban developments that may be possible without changing the existing legal framework. First, Law 9 of 1974 has the provision for land sub-division and development by the private sector on the conditions that such development complies with the master plan and it allocates up to 50% of the land for public purposes. This law, however, has been largely superseded by Law 60 of 1979 as amended by Law 26 of 2000.

Where Law 9 of 1974 is not applied, the municipalities are to take the land in the expansion area either by the Expropriation Law 20 of 1983 on the basis that the project is for public benefits or by Law 26 of 2000 on the basis of “urgency.” The “urgency” applies under Law 20 of 1983 to the expropriation of “non-built real estate” i.e. rural or agricultural land, as soon as the expropriation decree is issued and before compensation is paid.

Law 9 of 1974 may be reinstated for the land sub-division and development by the private sector. The section of this law dealing with the establishment of organizational areas, and a process of land pooling and readjustment involves almost prohibitive steps to be taken. This encourages the municipalities to resort to Law 26 of 2000. The section dealing with the private sector-led development, however, should not be so complicated. Thus, it is proposed

that Law 9 of 1974 should be reinstated by streamlining some sections related to land subdivision and development by the private sector. It may take an amendment to the existing law. Otherwise, a new law may be introduced by revising Law 9 of 1974.

Informal housing areas

The policy of the Damascus governorate for informal housing areas has evolved in the recent decades to increase the support for their livelihood. Some key activities are summarized from the GCEC study as follows.

- 1) In 1980, the DG Council issued resolution for assigning the Technical Affairs Department to study some of collective illegal areas and establish a detailed organization plan for reconstruction complete with utilities and services according to the Urban Planning Law, similar to Area K or township expansion or amend the general structural plan (GSP) in accordance with the current situation.
- 2) The Executive Order approving the organization plan was issued in 1984.
- 3) The DG Executive Office issued resolution in 1984, amended later, to permit temporary license for all commercial and services shops in collective illegal areas.
- 4) The Executive Office resolution of 1987 approved servicing collective illegal areas with sewers and asphaltting of roads, free of charge.

The formalization of informal settlements has recently been given legal backing by Law 46 of 2004, which facilitates the granting of title as part of program of land readjustment under Law 9 of 1974. Also, the law requires that public utility bodies supply water and electricity to those developments for which the residents are expected to pay for them. Thus, the ongoing efforts by the Damascus governorate to formalize informal settlements have received legal supports by the national policy.

Expansion areas

As mentioned above, once an expansion area is known either by formal announcement or informally, people will move in and buy from the existing “miri” land owners as the land owners can get much better prices from illegal sale than the compensation by the expropriator. Law 1 of 2003 is to prohibit such land sales by imposing high penalties against them. The enforcement of penalties, however, would involve large resources in the public sector. A better mechanism to control the land development is to encourage the land development under very strict conditions with respect to building coverage, floor area ratio, minimum land area for development and others, while providing some incentives such as subsidies for investment in buildings. Recently, a new law was enacted to allow new residential developments in the areas originally designated as agricultural land under strict conditions related to land occupancy ratio, floor area ratio and other parameters. This is still a regulatory measure, which by itself may

not be effective in encouraging the private developers. The mechanism relying on the private sector initiative will work better than the one relying on the public sector initiative such as the expropriation.

(2) Provision for public-private partnership

The revision of the legal and institutional system for urban planning, development and control should aim at more extensive and substantive public-private partnership. It is important for the legal and institutional system to provide a broad framework, and the municipalities have options to choose from within the framework. The following should be accommodated in the revision.

Joint development

Alternative forms of public-private partnership for urban development have been undertaken in different countries. They include the following:

- 1) Public to establish a wholly owned company to undertake the development in partnership with private developers,
- 2) Public to assist land owners to establish a company or association/cooperative to undertake the development, and
- 3) Public to enter into a joint venture arrangement with a private entity to undertake the development.

A specific form of the public-private partnership for large scale land development is for the public sector to provide major infrastructure facilities following a master plan, and the private sector to plan and develop individual land lots following the master plan, including the infrastructure development for the individual land lots. This will reduce the resource requirements on the public side, and still coherent development of the entire land is ensured by the master plan.

Master planning

A master plan for any development area may be prepared also by the public-private partnership. Alternative arrangements are conceived as follows.

- i) The public entity prepares the master plan either directly or by outsourcing the works.
- ii) Private developers prepare the master plan for approval by the public.
- iii) Private developers pool their resources and entrust them to the public entity for preparing the master plan.

Development methods and tools

The revised legal and institutional system should allow a variety of planning and

implementation methods and tools to be applied to various cases of urban development. The land readjustment and pooling provided by Law 9 of 1974 and the expropriation provided by Law 20 of 1983 are just two possible methods. The provision should be made to allow more different methods to be used with a view to encouraging the private sector initiative as much as possible. The system relying more on the private sector initiative is much better than the one relying more on the public sector initiative in responding to rapidly changing needs of urban development.

The provision should also be made, however, that the reflection of concerns on heritage value, environmental sanitation, and other socio-cultural conditions contributing to the urban amenity should be ensured. The public-private partnership is indeed a mechanism to ensure this provided that the public here represents general public as well as the governments. Therefore, the revised system should allow a wider participation of citizens in the planning process.

(3) Control of urban sprawl and encroachment on agricultural land

The encroachment on the remaining agricultural land should be prevented as much as possible by controlling urban sprawl. For this purpose, the Master Plan recommends the corridor development along the main radial arteries extending from the city together with the development of new urban centers in outer areas. Such physical measures should be complemented by institutional measures.

The best way to preserve the greenery of the remaining agricultural land is to encourage the development by the private sector under very strict conditions. This would be more effective than imposing a ban on land development or expropriating the land, which would involve large public sector resources. The idea is the same as the new law recently introduced for the residential development in agricultural land. Such a regulatory measure alone, however, would not be effective as private investors would not have sufficient incentives. Therefore, incentive measures should be introduced at the same time such as a subsidy for the initial investments to convert the existing agricultural land into residential, recreational and other facilities on the conditions that large greenery areas would be preserved, and tax incentives to ensure adequate profits from the operation.

(4) Regional planning

Need for planned development of urban spaces is taken as a matter of course in the face of many and varied urban problems. The imminence and severity of the urban problems, however, often lead planners and administrators to practice responsive planning: planning in response to imminent needs. Such an approach tends to lead to more problems as the

urbanization in the 20th century demonstrated with numerous examples.

The urban functions need to be strengthened to support various socio-economic activities in a larger geographic context beyond individual cities. To do so in a cost-effective way, locations of the socio-economic activities would better be improved from a region-wide point of view, and certain activities should better be encouraged or discouraged in particular locations for social, environmental and other reasons; hence, the need for regional planning.

Location of various socio-economic activities and infrastructure facilities and utilities serving them would better be planned from a region-wide point of view. Such planning pursues specialization and complementarity. Certain facilities and functions, such as an international airport and industrial estates, should better be located only in selected areas; hence, specialization. Facilities and functions in different locations should serve collectively all the areas and activities; hence, complementarity. The regional planning aims at the optimal distribution of these functions and activities from a viewpoint of larger geographic area for cost-effectiveness and the best satisfaction of largest number of people.

The legal and institutional system for urban planning, development and control should be built in the broader system of socio-economic and spatial development. First, there should be a proper industrial location policy at the national level, supported by the trunk transportation and other infrastructure system within the context of the national land development. Then, under the conditions and roles dictated by such national level plans for different regions, a regional development plan should be prepared for any region considered to constitute integral part of the national development, respectively. Urban development plans should be prepared with the relevant regional plan as the framework.

The legal and institutional system should be established for this kind of hierarchical planning with the view to realizing more balanced and robust development of the Country as a whole for the benefits of the people. In this system, regional planning holds the key position as it would pursue self-reliant development of any region complementary to the development of other regions. It is not only desirable for the welfare of the people in each region, but in fact necessary to survive in the globalizing economy.

Chapter 9 Implementation Program

9.1 Financial Framework

(1) Recent investment performance and assumptions for projection

The development programs and projects proposed by the Master Plan are expected to be implemented mainly by the public sector initiative in cooperation with the private sector. The budget for implementation would be allocated by the Central Government either directly or through affiliated organizations, and local governments. The public investment that may be allocated to the proposed programs and projects is estimated in a macroscopic way to set the financial framework for the DMA urban development.

The public investment availability is first estimate at the national level. The following assumptions are made concerning the macroeconomic performance of Syria:

- 1) The GDP will grow from US\$24.9 billion in 2004 to US\$48.5 billion in 2015 and US\$105.1 billion in 2025 according to the socio-economic framework of Syria presented in Section 3.1;
- 2) Efficiency of the investment as a whole as measured by the incremental capital-output ratio (ICOR) will improve from 4.5 up to 2013, through 4.0 up to 2019 to 3.5 up to 2025;
- 3) The ratio of the public investment to the total investment will decrease from 45% up to 2013, through 35% up to 2019, to 30% by 2025.

These assumptions are based on the macroeconomic performance of Syria in recent years (Table 9.1), and considered to be appropriate for a long term planning purpose. The GDP of Syria increased at the average annual rate of 4.1% during 1997-2000, and at 3.3% per annum in 2000-05. The total investment, measured here as the gross fixed capital formation, was about 17.9% of the GDP in 1997-99, and 19.2% in 2000-04. Therefore, the ICOR is calculated to be 4.4 in 1997-2000, and 5.8 in 2001-05. The ratio of the public investment to the total investment was smaller than 60% during late 1990's, but exceeded 60% in early 2000's. It has declined in recent years to 47% in 2004 and 2005.

Table 9.1 Macroeconomic Performance of Syria in Recent Years

(Unit: SL10⁹)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gross domestic product (GDP)	872.5	931.7	898.6	983.6	1,084.9	1,154.5	1,131.3	1,105.6	1,155.4
Gross fixed capital formation (GFCF)	158.9	164.1	159.8	156.1	178.1	196.4	234.8	281.4	303.1
GFCF -public sector share (%)	58.0	58.5	59.5	63.6	59.1	60.6	64.4	47.0	47.5

Source: Statistical Abstract 2006

(2) Projection of public investment and allocation to the DMA

The public investment at the national level is projected by phase up to 2025 based on the assumptions above. The incremental GDP is calculated from the growth assumptions by phase. With the incremental GDP and the assumed ICOR value by phase, the total cumulative investment is estimated by phase. The public investment is calculated as 45% of the total investment for Phase 1, 35% for Phase 2, and 30% for Phase 3 as assumed above.

Allocation of the public investment to the DMA is assumed to be in proportion to the population. Following the socio-economic frameworks for Syria in Section 3.1 and for the DMA in Section 7.2, the allocation ratios are set at 21.5% up to 2013 and 22.0% up to 2025. The results of the calculation are summarized in Table 9.2.

The public investment allocation to the DMA is projected to be SL 192billion in 2008-13, SL 339billion in 2014-19, and SL 391billion in 2020-25 for the total of SL 922billion over this period. The ratio of public investment to the total investment must be comparatively smaller in the DMA than in Syria as a whole due to more active private investment in the capital region, and is assumed at 40% in Phase 1, 35% in Phase 2 and 30% in Phase 3. The total investment in the DMA is thus calculated to be SL. 480billion in 2008-13, SL. 1,130billion in 2014-19, and SL 1,564billion in 2020-25 for the total of SL. 3,174billion during the entire planning period.

Table 9.2 Projection of Public Investment and Allocation to the DMA

	Unit	2004	2008	2013	2019	2025	Average/ total
GDP	SL10 ⁹	1,106	1,300	1,740	2,840	4,530	
GDP growth	% per annum		4.1	6.0	8.5	8.1	6.9 (2004-25)
Cumulative GDP	SL10 ⁹			7,328	12,925	20,887	
Incremental GDP	SL10 ⁹			440	1,100	1,691	
ICOR				4.5	4.0	3.5	
Cumulative total investment	SL10 ⁹			1,980	4,400	5,915	
Cumulative investment/GDP	%			27.0	34.0	28.3	
Public investment as % of total investment	%			45	35	30	
Cumulative public investment	SL10 ⁹			891	1,540	1,775	
Allocation ratio of public investment to the DMA	%			21.5	22.0	22.0	
Cumulative public investment to the DMA	SL10 ⁹			192	339	391	922
Public investment as % of total investment in the DMA	%			40	30	25	
Cumulative total investment in the DMA	SL10 ⁹			480	1,130	1,564	3,174

Source: JICA Study Team

9.2 Indicative Investment Schedule

(1) Project prioritization

Investment requirements for the proposed projects and programs will have to be satisfied largely by public investments and partly by private investments. The total investment cost required for the proposed projects and programs should not exceed the projected public investment allocations at any point in time. Moreover, considering other regular programs to be implemented by government agencies and municipalities, the investment requirements should be much smaller than the projected public investments. To satisfy these conditions, the proposed projects and programs are prioritized and phased for their implementation.

A few criteria are particularly important for prioritization of the projects and programs to support the DMA urban development. First, ongoing projects have high priority. They include the Adra industrial city, some road sections and water supply system improvement as well as continual improvement of education and health facilities.

Second, those projects that would contribute to the medium and long-term development of the DMA through introducing new elements need to be initiated in Phase 1 and continue through Phase 2. They include sections of the outer ring road, all the new cities and multi-functional urban centers, and some controlled developments.

Third, those projects contributing to the improvement of the livelihood of the majority of local people and particularly the deprived would be given additional points in priority assessment such as the informal housing areas formalization. Fourth, the special program for urban heritage restoration and use should be given emphasis especially in Phase 1 and Phase 2. Some economic and social infrastructure projects would be implemented continuously through the three phases.

(2) Indicative investment schedule

Within the framework of the projected public investment allocation to the DMA, an indicative investment schedule is prepared, including all the proposed projects and programs. Investment costs of all the proposed projects and programs are roughly estimated, and the investment schedule is constructed in line with the project prioritization.

The indicative investment schedule is presented in Table 9.3. The total investment costs for all the proposed projects and programs are SL.117,497 million in Phase 1 (2008-13), SL.103,279 million in Phase 2 (20014-19), and SL.111,627 million in Phase 3 (2020-25). These estimates correspond to 59.0%, 30.2% and 28.3% of the projected total public investment allocation in Phase 1, Phase 2 and Phase 3, respectively. Considering other regular development expenditures that would have to be covered by the allocated public investments,

the investment fund availability is rather tight for Phase 1. This may be inevitable as comparatively larger public fund would have to be allocated to the DMA initially to lead the planned development until the private sector would start to respond more actively in Phase 2 and Phase 3.

Table 9.3 Indicative Investment Schedule for DMA Urban Development

							(Unit: SL..million)
No.	Project title	Status	Implementing agencies	Investment Phase 1	Phase 2	Phase 3	Total
I. Urban Structure Transformation Initiative							
1. Artery transport network development program							
1.1	Outer ring road development	New	MOT	3,233	3,525	5,281	
1.2	Radial roads upgrading	Extended		415	391		
1.3	Second ring road establishment	Extended		5,568	3,881	3,881	
1.4	Third ring road establishment	Extended		1,464	1,464		
1.5	Damascus-Quneitra road development		MOT		229		
			Sub-total	10,909	9,261	9,162	29,332
2. New cities development program							
2.1	Adra industrial city development	Extended	MLEA	2,869	1,912		
2.2	Qatana IT city development	New		1,412	2,838	2,838	
2.3	Government city development	Extended	MLAE	2,266	2,266		
2.4	Al Kissweh industrial city development	New		1,922	3,844	3,844	
				8,469	10,860	6,682	26,011
3. Multi-functional urban centers development program							
3.1	East business and commercial center	New	DG, RDG	2,668	2,688	1,334	
3.2	Southeast tourism and cultural center	New	DG, RDG	2,060	1,545	1,545	
3.3	South mixed use urban center	New	DG, RDG	2,052	1,539	1,539	
3.4	Southwest international communication center	New	DG, RDG	485	970	970	
3.5	Northeast social development center	New	DG, RDG	376	751	751	
3.6	North suburban business center	New	DG, RDG	439	585	439	
				8,080	8,078	6,578	22,736
II. Living Environment Improvement Initiative							
4. Informal housing area formalization program							
				1,967	1,967	1,967	5,901
5. Controlled urban and agricultural development program							
5.1	Productive urban greenery development	New	RDG, Min. Agriculture	2,500	2,500		
5.2	Sports & cultural complex development	New		2,000	2,000	2,250	
5.3	Heritage parks establishment	New	RDG, Min. Antiquity	1,245	1,245		
5.4	Cooperative agricultural development	New	Min. Agriculture	1,000	1,000	1,000	
5.5	Controlled watershed area development	New	Multi-agency	1,000	1,000	1,000	
				7,745	7,745	4,250	19,740
6. Social infrastructure program							
6.1	Education facilities expansion & improvement	Extended	Min. Education	30,811	16,022	18,676	
6.2	Higher education institute establishment	New	Min. Higher Education	1,000	1,000		
6.3	Health facilities expansion & improvement	Extended	Min. Health	6,643	2,723	3,267	
6.4	Hospitals development	Extended	Min. Health	4,522	2,515	2,863	
6.5	Cultural centers development	Extended	DG, RDG, Min. Culture	244	122	122	
				43,220	22,382	24,928	90,530
7. Urban renewal program							
				2,490	2,490	2,490	7,470
8. Water supply & sewerage improvement program							
8.1	DAWSSA water supply expansion & improvement	Extended	DAWSSA	3,363	729	204	
8.2	R-DAWSSA water supply & sewerage development	Extended	R-DAWSSA	15,728	8,136	8,200	
8.3	Adra sewage treatment plant tertiary treatment	New	DAWSSA	3,581	2,686	2,686	
8.4	Water and sewage tariff rationalization	Extended	DAWSSA, R-DAWSSA	100			
				22,772	11,551	11,090	45,414
9. City transport system improvement program							
9.1	Inner ring road improvement	Extended	DG	1,079	1,079		
9.2	City roads improvement	Extended	DG	2,352	2,352	1,040	
9.3	Underground parking development	Extended	DG	1,780	1,780	1,780	
9.4	Metro development	New	DG	3,000	20,000	40,000	
				8,211	25,211	42,820	76,242
Special Program for Urban Heritage Restoration and Use							
1	Old Damascus & the PHA management planning	Extended	Multi-agency	200			
2	Old Damascus utilities improvement	Extended	Multi-agency	869	869		
3	Old residential complexes restoration & use	New	Multi-agency	705	705		
4	Participatory historical areas planning	New	DG	1,660	1,660	1,660	
5	Heritage value awareness campaign	New	DG, RDG	100			
6	Heritage database development	New	DG, Min. Culture	100	500		
				3,634	3,734	1,660	9,028
Total				117,497	103,279	111,627	332,404

Source: JICA Study Team

9.3 Initial Actions

Initial actions to be taken in the subsequent stage are proposed. They include the adoption and promotion of the Master Plan, institutional measures to facilitate the Master Plan implementation and management, preparation of detailed plans for priority areas, participatory

planning for specific areas, legislative measures to promote the private sector-led urban development, and pilot projects implementation. Other follow-up activities suggested by various organizations through their comments on the Draft Final Report are summarized in Annex to Section 9.3.

(1) Master Plan adoption and promotion

Some projects and programs proposed by the Master Plan can be implemented or further developed by relevant sector agencies such as roads, social infrastructure, and water and sewerage projects. More deliberate efforts are required to implement other projects particularly by the initiative of the Damascus and the Rural Damascus governorates. To ensure the coordination of various development efforts by many agencies and timely implementation of inter-related projects, Master Plan proposals would have to be first discussed among related agencies, and sector concerns and possible conflicts should be resolved.

For these purposes, an inter-agency committee may be convened to be chaired by the MLAE Minister. It would be relevant to discuss the Master Plan proposals with respect to the 10 proposed programs in sub-committees. At each sub-committee, sector concerns related to the respective program would be clarified, and their recommended resolution should be reached. Results should be reported to the inter-agency committee for resolution of sector conflicts by program. Based on the resolution, the MLAE Minister should issue a policy paper recommending the adoption of the Master Plan with addenda if necessary for submission to the cabinet. Addenda may be prepared to allow flexible operation of the Master Plan as well as revisions necessary to make it fit to policies of sector agencies.

(2) Establishment of the DMA council

The DMA council may be established as recommended in Section 8.1. Initially, the council should be tasked to undertake only coordination and limited management functions. In fact, its initial tasks would be the same as those described above for the Master Plan adoption and promotion. The inter-agency committee may be developed into the council, or the council may be established by the Presidential decree to perform the roles of the committee from the beginning. The jurisdiction of the DMA council should be discussed and determined first.

(3) Preparation of detailed plans

First, the detailed plans prepared by the JICA Study should be evaluated as they were prepared as examples for planning and programming process in the context of overall city planning, implementing arrangements including the public-private partnership, prioritization system of areas for detailed planning, and other issues. These issues should be resolved to set institutional frameworks for detailed planning.

Within the frameworks, detailed plans should be prepared for priority areas for early initiation of development activities. They should cover the six multi-functional urban centers and the four new cities proposed by the Master Plan. For the Adra industrial city and the Government city, the existing plans should be reviewed and revised to make them in line with the Master Plan. Detailed plans may be prepared in steps also for some areas made available by the relocation of existing industries as well as selected historical and informal housing areas.

(4) Participatory planning

Participatory planning should be undertaken for the Old Damascus and its peripheral heritage area (PHA), other historical areas, and informal housing areas as recommended in subsections 7.2.4 and 8.2.2. Through the participatory management planning for the Old Damascus and the PHA, a unified entity should be established for the continued management of the integrated area. The participatory planning for historical and informal housing areas should be conducted in steps as the planning capacity of officials is enhanced through the planning and implementation of the plans one after another.

(5) Legislative measures

Existing laws may provide for the private sector-led urban development to some extent such as Law 9 of 1974 to allow land sub-division and development by the private sector. Another way to promote the private sector-led urban development may be to apply strict building code to protect remaining greenery through use, while providing some incentives to ensure adequate profitability for the private sector as recommended in subsection 8.2.2. The introduction of some incentives may need legislative measures such as subsidies for investment costs or tax reduction.

Legislative measures need to be taken to reform the legal and institutional system for urban planning, development and control for more extensive and substantive public-private partnership as recommended in subsection 8.2.2. The revised system should provide a broad framework, within which the municipalities should have various options to take for joint development, preparation of development plans, and implementation by applying various methods and tools.

(6) Pilot projects implementation

The Master Plan recommends more substantive public-private partnership and private sector-led urban development. Also, participatory planning should be taken for heritage and informal housing areas. These new concepts and approaches can not take root in a short period of time.

They should be applied early and successfully. The initial success would provide momentum for the continued application of new concepts and approaches to different areas. In particular, the detailed plans prepared as part of the master planning should be implemented as pilot projects for demonstration purposes.

Annex to Section 9.3

Follow-up Activities Subsequent to the DMA Master Planning Suggested by Various Organizations

1. Regional planning

- (1) Review of regional division
- (2) Regional planning for other regions in relation to the DMA urban development as planned, including consistent projection of GRDP etc., analysis on urban network, and industrial location.

2. Iraqi refugees

- (1) Clarification of issues and policy related to the Iraqi refugees.
- (2) Revised projection of population with detailed distribution.

3. Land use plan for the DMA

- (1) Modification of the directional land use plan for the DMA by using the GIS database established through the JICA Study.
- (2) Incorporation of tourism development areas, areas for power facilities etc.
- (3) Preparation of a definitive land use plan for the DMA.

4. Transportation

- (1) Planning for public mass transportation with the artery transport system as planned (with modifications if found necessary).
- (2) Further examination of alternative traffic modes in the future such as trams, trunk bus system and commuter rail system, covering cost-benefit, physical issues such as density, right-of-way and topography, and others.
- (3) Study of traffic management and regulations including road classification and re-classification, speed limits, traffic and access restrictions, and public transportation including “park and ride”(EU-MAM has proposed a study of traffic management system in the city center).

5. New cities

- (1) Case studies of new towns in other countries, focusing especially on the financial and administrative arrangements with public and private involvement.
- (2) Study of advantages and disadvantages of new cities and the third ring road.
- (3) Comparative analysis on alternative locations for the Government city and detailed planning for the selected location.
- (4) Planning for the Qatana IT city within the larger geographic context including the productive agricultural land in the framework of the directional land use plan of the DMA; detailed planning for the Qatana IT city with clarification of implementing arrangements.
- (5) Detailed planning for the Adra industrial city with the full environmental impact assessment.

6. Tourism development

- (1) Master planning for tourism development in the DMA with the focus on Rural Damascus by using the directional land use plan as a framework to select locations for tourism related development.
- (2) Incorporation of the heritage park, and tourism use of the Ghouta area in the plan.

7. Urban structure

- (1) Analysis on alternative urban structure models, covering development axes and corridors, urban renewal within the city, new cities and sub-centers, greenery and open spaces, energy and other utilities need impact, population distribution and density, and other related aspects.
- (2) Evaluation of the alternatives by environmental sustainability and other criteria.

8. Detailed planning

- (1) Detailed planning for the Qanawat heritage area as a whole to avoid further encroachment by industrial and commercial activities.
- (2) More complete planning for the Qaboun informal housing area, incorporating substantial re-development possibly for alternative uses (at least partly for commercial uses); implementation planning for the Qaboun area, including financial analysis with stage-wise development, examination of funding methods, public-private partnership and administrative issues, and land use zoning for residential and other uses; establishment of a building code for the Qaboun area specifying the land coverage ratios, building heights and other parameters.

9. Others

- (1) Revision of the general master plan of the Damascus city in line with the directional land use plan of the DMA and the indicative land use plan of the city prepared by the JICA Study.
- (2) Preparation of more detailed development scenario for the DMA, clarifying investment opportunities for the private sector, phasing of infrastructure development, prioritization of area development, tourism development, opportunities for public-private partnership etc.
- (3) Development of new legal framework to regulate the urban development together with interim measures to prevent land speculation during the process.