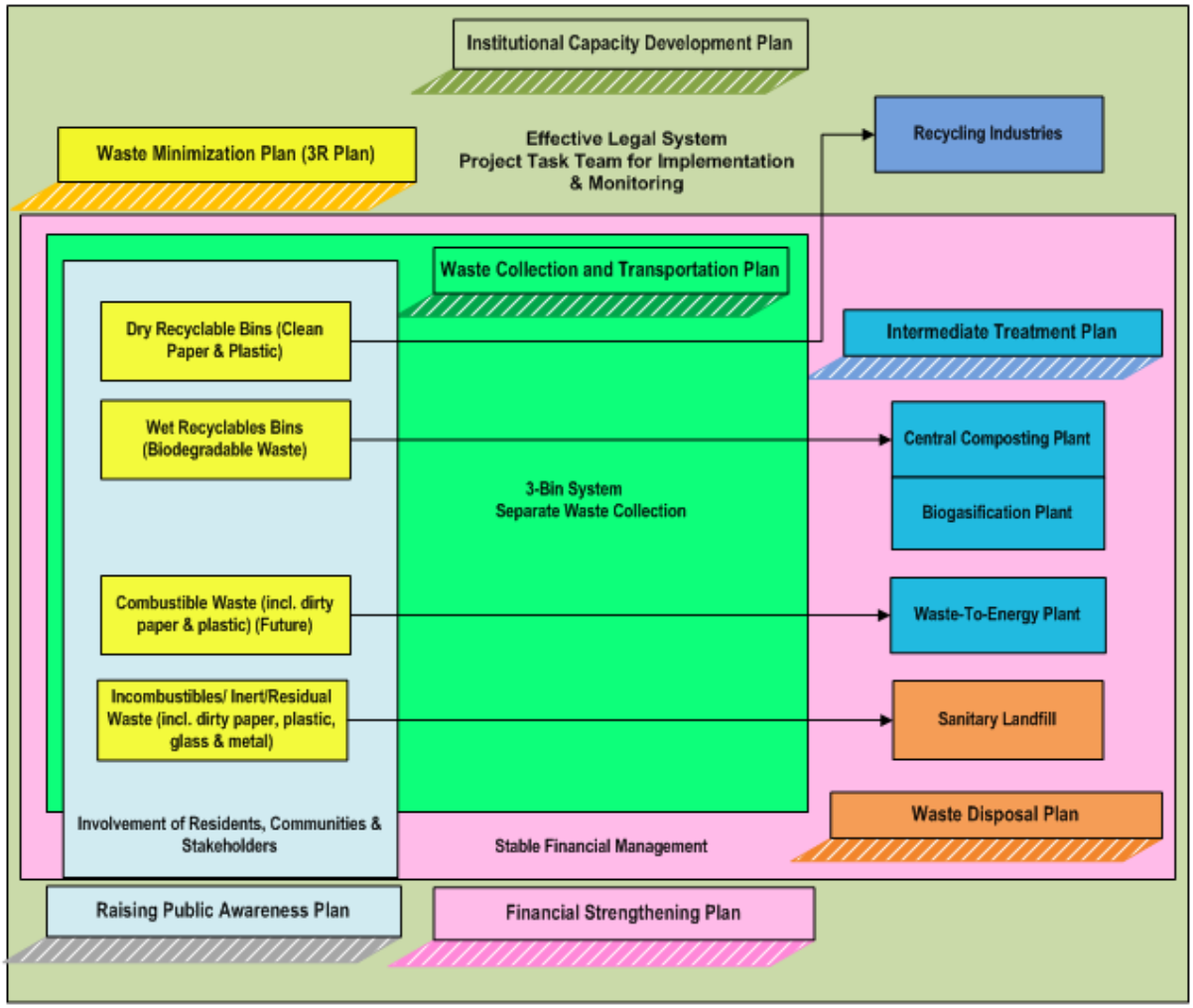
12. Action Plan for Integrated Solid Waste Management (ISWM) Plan

12.1 General (Selection of Priority Projects, Assumptions and Premises)

12.1.1 Interrelation of Project Components

The plans, programs, and projects mentioned in Chapter 5 are related to each other as illustrated in Figure 12.1.1. For example, activities of 3R plan stand on clear roles and responsibilities of waste generators to be defined under the institutional capacity development plan. Recovery of recyclable materials through 3R plan is supported by introduction of separate collection and construction of appropriate intermediate treatment for different types of waste. Furthermore, all the plans, programs, and projects are implemented under sufficient financing and stable financial management under the financial strengthening plan. Detaching or separating some of the components of the integral part is not effective for implementation of the master plan. In other words, the interrelated plans, programs, and the projects in the seven components shall be considered a set of the project to be implemented together under the prioritization of the project.



Source: JICA Study Team

Figure 12.1.1 Interrelation of Proposed Components of Integrated Solid Waste Management Plan

12.1.2 Preliminary Screening of Action Plans

Preliminary screening of the priority plans, programs, and projects are carried out based on the following concepts:

- Urgent necessity to remove public nuisances and maintaining cleanliness and a healthy environment;
- Initiate the activities taking long-term efforts to obtain the cooperation of the stakeholders to Solid Waste Management (SWM) services;
- Initiate the preparatory work of the projects which take a long time for the processes of feasibility study, Environmental Impact Assessment (EIA), engineering design, construction work, etc. until the commencement of operation;
- Implement the plans, programs, and projects to comply with the required target level and timeframe of recycling ratio, landfill ratio, and recovery of energy ratio stated in the Law and the National Integrated Waste Management Plan; and
- Use the project result effectively for early stage improvement of the SWM services, mitigation of public nuisance and improvement of public sanitation and aesthetics.

In performing the preliminary screening, the factors of i) urgency, ii) compliance, and iii) effects are selected for the evaluation items and preparation of the preliminary prioritization long list as tabulated in Table 12.1.1

Prioritization of the projects with other sectors, i.e., road and traffic, water supply, sewerage and drainage, and sold waste management, will be carried out separately from the prioritization of this section.

Table 12.1.1 Preliminary Screening of Proposed Projects under ISWM Plan

Proposed Plans, Programs, and Projects		Urgency	Compliance	Effects	Score
SWM-1 Waste Collection and Transportation Plan					
SWM-1-1	Formulation of Implementation Plan for Waste Collection and Transportation	4	3	4	11
SWM-1-2	Survey of Illegal Dumpsite and Preparation of Clean-up Project	5	1	5	11
SWM-1-3	Implementation of Illegal Dumpsite Clean-up Project through Contract	5	1	5	11
SWM-1-4	Implementation of Pilot Study for Improvement of Waste Collection Service				
SWM-1-4-1	Study for Expansion of Service Area by Separate Collection	4	3	4	11
SWM-1-4-2	Study of Separate Waste Collection for Special Wastes	3	3	3	9
SWM-1-4-3	Implementation of Separate Collection at the Pilot Study Areas	4	5	4	13
SWM-1-5	Operation of Separate Collection by 3-Bin System	4	5	4	13
SWM-1-6	Monitoring/Inspection of Waste Collection Activities	3	3	3	9
SWM-1-7	Evaluation of Performance and Target Level of Waste Collection Plan	3	3	3	9
SWM-2 Waste Minimization Plan (3R Plan)					
SWM-2-1	Formulation of Implementation Plan for 3R Activities				
SWM-2-1-1	Formulation of Implementation Plan of Waste Reduction	5	4	3	12
SWM-2-1-2	Formulation of Implementation Plan of Waste Recovery, Reuse and Recycling	5	4	3	12
SWM-2-2	Implementation of 3R Activities				

Proposed Plans, Programs, and Projects		Urgency	Compliance	Effects	Score
SWM-2-2-1	Promotion of Waste Generation Source Control	4	3	3	10
SWM-2-2-2	Promotion of Waste Discharge Control	4	3	3	10
SWM-2-2-3	Promotion of Recovery of Recyclable Materials	4	4	4	12
SWM-2-2-4	Promotion of Reuse and Recycling of Recyclable Materials	4	4	4	12
SWM-2-2-5	Construction of Central Material Recovery Facilities at Sharra	4	4	4	12
SWM-2-2-6	Operation of Central Material Recovery Facilities at Sharra	4	4	4	12
SWM-2-3	Monitoring for Implementation of 3R Activities	3	3	3	9
SWM-2-4	Evaluation of Performance and Target Level of Waste Minimization Plan	3	3	3	9
SWM-3 Intermediate Treatment Plan					
SWM-3-1	Formulation of Implementation Plan for Intermediate Treatment Plan				
SWM-3-1-1	Formulation of Implementation Plan for Organic Waste Treatment	5	4	4	13
SWM-3-1-2	Formulation of Implementation Plan for Waste to Energy	5	4	4	13
SWM-3-2	Implementation of Organic Waste Treatment Plan				
SWM-3-2-1	Organizing Home Composting and Community Composting Groups	4	3	4	11
SWM-3-2-2	Implementation of Pilot Project of Home and Community Composting	4	3	4	11
SWM-3-2-3	Expansion of Home Composting and Community Composting	4	3	3	10
SWM-3-2-4	Selection of Large Waste Generation Source of Biodegradable Waste	4	3	3	10
SWM-3-2-5	Construction of Pilot Scale Composting and/or Biogasification Plant	5	4	4	13
SWM-3-2-6	Operation and Maintenance of Pilot Scale Composting and/or Biogasification	5	4	4	13
SWM-3-2-7	Construction of Central Composting and Biogasification Plant	5	4	5	14
SWM-3-2-8	Operation and Maintenance of Central Biogasification and Compost Plant	5	4	5	14
SWM-3-3	Evaluation of Performance and Target Level of Organic Waste Treatment Plan	3	3	3	9
SWM-3-4	Implementation of Waste to Energy Plan				
SWM-3-4-1	Selection of Construction Site and Procurement	4	3	4	11
SWM-3-4-2	Construction of Waste to Energy Plant	5	4	5	14
SWM-3-4-3	Operation and Maintenance of Waste to Energy Plant	5	4	5	14
SWM-3-5	Evaluation of Performance and Target Level of Waste to Energy Plan	3	3	3	9
SWM-4 Waste Disposal Plan					
SWM-4-1	Formulation of Implementation Plan for Waste Disposal	5	3	4	12
SWM-4-2	Coordination with Regional Waste Disposal Plan	4	2	3	9
SWM-4-3	Selection of Construction Site and Procurement	5	3	3	11
SWM-4-4	Implementation of Waste Disposal Plan				
SWM-4-4-1	Construction of Sanitary Landfill	5	3	5	13
SWM-4-4-2	Operation of Sanitary Landfill	5	3	5	13
SWM-4-4-3	Closure of Existing Landfill	3	3	3	9
SWM-4-5	Evaluation of Performance and Target Level of Waste Disposal Plan	3	3	3	9

Proposed Plans, Programs, and Projects		Urgency	Compliance	Effects	Score
SWM-5 Institutional Capacity Development Plan					
SWM-5-1	Establishment of Project Task Team and Implementation of Priority Projects				
SWM-5-1-1	Recruiting the Task Team Staff	5	3	5	13
SWM-5-1-2	Orientation of Action Plans of ISWM Plan, Modification and Finalization	5	3	5	13
SWM-5-1-3	Preparation of Implementation Plan of the Priority Projects	5	3	5	13
SWM-5-1-4	Budgeting for Implementation of the Priority Projects	5	3	5	13
SWM-5-2	Formulation of Implementation Plan for Institutional Capacity Development	4	4	4	12
SWM-5-3	Upgrading of Institutional System				
SWM-5-3-1	Enactment of By-laws to Comply with the Integrated SWM Law	4	5	3	12
SWM-5-3-2	Preparation of Rules, Regulations, Criteria, Standards, etc.	4	5	3	12
SWM-5-3-3	Study and Establishment of ALB Resource Recovery and Recycling Enterprise	5	3	4	12
SWM-5-4	Formulation and Approval of ISWM Plan				
SWM-5-4-1	Review, Modification, and Revision of ISWM Plan	5	5	3	13
SWM-5-4-2	Official Approval of ISWM Plan	5	5	3	13
SWM-5-5	Surveys of Baseline Data for Performance Indicators and Reporting				
SWM-5-5-1	Preparation of Monthly and Annual Report	3	3	3	9
SWM-5-5-2	Public Awareness/Opinion Survey on SWM Activities	4	4	4	12
SWM-5-5-3	Domestic Waste Amount and Composition Survey	3	3	3	9
SWM-5-5-4	Commercial/Business Waste Amount and Composition Survey	3	3	3	9
SWM-5-6	Evaluation of Performance of Target Level of Institutional Capacity Development Plan	3	3	3	9
SWM-6 Financial Strengthening Plan					
SWM-6-1	Formulation of Implementation Plan for Financial Strengthening	4	3	4	11
SWM-6-2	Study on SWM Unit Cost and Review of Waste Tariff System	4	3	4	11
SWM-6-3	Implementation of Financial Strengthening Plan				
SWM-6-3-1	Preparation of Separate SWM Account	5	2	3	10
SWM-6-3-2	Implementation and Establishment of Sound Waste Tariff System	5	3	4	12
SWM-6-3-3	Implementation and Establishment of Sound SWM Account	5	3	5	13
SWM-6-4	Evaluation of Performance and Target Level of Financial Strengthening Plan	3	2	3	8
SWM-7 Raising Public Awareness Plan					
SWM-7-1	Formulation of Implementation Plan for Raising Public Awareness	5	4	4	13
SWM-7-2	Implementation of Raising Public Awareness Plan				
SWM-7-2-1	Implementation of Public Information Plan	4	3	2	9
SWM-7-2-2	Implementation of School Education Plan	4	3	4	11
SWM-7-2-3	Implementation of Non-formal Education Plan	4	3	4	11
SWM-7-2-4	Implementation of Community Involvement Plan	5	4	4	13
SWM-7-3	Evaluation of Performance and Target Level of Raising Public Awareness Plan	3	3	3	9

Note: Scoring Legend:

5 : High , 4 : Medium High, 3 : Medium, 2 : Medium Low, 1 : Low

Source: JICA Study Team

12.1.3 Assumption and Premises of Priority Projects

A smooth implementation of the ISWM Plan is grounded in materialization of the planning policies stated earlier for the main concepts and in the several concrete assumptions and premises in the respective section for planning. Those requirements are summarized again in Table 12.1.2 for each category of work for the important conditions to implement the Priority Projects and the ISWM Plan as well.

Table 12.1.2 Assumptions and Premises for Implementation of Priority Projects

Work Category	Assumptions, Premises, and Conditions
Clean-up of Illegal Dumpsite	Clean-up is carried out for the dumpsites on public land. Large-scale dumpsites are cleaned using heavy machines and open dump car. Small-scale dumpsites are cleaned using wheel barrows and a small truck.
Separate Waste Collection	Participation of the waste generators, including residents and commercial and business establishments, is a basic rule for separate collection to discharge recyclable waste and residual waste separately to the designated waste bins respectively. The waste generators follow the waste collection rules set by MOT. New waste bins are placed and regular waste collection is carried out in the peripheral areas located a little far from the waste bins currently.
3R Activities	MOT takes initiative for setting up appropriate 3R activities with participation of the waste generators including residents and commercial, business, and institutional establishments, waste pickers, dealers of recyclables and recycling industry. Sorting of recyclable materials is carried out at the waste generation sources. Recovered recyclable material is discharged to the designated waste bins or brought to the town material recovery facilities or collected by the collectors of recyclable materials.
Organic Waste Treatment	Large waste generators cooperate with MOT for sorting biodegradable waste properly for direct collection. Sorted biodegradable waste is discharged properly to the designated wet waste bins for collection of biodegradable waste by 3-bin system.
Waste-to-Energy Project	Sorting combustible waste is carried out at waste generation source and discharged properly to the designated combustible waste bins for collection by 4-bin system to be shifted as the Waste to Project is implemented. Securing the financial source(s) is the issue to launch the project through central government subsidy or private sector investment as PPP project. Introduction of the technology from EU or Japan is the key to success.
Waste Disposal	3R and intermediate projects are implemented as proposed to reduce the waste amount to landfill. The adjacent area of proposed landfill site is wide enough for the construction site of other waste management facilities under the land use plan of Tirana Municipality Regulatory Plan and it is approved by the relevant authorities. Sanitary landfill is constructed and operated properly to follow the operation and maintenance manual.
Institutional and Organizational Strengthening	MOT establishes the Project Task Team and appoints MOT staff to head the team and/or employs/contracts an experienced person from external sources. The staff in charge, especially the staff of the Project Task Team, fully understand the contents of the Priority Projects and the ISWM Plan Human resource development or training is carried out to enhance the capacity of the technical and managerial staff.
Database of SWM Activities	The staff in charge clearly understands the importance of accumulation and analysis of database on SWM activities. Monthly/Annual reports are prepared through analysis of the database for evaluation of the SWM activities. MOT allocates sufficient annual budget to carry out the surveys and the associated works.

Financial Strengthening	MOT decides the level of cost recovery from the waste generators and determines appropriate waste fee and the tariff. Independent and transparent SWM account is established along with establishment of fair waste fee and tariff system. MOT takes provisional measures to secure sufficient budget for all of the improvement cost of the SWM services in the initial stage. Full cost recovery is considered for SWM services in future.
Raising Public Awareness	MOT clearly understands the importance of raising public awareness for successful achievement of the ISWM Plan. Ministry of Education participates in the school education programs. Community groups are established in the pilot study areas. MOT allocates sufficient annual budget for the activities.

Source: JICA Study Team

12.2 Components of the Priority Projects of ISWM Plan

The Priority Projects are selected from among the plans, programs, and projects formulated in the ISWM Plan based on the study of preliminary screening described earlier in Section 12.1.2. The screening criteria is prepared by the key factors especially for "urgency," "compliance," and "effects" which are attributed to each project in addition to the circumstances implicated in the development of modern SWM facilities. As a result, the following are the packages of the Priority Projects proposed for the action plans toward the establishment of an effective and efficient SWM system for the capital city of Albania.

- Illegal Dumpsite Clean-up Project
- Separate Waste Collection and Transportation Services
- Introduction of 3R Programs
- Organic Waste Treatment Project
- Waste-to-Energy Project
- Waste Disposal Facilities Expansion Project
- Organizational Strengthening
- Monitoring and Evaluation Strengthening
- Financial Strengthening
- Raising Public Awareness Programs

12.3 Outlines and Technical Proposals of the Project

12.3.1 Illegal Dumpsite Clean-up Project

(1) Objectives of the Project

The Project is aiming at clean-up of accumulated wastes discarded at the public lands especially in the peripheral areas of the town and the areas along the river banks. During and after the clean-up works, the waste containers shall be placed to include those areas in the regular waste collection service area. Beautification of the capital city of Albania shall be maintained through implementation of the Project. MOT is implementing the Tirana River Rehabilitation Project in conjunction with the Ring Road Project to construct a stretch of road about 7 km long on both

sides of the river bank. The design has not yet been finalized but the cost of the river rehabilitation is estimated at approximately 2.5 billion Lek. The clean-up project of the illegal dumpsite along Tirana River should be implemented in relation with the said river bank rehabilitation project.

(2) Project Location or the Covered Area

The survey carried out by the Study Team identified 46 open dumpsites in the town area and some of the typical sites are shown in Figure 12.3.1. The Project covers clean-up of discarded waste at the public land in the entire area of MOT including but not limited to the said 46 open dumpsites.

Source: JICA Study Team

Figure 12.3.1 Typical Open Dumpsites for Clean-up Project

(3) Components and Contents of the Project

This Project is scheduled to complete in three years. The Project including the sub-project consists of the following works.

- SWM 1-2: Survey of Illegal Dumpsite and Preparation of Clean-up Project
- SWM 1-3: Implementation of Illegal Dumpsite Clean-up Project through Contract

In addition to the outline of the work described under section 5.7, Waste Collection and Transportation Plan, the Project will also carry out the following works:

- Conduct the field survey prior to the commencement of the clean-up work;
- Estimate the cost based on the survey results and determine the objective clean-up sites in consideration of availability of the budget for the fiscal year;
- Preparation of the terms of reference and the specifications for carrying out the work either through the existing waste collection service providers (as extra work) or through contracting with other service provider(s);

- The contracted service provider(s) carries out the clean-up work and places new waste bins provided by MOT in the course of clean-up work;
- MOT shall carry out monitoring and inspection to assure the performance of the service provider(s);
- MOT shall designate the site or the new waste bins for the regular waste collection service area;
- The service provider(s) prepares the work completion report for approved; and
- Prepares the clean-up work for the next fiscal year.

The following Table 12.3.1 shows the list of identified open dumpsites surveyed by the JICA Study Team from January to February 2012. In total, 46 open dumpsites were identified with the total estimated waste amount at 16,000 m^3. The clean-up work is to be completed in three years. Accordingly, the clean-up waste amount is estimated more or less at 5,000 m^3 per year.

Table 12.3.1 Identified Open Dumpsites in the MOT Area

No.	Coordinates		Estimated Waste Amount (m^3)	Wastes
1	41°21'29.33"N	19°50'45.30"E	30	Familiar wastes + Inert
2	41°21'6.51"N	19°49'50.80"E	5000	Inert + familiar wastes
3	41°21'4.07"N	19°48'30.17"E	3000	Inert + familiar wastes
4	41°21'7.90"N	19°48'39.85"E	5	Familiar wastes
5	41°21'7.16"N	19°48'35.27"E	50	Inert + familiar wastes
6	41°21'2.28"N	19°48'17.26"E	2000	Inert + familiar wastes
7	41°21'0.72"N	19°48'11.98"E	2500	Inert + familiar wastes
8	41°20'59.96"N	19°48'6.11"E	1400	Inert + familiar wastes
9	41°20'56.83"N	19°47'58.95"E	150	Inert + familiar wastes
10	41°18'45.9"N	19°48'13.7"E	5	Inert
11	41°18'46.4"N	19°48'11.9"E	50	Inert
12	41°18'44.1"N	19°48'16.8"E	3	Inert + familiar wastes
13	41°18'46.0"N	19°48'9.6"E	10	Inert + wood
14	41°18'48.2"N	19°48'4.9"E	5	Inert
15	41°18'50.6"N	19°48'0.0"E	80	Inert
16	41°18'51.7"N	19°47'51.7"E	5	Inert
17	41°18'52.8"N	19°47'57.5"E	60	Inert + familiar wastes
18	41°20'02.6"N	19°51'47.8"E	30	Inert
19	41°20'04.4"N	19°51'37.2"E	32	Inert
20	41°19'08.3"N	19°49'54.4"E	4	Inert + familiar wastes
21	41°18'48.6"N	19°48'44.5"E	600	Inert + familiar wastes
22	41°18'50.6"N	19°48'44.2"E	2	Inert + familiar wastes
23	41°18'52.4"N	19°48'47.0"E	1	Inert + familiar wastes
24	41°19'00.9"N	19°50'00.1"E	4	Inert
25	41°19'48.2"N	19°50'16.2"E	4	Inert
26	41°19'55.4"N	19°52'24.8"E	2	Familiar wastes
27	41°18'58.9"N	19°50'20.7"E	80	Inert
28	41°19'00.8"N	19°50'38.7"E	4	Inert + familiar wastes
29	41°19'05.2"N	19°50'00.1"E	4	Inert
30	41°19'39.04"N	19°48'42.42"E	8	Inert
31	41°20'41.88"N	19°46'49.83"E	25	Inert

No.	Coordinates		Estimated Waste Amount (m^3)	Wastes
32	41°21'23.76"N	19°46'9.73"E	55	Inert + familiar wastes
33	41°21'31.92"N	19°45'50.67"E	150	Inert + familiar wastes
34	41°21'36.65"N	19°45'44.92"E	300	Inert + familiar wastes
35	41°20'57.44"N	19°46'51.73"E	110	Inert + familiar wastes
36	41°20'20.98"N	19°50'19.04"E	2	Inert + familiar wastes
37	41°20'38.73"N	19°50'47.76"E	1	Familiar wastes
38	41°21'2.44"N	19°50'38.50"E	4	Familiar wastes
39	41°20'48.23"N	19°49'19.50"E	150	Familiar wastes
40	41°20'38.14"N	19°50'45.18"E	5	Inert
41	41°20'37.49"N	19°50'50.75"E	10	Inert + familiar wastes
42	41°20'34.35"N	19°48'37.12"E	150	Inert + familiar wastes
43	41°20'31.95"N	19°48'51.88"E	40	Inert + familiar wastes
44	41°21'13.20"N	19°51'3.23"E	20	Inert + familiar wastes
45	41°20'2.57"N	19°50'45.85"E	25	Inert + familiar wastes
46	41°21'27.02"N	19°45'54.19"E	120	Inert + familiar wastes
Total			16295 m3	

Source: JICA Study Team

(4) Implementation Schedule of the Project

According to the implementation schedule shown in Table 12.3.2 below, the Project is expected to be completed over a period of three years in the Urgent and Short-term Period.

Table 12.3.2 Implementation Schedule of Clean-up Project

Action Plans			Urgent and Short-term Period					Mid-term Period					Long-term Period				
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-1	Waste Collection and Transportation Plan																
	SWM-1-2	Survey of Illegal Dump Site and Preparation of Clean-up project															
	SWM-1-3	Implementation of Illegal Dump Site Clean-up Project through Contract															

Source: JICA Study Team

12.3.2 Separate Waste Collection and Transportation Services

(1) Objectives of the Project

The overall project objective is to maintain the cleanliness of the town through improvement of waste collection, expansion of service area, and introduction of separate waste collection system. The introduction of separate collection is aiming at increase of recovery amount of recyclable materials for reuse and recycling thus saving resources and reducing residual waste amount for final disposal.

(2) Project Location or the Covered Area

The project area covers the entire area of MOT. The Project shall be started in the same candidate pilot study areas of 3R programs, and the good practices learned from the pilot study areas will be expanded to the neighboring areas and to the entire area of MOT.

(3) Components and Contents of the Project

1) Components of the Project

This Project is supported by many other subprojects and programs. The separate collection involves several activities related with participation of waste generators in sorting of

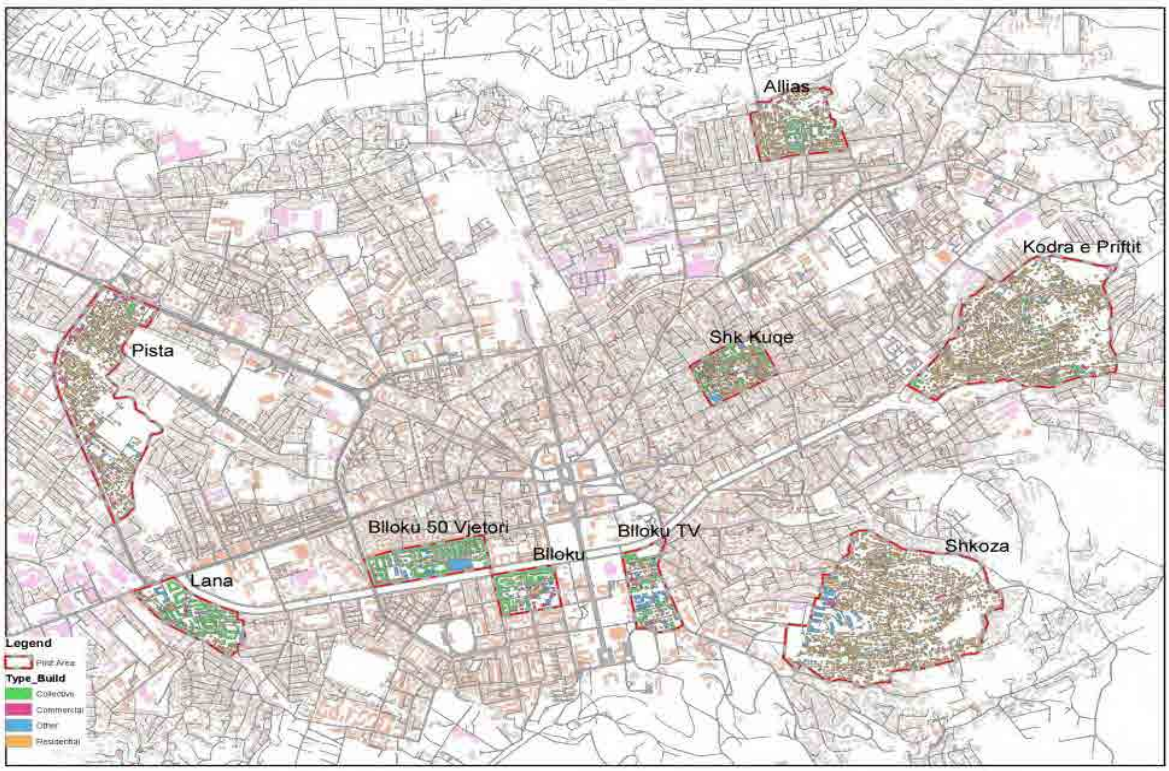
recyclable materials at source, waste discharge method, involvement of waste pickers and recycling industries, etc. These challenging activities are to be practiced in the following subprojects and disseminated to the neighboring areas.

- SWM 1-4: Implementation of Pilot Study for Improvement of Waste Collection Service
- SWM 1-4-1: Study for Expansion of Service Area by Separate Collection
- SWM 1-4-2: Study of Separate Waste Collection for Special Waste
- SWM 1-4-3: Implementation of Separate Collection at the Pilot Study Area

In addition to the subprojects listed above, the contents of the programs are as outlined under Section 5.7, Waste Collection and Transportation Plan. Additional descriptions are provided below.

2) Candidate Pilot Study Areas

The Project is carried out initially at the pilot study areas to study the effective and practical method for separate collection using the 3-bins system. The pilot study areas will be selected for three representative types of towns, namely, 1) detached house area, 2) apartment building area and 3) commercial area. The methods or the model case to be developed in the pilot study area will be applied in the entire waste collection area for introducing an appropriate separate collection system in MOT. Figure 12.3.2 shows the proposed candidate site of pilot study area.



Source: JICA Study Team

Figure 12.3.2 Candidate Areas for Pilot Study

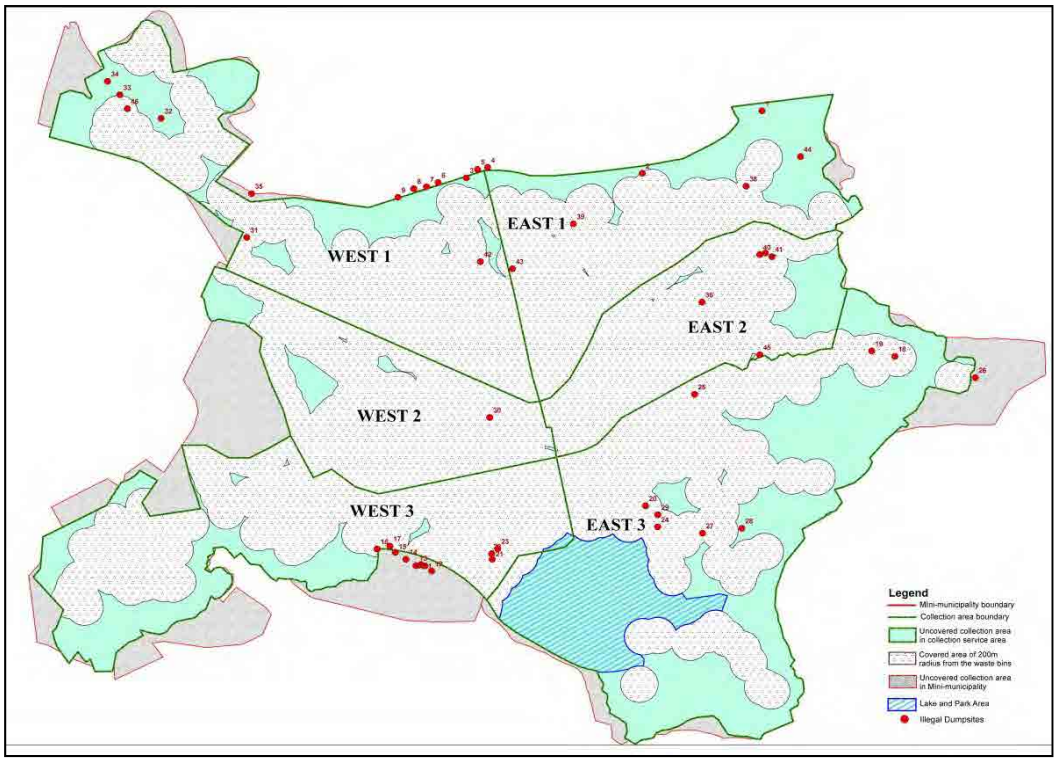
3) Implementation Programs and Prerequisites

The Project is implemented in collaboration with the 3R programs for the activities of i) expanding waste collection area, ii) sorting recyclable materials at source, iii) placing 3-bin system (dry recyclable bin, wet recyclable bin and residue bin), iv) discharging waste and recyclable materials to the designated waste bins, v) raising public awareness for 3R activities. For successfully implementing the activities, the following matters become the prerequisite. The Project Task Team, in collaboration with the relevant sectors and the parties shall organize the group's participation in the activities and give guidance and/or instruction on the procedures for the programs.

- Participation of the waste generators including the residents, and commercial and business establishment for sorting and discharging waste and putting recyclable materials properly into the designated waste bins and/or the material recovery centers
- Participation of waste pickers in town, recyclable materials dealers, recycling industry for recovery and recycling
- Sorting recyclable materials at source and putting them into the appropriate waste containers of the 3-bin system and/or to bring them to the town Material Recovery Facilities (Town MRF) or other material recovery centers.

4) Waste Collection Expansion Areas

Separate collection is introduced into the entire area of MOT including the peripheral areas of MOT where the waste collection service do not currently reach and open dumping is taking place as plotted in Figure 12.3.3.



Source: JICA Study Team

Figure 12.3.3 Uncovered Waste Collection Service Area in MoT

(4) Implementation Schedule of the Project

Table 12.3.3 shows the implementation schedule of Separate Waste Collection and Transportation Services. The Project is scheduled for 2013, giving time to prepare the programs to carry out in the pilot study area. The project is to be carried out continuously so that the good practices model(s) can be disseminated gradually into the neighboring areas and to the entire area of MOT through the master plan period.

Table 12.3.3 Implementation Schedule of Separate Waste Collection

Action Plans	Urgent and Short-term Period					Mid-term Period					Long-term Period				
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-1 Waste Collection and Transportation Plan															
SWM-1-4 Implementation of Pilot Study for Improvement of Waste Collection Service															
SWM-1-4-1 Study for Expansion of Service area by 3-bins System	■														
SWM-1-4-2 Study of Separate Waste Collection for Special Wastes	■														
SWM-1-4-3 Implementation of Separate Collection at the Pilot Study Areas	■	■	■												
SWM-1-5 Operation of Separate Collection by 3-bins System	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Source: JICA Study Team

12.3.3 Introduction of 3R Programs

(1) Objectives of the Project

The objective of the Project is to implement the 3R activities and thus contribute to saving finite natural resources, minimizing discharge of waste into the environment and reducing the cost burden of MOT for SWM.

(2) Project Location or the Covered Area

The Project area covers the entire area of MOT. The Project shall be started at the same pilot study areas to implement the separate waste collection as shown in Figure 12.3.2 and the good practices learned from the pilot study areas shall be expanded to the neighboring areas and to the entire area of MOT.

(3) Components and Contents of the Project

1) Components of the Project

This Project is supported by many other subprojects and programs. The main subprojects are listed below.

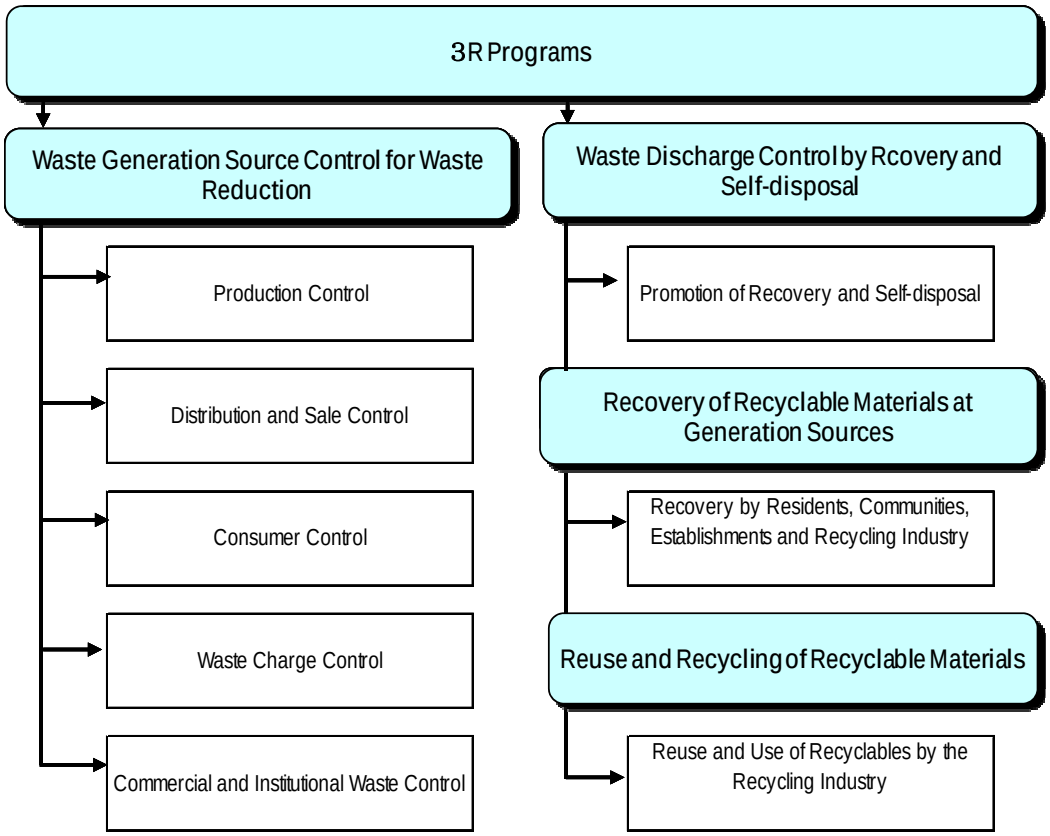
- SWM 2-2: Implementation of 3R Activities
- SWM 2-2-1: Promotion of Waste Generation Source Control
- SWM 2-2-2: Promotion of Waste Discharge Control
- SWM 2-2-3: Promotion of Recovery of Recyclable Materials
- SWM 2-2-4: Promotion of Reuse and Recycling of Recyclable Materials
- SWM 2-2-5: Construction of Central Material Recovery Facilities at Sharra
- SWM 2-2-6: Operation of Central Material Facilities at Sharra

In addition to the subprojects listed above, the pilot study activities include the challenging activities for separate waste collection, home composting and community composting to be carried out in parallel with the 3R activities. The contents of the programs are as outlined under Section 5.8, Waste Minimization (3R) Plan with additional descriptions provided

below.

2) Contents of 3R Programs

The programs of 3R activities consist of i) waste generation source control, ii) waste discharge control, iii) recovery of recyclable materials, and iv) reuse and recycling, as shown in Figure 12.3.4.



Source: JICA Study Team

Figure 12.3.4 Components of 3R Programs

Each program composing the 3R activities is divided further into the subprograms to be carried out with involvement of all the stakeholders for developing into the social activities. The purpose of each program and the role of MOT/Government and the stakeholders are summarized and shown in Figure 12.3.5 for the key activities to implement the 3R programs.

Concepts for Implementation of 3R Plan

Waste Generation Source Control for Waste Reduction

Production Control

Planning Purposes	Actions by MOT and Government Agencies	Actions by Waste Generators, Communities and Establishments
* Production of long-life/durable goods	* Encouragement and assistance to the producers	* Buy long-life/durable things and take care of the goods/products
* Production of eco-friendly and less packaged goods	* Encouragement and assistance to the producers	* Buy eco-friendly and less packaged goods
* Production of more returnable bottle bevarages	* Encouragement and assistance to the producers	* Buy returnable bottle bevarages
* Production of more recyclable goods	* Encouragement and assistance to the producers	* Accept/Buy recyclable products

Distribution and Sale Control

* Marketing of more goods in returnable bottles	* Control of goods in non-returnable bottles	* Ensure recovery and deposit systems
* Reduction of over-packaged goods	* Control of over-packaged goods	* Sale/Purchase of simple packaged goods

Consumer Control

* Reduction of domestic waste generation rate	* Campaigns for "Save the Earth" and//or "Establishment of a Sound Resource Recycling Society" and education	* Change the previous concept for the habit of mass production and mass consumption
* Reduction of plastic shopping bags	* Campaign and education for "my shopping bag"	* Use of "my shopping bag"

Waste Charge Control

* Application of progressive rate waste tariff	* Establishment of fair waste tariff	* Payment of waste charge
* Penalty to users with unpaid bills	* Monitoring and collection of unpaid bills	* Acceptance for payment of waste fee

Commercial and Institutional Waste Control

* Reduction of commercial and business waste generation rate	* Campaigns for "Save the Earth" and//or "Establishment of a Sound Resource Recycling Society" and education	* Change the previous concept for the habit of mass production and mass consumption

Waste Discharge Control by Reuse and Self-disposal

Promotion of Recovery and Self-disposal

Planning Purposes	Actions by MOT and Government Agencies	Actions by Waste Generators, Communities and Establishments
* Reduction of organic waste disposal	* Promotion campaign, assistance and guidance for home and community composting	* Participation to the home composting and community group composting programs
* Reduction of disposal of malfunctioning electriccal appliances and products	* Promotion campaign, assistance, and guidance for repair of malfunctioning products	* Repair, use or sale of second-hand products
* Reduction of disposal of usable things	* Promotion campaign and assistance for garage/garden sale and/or exchange market	* Participation to the garage/garden sale and exchange market

Recovery of Recyclable Materials at Generation Source

Recovery by Residents, Communities, Establishments, and Recycling Industry

Planning Purposes	Actions by MOT and Government Agencies	Actions by Waste Generators, Communities, Establishments and Recycling Industry
* Establishment of a sound resource recycling society	* Campaigns for "Save the Earth" and//or "Establishment of a Sound Resource Recycling Society" and education	* Participation to the challenging strategies of MOT and the Central Government
* Enhancement of recovery of recyclable materials	* Establishment of the recoverry centers and/or the town material recovery facilities and promotion for utilization	* Utilization of the recovery centers for recovery of recyclable materials by exchange of money or goods
* Recovery of Recyclable Materials fron Househollds, Small Commercial, Business and Institutional Waste Generators	*	* Sorting of recyclable materials at source and dispose of separately to the designated waste bins or places
* Recovery of Recyclable Materials from Large Commercial, Business and Institutional Waste Generators	* Establishment of Special Organization or Enterprise or Contractor to recover directly from the generation sources	* Sorting of recyclable materials at source and to store/dispose of recyclables separately to the designated places
* Establishment of the extended producer responsibility	* Encouragement and assistance to the producers	* Fullfilling the responsibilities for recovery of recyclable, recycling, treatment and disposal
* Securing the routes for recovery and trading of recyclable materials	* Encouragement and assistance to the the Recycling Industry	* Establishing a linkage of the recycling groups including the waste pickers, dealers, and recycling factories with MOT

Reuse and Recycling of Recyclable Materials

Reuse and Use of Recyclables by the Recycling Industry

Planning Purposes	Actions by MOT and Government Agencies	Actions by Waste Generators, Communities, Establishments and Recycling Industry
* Enhancement of reuse of second-hand goods and reproduced products	* Encouragement and assistance to the recycling industry	* Acceptance/Use of second-hand products
* Establishment of regular system for recovery, shipping, and recycling of recyclable materials	* Encouragement, assistance, and establishment of linkage among the operators of recyclable materials	* Coordination and sharing of information for dealing with recyclable materials
* Development of technologies for utilization of recyclable materials for reproduction	* Encouragement and assistance to the recycling industry	* Study and investment in the new technologies for production of new goods

Source: JICA Study Team

Figure 12.3.5 Purpose of Each Program and Role of Stakeholders for Implementing 3R Programs

3) Recovery of Recyclable Materials

Resource recovery and recycling can divert significant quantities of recyclable materials that might have been delivered to final disposal. And the most effective way to recover a large amount of recyclable waste is at source rather than from the mixed waste. Recovery at sources will improve the quality of recovered materials and also improve the effectiveness of the program. This method involves the practice of segregating wastes by individual waste generator and placing the segregated materials in the waste containers of 3-bins system that will then be collected separately, or the individual waste generator will bring the recovered recyclable materials to the redemption stations such as Town MRF. Waste transformation is another type of resource recovery and recycling, and this process needs intermediate treatment facilities such as a compost plant, a biogasification plant, and a waste-to-energy plant, which will transform biodegradable, organic, and combustible wastes into compost, biogas, and electricity, respectively. Waste transformation can be started upon completion of construction of the intermediate facilities. In summary, the system for recovery of recyclable materials shall be composed of the following.

- Recovery of paper, plastic, glass and metal by the dry recyclable waste containers of 3-bins system;
- Recovery of biodegradable/organic waste by the wet recyclable waste containers of 3-bins system;
- Recovery of combustible waste by the combustible waste containers as shifted to 4-bins system in future;
- Recovery of paper, plastic, glass and metal at the redemption centers such as Town MRF in return of money or goods; and
- Recovery of paper and plastic from the large waste generators by the recovery operators and/or the ALB Resource Recovery and Recycling Enterprise.

4) Reuse and Recycling Programs

The reuse program will be composed of:

- Reuse of malfunctioning equipment, instrument and electrical appliances after repair;
- Open market for exchange/sale of recovered commodities; and
- Fostering the word and practice the "*Mottainai* (Japanese for "it would be a regrettable waste …") Mindset" to save whatever things are usable.

The recycling program shall be carried out by recycling of recovered resource materials and transformation of organic and combustible wastes by intermediate treatment summarized in the following activities with the actors.

- Recycling of paper, plastic, glass and metal by the factories of recycling industry represented by the existing organization(s) such as the Albania Recycling Association (ARA) and/or the proposed ALB Resource Recovery and Recycling Enterprise;
- Composting of biodegradable waste by the roles of MOT and/or the contractor;
- Biogasification of biodegradable waste by the roles of MOT and/or the contractor; and

- Transformation of combustible waste to energy by the roles of MOT and/or the contractor.

5) Functions of Material Recovery Facilities (MRF)

The basic plan for recovery of resource materials is proposed by two options. Both of the options need segregation of recyclable materials at waste generation source. The first option is to recover segregated paper, plastic, glass and metal at the redemption center represented by Town MRF for exchange with money or goods. The second option is to recover segregated recyclable materials discharged into the waste containers of dry recycle materials under the scheme of 3-bins system. This Central MRF is constructed to have a function of secondary segregation only for dry recyclable materials of the 3-bins system and reject unsuitable materials for final disposal. The Central MRF designed basically with the hand sorting process can offer a relief measure for about 50-100 waste pickers who will lose a source of income after banning waste picking in the landfill area. In conclusion, the Central MRF shall have the following functions.

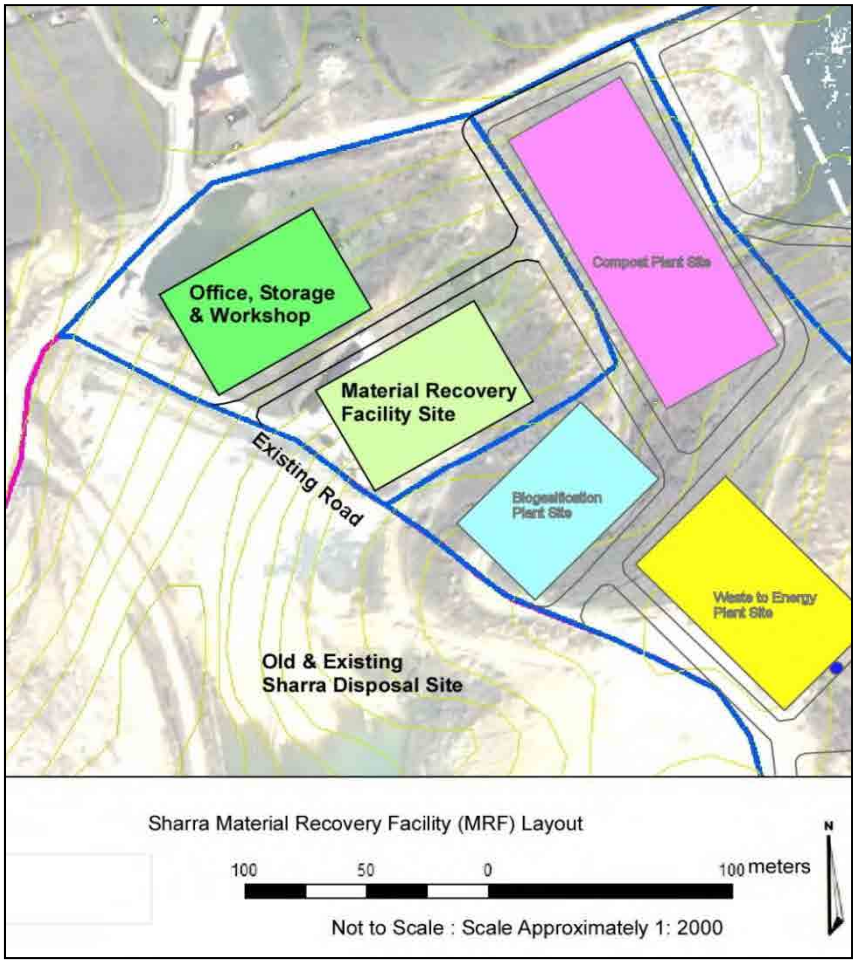
- The Central MRF shall have the main functions for receiving only dry recyclable materials of the 3-bins system for secondary sorting, processing and shipping to the recyclers/factories through opening a home page of stock information.
- The Central MRF is proposed as a distribution center of recyclable materials to be operated and maintained by the organized groups of waste pickers, dealers, recyclers/factories and/or the PPP contractor in linkage with MOT through the Tirana Waste Management Enterprise.

The Central MRF is proposed to site at the adjacent area of existing Sharra disposal site as shown by the layout in Figure 12.3.6.

6) Construction of MRF

The MRF operation shall keep a record of the following:

- Quantity of incoming and sold recyclable materials including paper, plastic, glass and metal;
- Sold amount of recyclable materials;
- Daily manpower record; and
- Accounting of Central MRF operation and maintenance.



Source: JICA Study Team

Figure 12.3.6 Proposed Layout of Central MRF and Office Building

(4) Implementation Schedule of the Project

Table 12.3.4 shows the implementation schedule of the 3R programs. As shown in the table, the Project's commencement year is 2014 in the Urgent and Short-term Period and continues until the end of the Master Plan period.

Table 12.3.4 Implementation Schedule of 3R Programs

Action Plans				Urgent and Short-term Period						Mid-term Period					Long-term Period				
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-2	Waste Minimization Plan (3R Plan)																		
	SWM-2-2	Implementation of 3R Activities																	
		SWM-2-2-1	Promotion of Waste Generation Source Control																
		SWM-2-2-2	Promotion of Waste Discharge Control																
		SWM-2-2-3	Promotion of Recovery of Recyclable Materials																
		SWM-2-2-4	Promotion of Reuse and Recycling of Recyclable Materials																
		SWM-2-2-5	Construction of Central Material Recovery Facilities at Sharra																
			Civil Work																
			Building Work																
			Mechanical & Electrical Works																
			Engineering Design and Construction Supervision																
		SWM-2-2-6	Operation of Central Material Recovery Facilities at Sharra																

Source: JICA Study Team

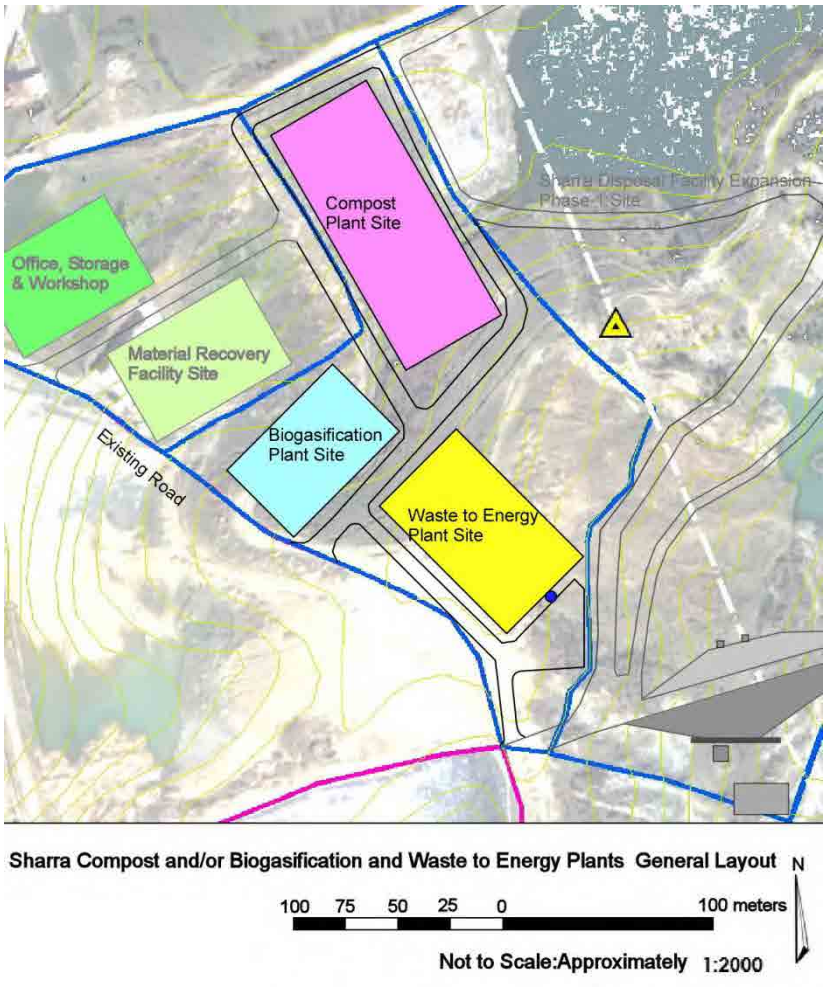
12.3.4 Organic Waste Treatment Project

(1) Objectives of the Project

The Project is aiming at treatment of biodegradable waste through utilizing the potential resources as for biomass. Meanwhile, with implementation of the Project, the target set by the EU Directive to reduce the amount of organic waste brought to landfill by less than 35% in 2016 will be reached.

(2) Project Location or the Covered Area

Home composting and community composting will be carried out initially at the pilot study area along with the piloting programs for separate waste collection, 3R activities, and raising awareness activities, and the good practices models shall be disseminated gradually to the neighboring areas and to the entire area of the MOT. The construction site of organic waste treatment facilities including pilot compost plant, central compost plant, and/or biogasification plant are proposed to allocate at the adjacent area of waste-to-energy plant and the site for Sharra disposal facilities Phase 1 as shown in Figure 12.3.7.



Source: JICA Study Team

Figure 12.3.7 Proposed Construction Site of Compost and/or Biogasification Plants

(3) Components and Contents of the Project

1) Components of the Project

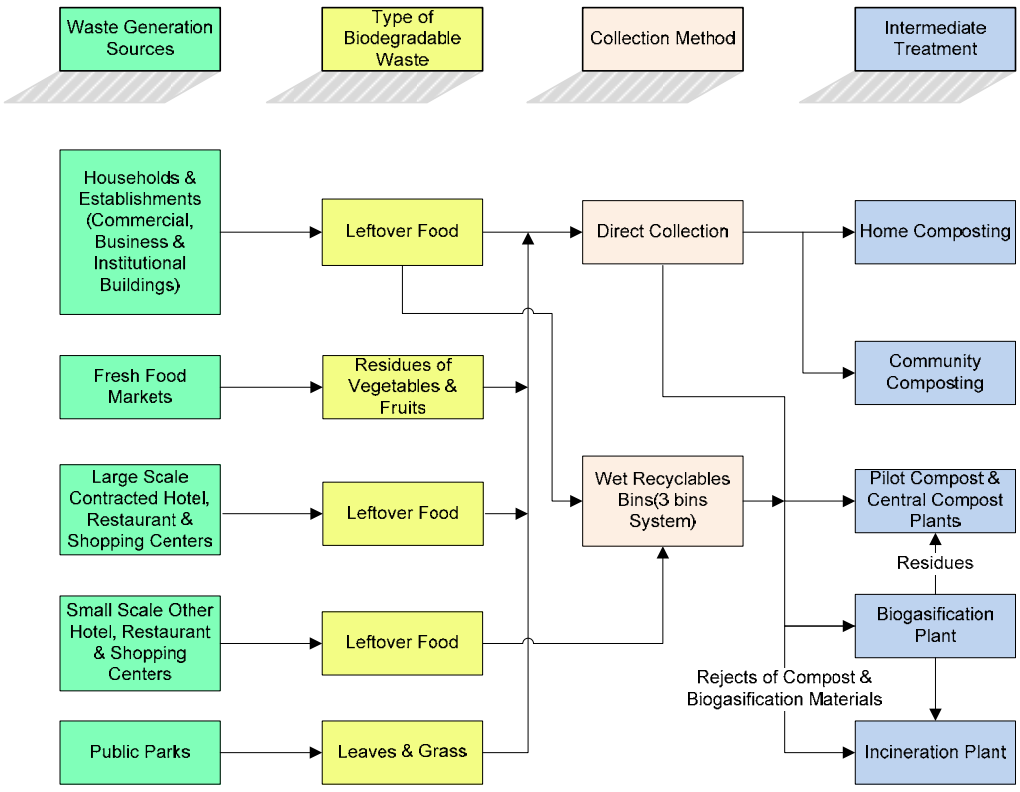
The Project comprises the following subprojects.

- SWM 3-2-1: Organizing Home Composting and Community Composting Groups
- SWM 3-2-2: Implementation of Pilot Project of Home and Community Composting
- SWM 3-2-3: Expansion of Home Composting and Community Composting
- SWM 3-2-4: Selection of Large Waste Generation Source of Biodegradable Waste
- SWM 3-2-5: Construction of Pilot Scale Biogasification and/or Compost Plant
- SWM 3-2-6: Operation of Pilot Scale Biogasification and/or Compost Plant
- SWM 3-2-7: Construction of Central Biogasification and/or Compost Plant
- SWM 3-2-8: Operation and Maintenance of Central Biogasification and/or Compost Plant

The contents of the programs are as outlined under Section 5.9, Intermediate Treatment Plan, and additional descriptions are provided below.

2) Collection Method of Biodegradable Waste

Raw materials for composting and biogasification of biodegradable waste, are collected by two ways: collection directly from the waste generation sources and collection from the wet recyclable waste bins of 3-bins system. That procedural flow for collection is shown in Figure 12.3.8.



Source: JICA Study Team

Figure 12.3.8 Procedural Flow for Collection of Raw Materials for Composting and/or Biogasification

3) Method of Home Composting and Community Composting

There are several alternatives for small-scale composting such as home composting and community composting. As proposed previously, the following methods are considered for the alternative methods to practice in the pilot study areas.

Alternatives of Home Composting

- Plastic Basket Composting
- Soil Bed Composting

Alternatives of Community Composting

- Piling Plastic Basket plus Windrow Type (Piling on the Ground) Composting
- Windrow Type Composting

These alternatives shall be practiced and improved in the course of the pilot study to search for the preferable method for the home composting and for the community composting. After improvement, if necessary, the composting procedures will be disseminated in the neighboring areas.

4) Purpose and Functions of Pilot Scale Compost and/or Biogasification Plants

The pilot scale composting and/or biogasification as waste treatment of one ton per day each shall be constructed for the purposes and the functions stated as follows. The results of the pilot scale plants shall be reflected for the design of central compost and/or biogasification plants.

- The facilities shall have the functions for testing the processes for composting and/or methanization to study the effectiveness of process design and operation.
- Biodegradable waste from the wet recyclable material waste bins is input to the pilot compost plant, or segregated biodegradable waste from the large waste generator(s) may be used for raw material instead.
- Segregated biodegradable waste from the large waste generator(s) is input to the pilot biogasification plant.
- The pilot compost plant will be designed basically for windrow type composting with or without aeration and a series of processes for receiving, pre-treatment, removal of unsuitable waste, pre-fermentation, post-fermentation, maturation, storage, shipping and compost test yard.
- The pilot compost plant shall be designed to the manual process as much as possible to have the possibility to recruit the waste pickers for manpower for the composting operation.
- The pilot biogasification plant will be designed with wet-type or dry-type system with a series of processes for receiving, methanization, heating, desulfurization, storage, hot water supply or gas burning, and other associated facilities.

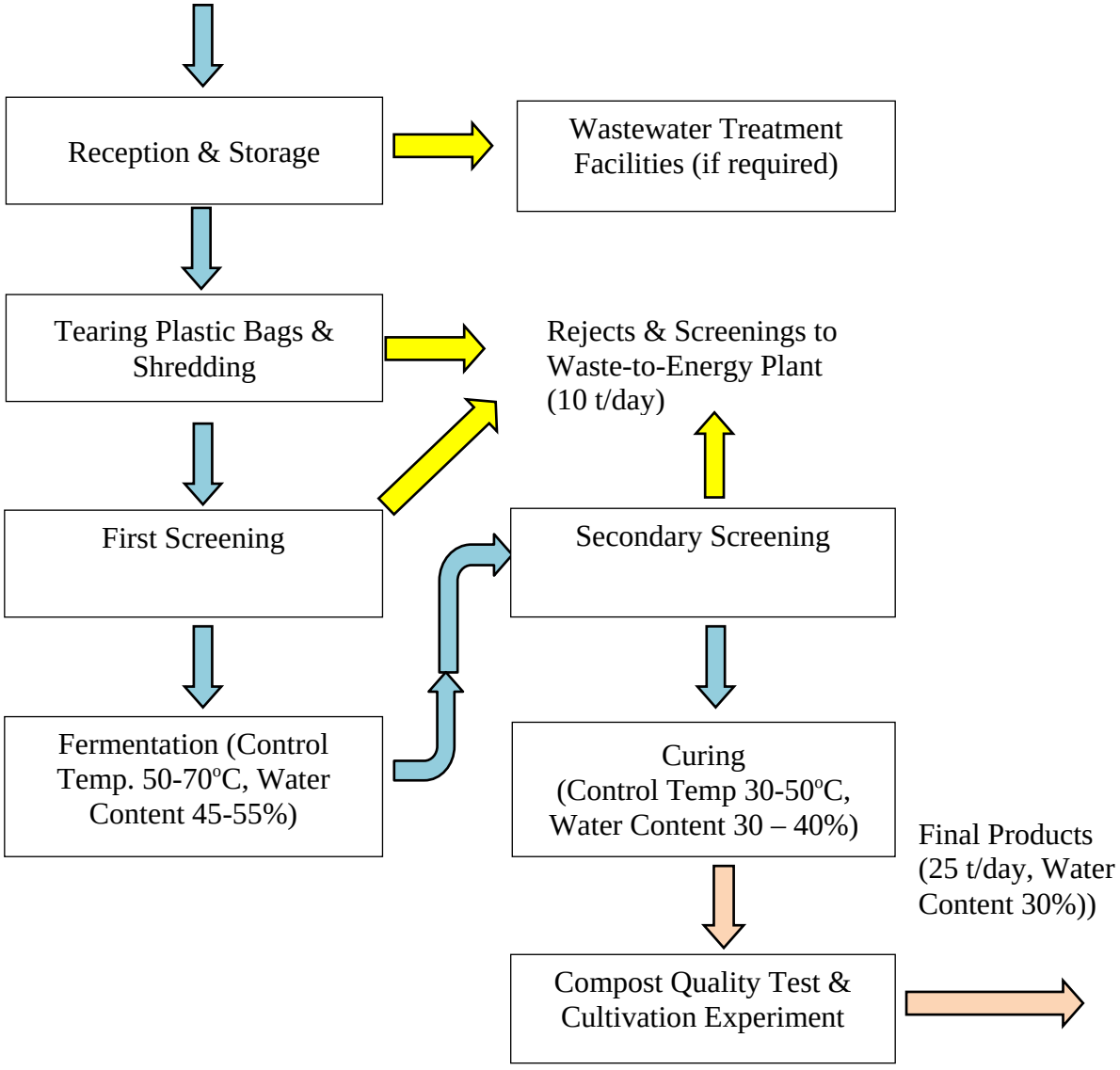
5) Operation Records of Pilot Scale Compost and/or Biogasification Plants

During operation of the pilot scale compost and/or biogasification plants, at least the following items shall be recorded and analyzed to verify the effectiveness of the process design for reference to the design of central compost and/or biogasification plants.

- Daily input and output amount of each plant
- Temperature, moisture content, oxygen concentration, dissolved oxygen, etc. in the composting and biogasification processes
- Compost quality including NPK concentration, pH, EC, C/N, moisture content, bulk density, heavy metals, etc.
- Methane concentration, carbon dioxide concentration, and hydrogen sulfide concentration
- Compost test farm records including compost application amount, plant growth record with and without compost, etc.
- Monthly record of electricity, chemicals, water and manpower input
- Daily and monthly maintenance record of the equipment and the systems; and
- Preparation of quarterly report for the operation status of each plant

6) Central Compost Plant Process Flow

The typical treatment process flow of windrow type composting is shown in Figure 12.3.9. The process flow is based on the treatment capacity of 50 t/day input of segregated biodegradable waste. The treatment flow may be modified with reference to the results of operation of the pilot scale composting experiment.



Source: JICA Study Team

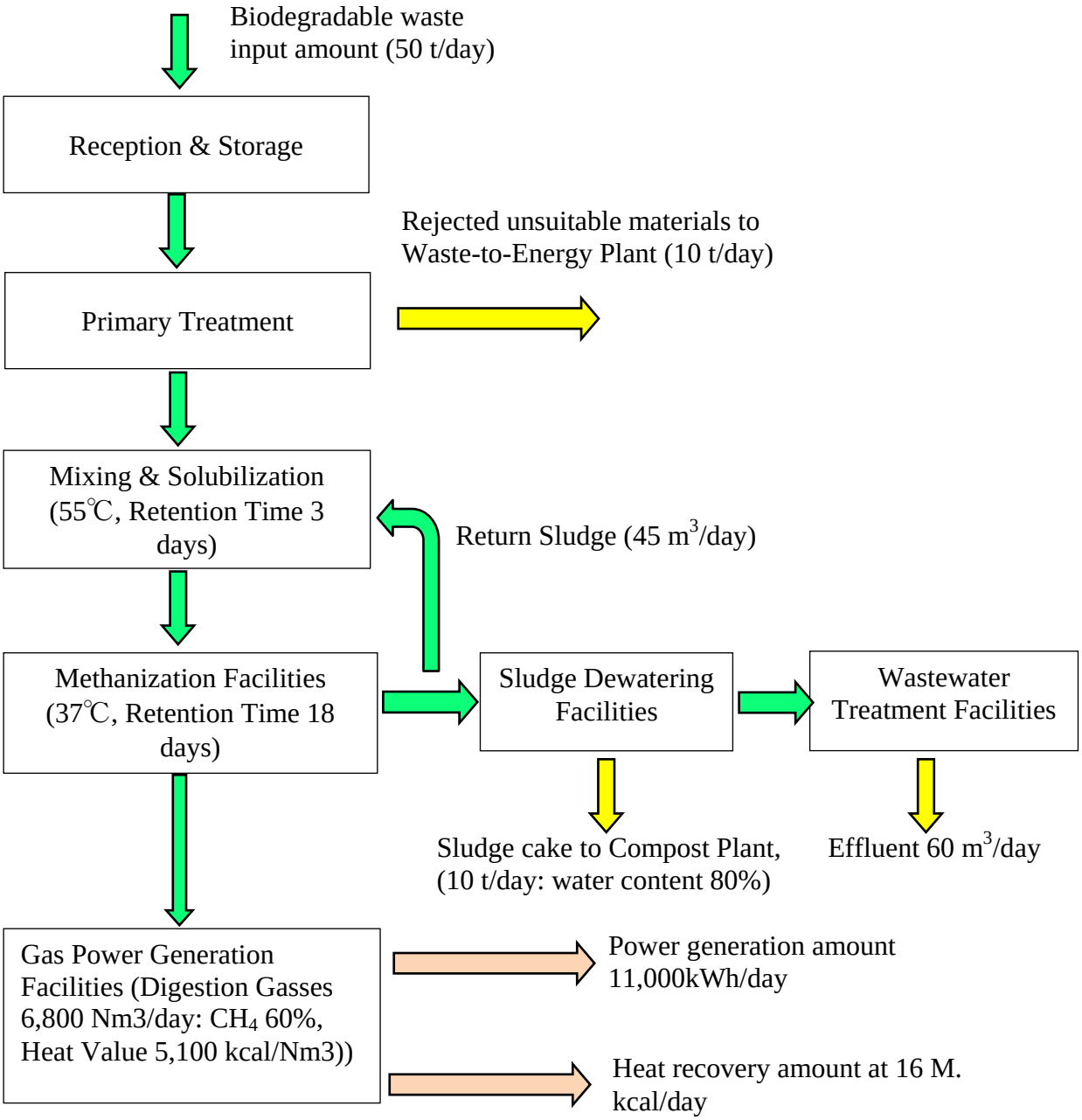
Figure 12.3.9 Proposed Central Compost Plant Process Flow (50 t/day)

7) Central Biogasification Plant Process Flow

The typical treatment process flow of wet type biogasification is shown in Figure 12.3.10. The process flow is based on the treatment capacity of 50 t/day input of segregated biodegradable waste. The treatment flow may be modified with reference to the results of operation of the pilot scale biogasification experiment.

8) Implementation Schedule of the Project

Table 12.3.5 shows the implementation schedule of Organic Waste Treatment Project. As shown in the table, the pilot scale composting is planned to start operation in 2013. The first phase of central plants for composting and biogasification is scheduled to start operation in 2017 and the second phase plants are slated to start operation in 2022.



Source: JICA Study Team

Figure 12.3.10 Proposed Central Biogasification Plant Process Flow (50 t/day)

Table 12.3.5 Implementation Schedule of Organic Waste Treatment Project

Action Plans				Urgent and Short-term Period					Mid-term Period					Long-term Period				
				2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-3	Intermediate Treatment Plan																	
	SWM-3-2	Implementation of Organic Waste Treatment Plan																
		SWM-3-2-1	Organizing Home Composting and Community Composting Groups															
		SWM-3-2-2	Implementation of Pilot Project of Home and Community Composting															
		SWM-3-2-3	Expansion of Home Composting and Community Composting															
		SWM-3-2-4	Selection of Large Waste Generation Source of Biodegradable Waste															
		SWM-3-2-5	Construction of Pilot Scale Compost Plant															
			Civil Work															
			Building Work															
			Mechanical & Electrical Works															
			Engineering Design and Construction Supervision															
		SWM-3-2-6	Operation and Maintenance of Pilot Scale Compost Plant															
		SWM-3-2-7	Construction of Central Compost and/or Biogasification Plant															
			Civil Work															
			Building Work															
			Mechanical & Electrical Works															
			Engineering Design and Construction Supervision															
		SWM-3-2-8	Operation and Maintenance of Central Compost and/or Biogasification Plant															

Source: JICA Study Team

12.3.5 Waste-to-Energy Project

(1) Objectives of the Project

The Project is aiming at reducing the volume for landfill, stabilizing the landfill waste and maximizing the recycling ratio to comply with the final target level of 75% recovery and recycling ratio set in the National Waste Management Plan. Scale of the waste-to-energy plant shall be designed large enough to recover energy in the form of electricity to utilize in the plant site and the extra amount of electricity to sell to the electric company. Meanwhile, the plant scale shall be minimized to reduce investment cost of the Project. The plant scale of 360 t/day will be an appropriate scale for development of the waste-to-energy plant in consideration of the recovery and recycling ratio, recovery amount of electricity, relation with the plant scale of composting and biogasification, and waste quantity and quality of MOT.

(2) Project Location or the Covered Area

The waste-to-energy plant site is proposed to be located between the Sharra waste disposal site Phase 1 and the site of central compost plant and/or biogasification plant as shown in Figure 12.3.11.

(3) Components and Contents of the Project

1) Components of the Project

The Project is composed of the following subprojects.

- SWM 3-4-1: Selection of Construction Site and Procurement
- SWM 3-4-2: Construction of Waste-to-Energy Plant
- SWM 3-4-3: Operation and Maintenance of Waste-to-Energy Plant

The contents of the Programs are as outlined under Section 5.9, Intermediate Treatment Plan, and additional descriptions are provided below.

2) Site Selection and Procurement

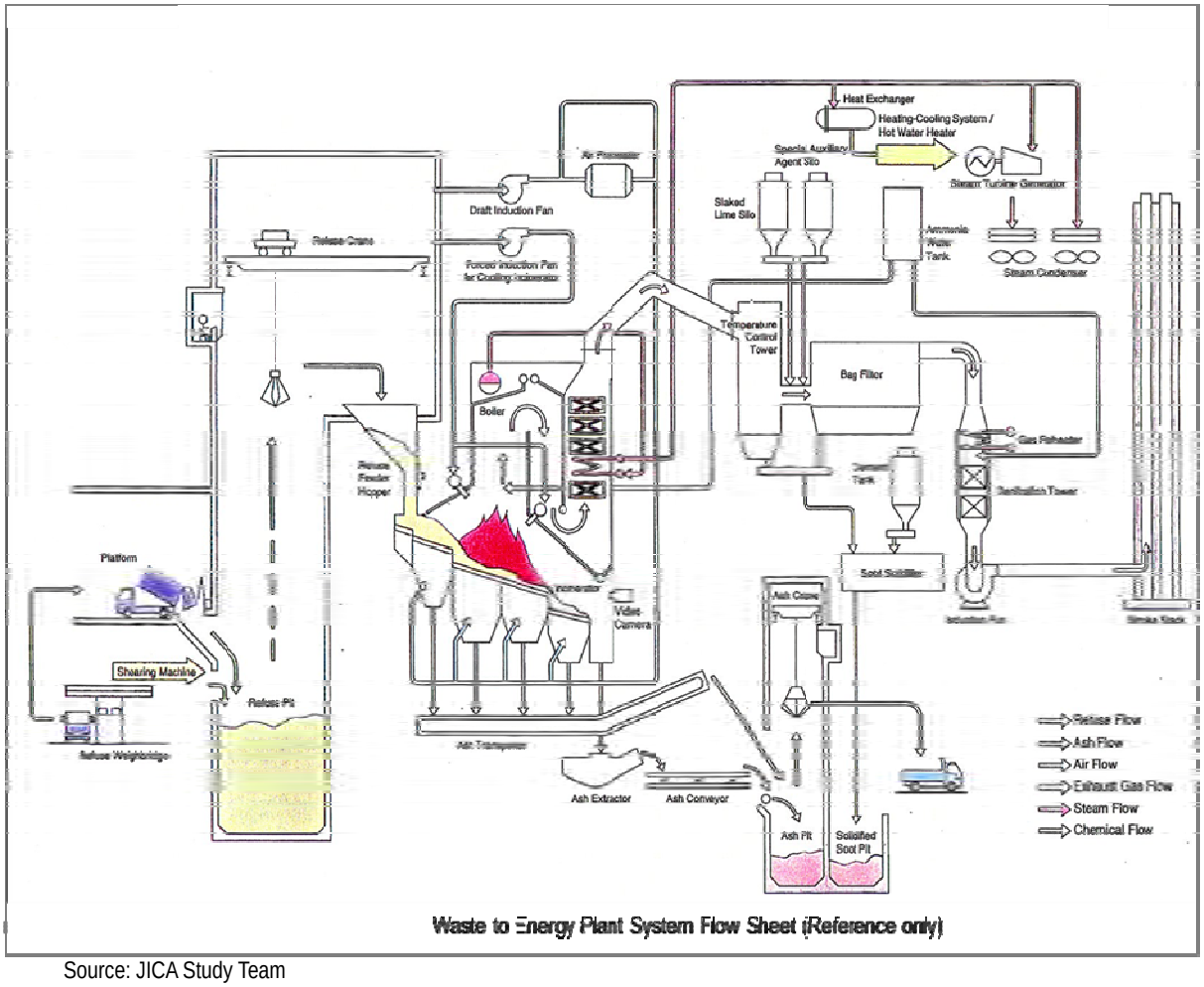
The construction site of intermediate treatment plant is proposed at the area adjacent to the existing Sharra waste disposal site. The site for waste-to-energy plant shall be allocated in relation with the construction site of compost plant, biogasification plant and other facilities. The final site allocation shall be started immediately to verify the appropriateness of the proposed site, in consultation with Vaquarr Commune and the relevant agencies. And so the steps to take include, but are not limited, to the following:

- Implementation of site selection study, preparation of the report, and decision by MOT;
- Consultation with Vaquarr Commune for use of the area adjacent to the Sharra disposal site;
- Signing of minutes of agreement between MOT and Vaquarr Commune for use of the proposed site for development of the comprehensive SWM facilities;
- Designation of the proposed site for the SWM facility site under the land use plan of the MOT urban development plan; and
- Preparation of EIA study, application, and approval by MOEFWA.

All the site selection processes mentioned above shall be completed by the end of 2014 prior to the commencement of construction work from the beginning of 2015.

3) Waste-to-Energy Plant Flow (360 t/day)

A typical process flow of waste-to-energy plant is illustrated in Figure 12.3.11. The process flow is based on the raw waste input capacity of 360 t/day.



Source: JICA Study Team

Figure 12.3.11 Waste-to-Energy Plant Process Flow (360 t/day)

4) Recording of Operation Data and Information

In operation of the waste-to-energy plant, the operators shall record the operation data and information of at least the following items for analysis of the effectiveness of the plant operation and estimation of the treatment cost per ton.

- Daily input waste amount and output amount of ashes
- Daily electricity generation amount
- Daily consumption amount of electricity, chemicals, and water
- Daily manpower input for operation and maintenance
- Daily and/or monthly maintenance record of the equipment and the systems
- Monthly accounting book for the waste-to-energy plant
- Quarterly report for the operation status of the plant

5) Implementation Schedule of the Project

Table 12.3.6 shows the implementation schedule of the Waste-to-Energy Project. The Project shall commence, according to the table, in 2014 in the Urgent and Short-term Period, and the construction work shall be completed by the end of 2018 in order to commence operation from the beginning of 2019.

Table 12.3.6 Implementation Schedule of Waste-to-Energy Project

Action Plans	Urgent and Short-term Period					Mid-term Period					Long-term Period				
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-3 Intermediate Treatment Plan															
SWM-3-4 Implementation of Waste to Energy Plan															
SWM-3-4-1 Selection of Construction Site and Procurement															
SWM-3-4-2 Construction of Waste to Energy Plant															
Civil Work															
Building Work															
Mechanical & Electrical Works															
Engineering Design and Construction Supervision															
SWM-3-4-3 Operation and Maintenance of Waste to Energy Plant															

Source: JICA Study Team

12.3.6 Waste Disposal Facilities Expansion Project

(1) Objectives of the Project

The Project is aiming at securing a modern sanitary landfill after the end-of-life of existing Sharra disposal facilities. The waste disposal facilities shall have enough storage volume to receive the residual waste hauled from MOT and the communes currently disposing waste at the existing Sharra disposal facilities.

(2) Project Location or the Covered Area

The proposed construction site locates at the adjacent area of existing Sharra disposal site and the proposed construction site of intermediate treatment facilities. The adjacent valley area is reserved for development of Sharra waste disposal facilities Phase 2 as shown in Figure 12.3.12.

(3) Components and Contents of the Project

1) Components of the Project

The Project comprises the following subprojects.

- SWM 4-2: Coordination with Regional Waste Disposal Plan
- SWM 4-3: Selection of Construction Site and Procurement
- SWM 4-4-1: Construction of Sanitary Landfill
- SWM 4-4-2: Operation of Sanitary Landfill
- SWM 4-4-3: Closure of Existing Landfill

The contents of the Programs are as outlined under Section 5.10, Final Disposal and Facility Development Plan, and additional descriptions are provided below.

Source: JICA Study Team

Figure 12.3.12 Allocation of Sites for Development of SWM Facilities at Sharra

2) Procedures of Waste Disposal Facilities Expansion Project

The implementing agency shall carry out the Project based on the following steps.

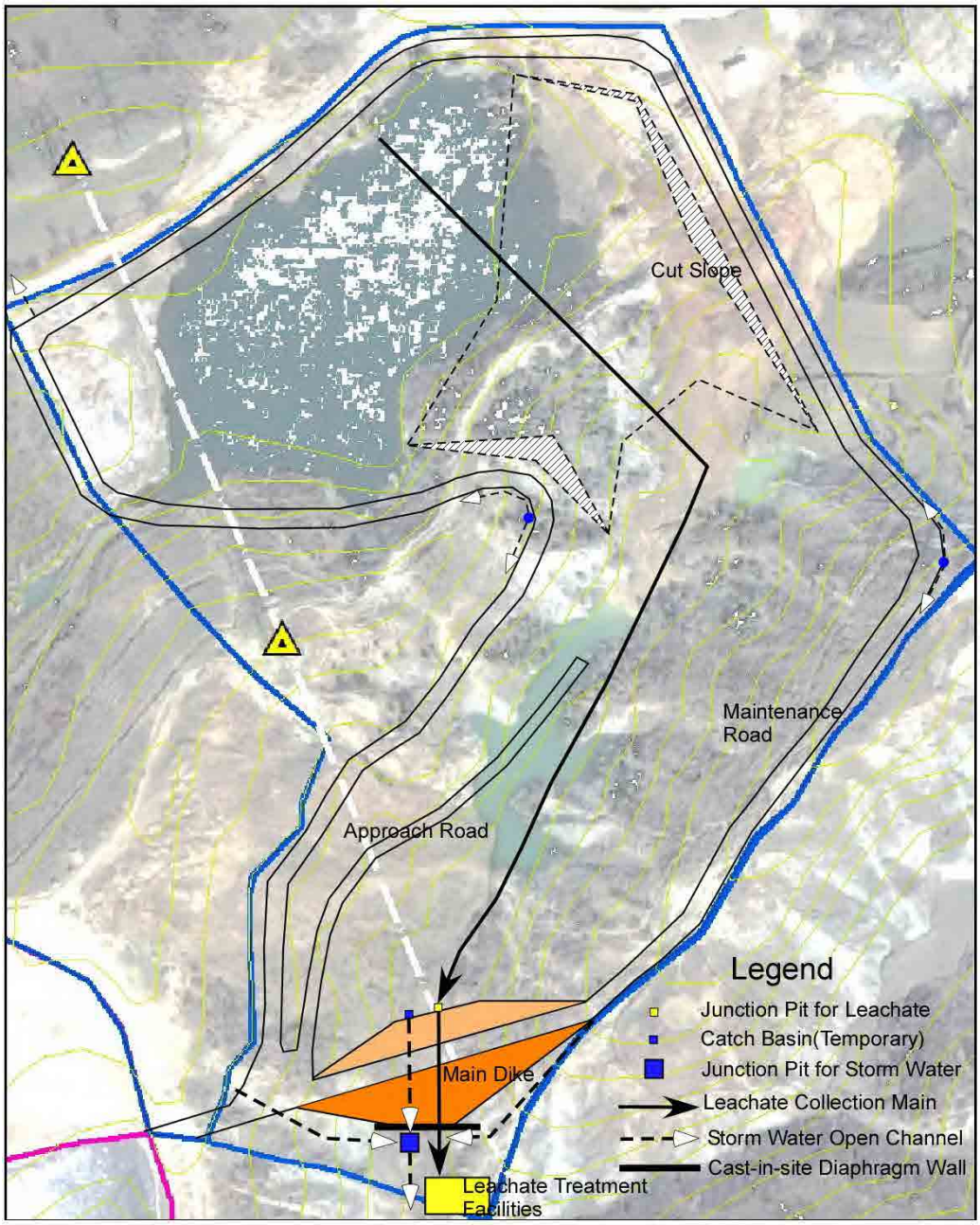
- Determine the method of contract for the construction work and operation
- Selection, approval and contract with an engineering company
- Engineering design of sanitary landfill facilities
- Preparation of tender document
- Preparation of tender by the bidders
- Evaluation of tender, approval, award, and signing of the contract
- Construction work
- Construction supervision
- Inspection of construction work and workmanship
- Handover of the facilities and completion of the construction work
- Commencement of operation and maintenance of sanitary landfill

3) General Layout of Sharra Waste Disposal Facilities Phase 1

The landfill site shall be constructed to have the landfill volume at 2 million cubic meter or more to serve the landfill up to 2027. The major facilities composing the waste disposal facilities are shown in Figure 12.3.13 and listed below.

- Main Dike and Cast-in-site Diaphragm Wall

- Maintenance Road and Approach Road
- Leachate Collection and Treatment Facilities
- Stormwater Drainage Facilities
- Peripheral Fencing
- Landfill Gas Vent
- Others



Source: JICA Study Team

Figure 12.3.13 Sharra Waste Disposal Facilities General Layout Plan (Phase 1)

4) Operation and Maintenance of Landfill

Landfill operation and maintenance shall be carried out based on the operation and maintenance manuals which shall be standardized by at least the following activities.

Basic Conditions for Operation and Maintenance

- Type of acceptable waste
- Waste receiving hours
- Landfill operation hours
- Landfill operation and administration staff
- Landfill equipment and tools
- Source of cover material and temporary stockyard in the waste disposal site

Measuring Incoming Waste Amount

The following items shall be measured by the truck scale and recorded:

- Quantity of incoming wastes by collection area, waste generation sources, type of waste, special waste or domestic hazardous waste by each vehicle; and
- Quantity of cover material delivered to the site and stock in the yard.

All the waste amount and cover materials shall be put in order as a database for analyzing the performance of waste disposal activities and/or the collection and transportation activities.

Management of Landfill Work in General

- Finish all the landfill works within the working hour for the day by spreading, compacting, grading, and covering earth.
- Landfill work shall be carried out in daytime as a basic rule.
- The landfill area shall be installed with marking board to show the filling depth of waste and covering earth as required.
- The landfill area shall not be excavated or filled by waste exceeding the pre-determined landfill height unless planned prior to the landfill operation.
- The progress of landfill work shall be recorded regularly by plans, drawings, and topographic survey and/or by photos. Taking photos every three months from the regular monitoring spots will be effective for recording the progress of landfill work and the landfill rate to estimate the remaining landfill volume and the lifespan as well.

Landfill Operation

The existing Sharra landfill site forms a valley wall and the landfill work is carried out from the upper portion of the landfill area. It may be continued to follow the current sequence of landfill work but the sequence of landfill work at new landfill site may be suggested to start from the lower portion or the downstream side of the landfill area. The exposed surface of leachate collection facilities within the designated landfill area shall be covered with approximately one meter high waste layer to avoid damage by the traffic of landfill machines.

Unloading area of solid waste shall be limited to a smaller area but with enough space for accommodating other vehicle traffic. The unloading area for the day shall be determined and directed by the supervisor. Unloading of waste shall be normally made at the toe of the fill in consideration of movement and working efficiency of the landfill machines.

Unloaded waste shall be spread, leveled, and compacted within the landfill area for the day in accordance with the landfill plan.

In order to avoid loose layer, minimizing voids and maximizing compaction, the waste depth of 30 cm per layer of spreading/leveling will be effective. The loose layer shall not exceed a depth approximately 0.60 m or two feet before compaction. Spreading and compacting waste shall be accomplished as rapidly as practicable to finish the landfill work within the working hour.

Landfill Operation Records and Reports

The landfill operation shall include recording and reporting of the following items.

- Daily weight or volume and type of incoming residual waste, special waste and acceptable waste carried-in by the individual collection and private operators.
- Daily or weekly or monthly logbook or files for operation of landfill machine and equipment and waste amount, volume and area of landfill and cover soil.
- Daily logbook or file of site conditions including damages by fire, explosion, landslide, earthquake, flood, typhoon, and other calamities.

All the landfill operation records shall be summarized and incorporated as a part of SWM Annual Report and for the reports required by the authorities concerned.

Inspection Plan

All facilities and equipment of the waste disposal facilities shall be regularly checked and inspected to provide the information for the preventive measures and/or the repair work for maintaining the function of each facility and/or equipment. Weekly or monthly inspection shall be carried out as a regular inspection by the standard check list. The major facilities and equipment for the regular inspection shall include the following:

- Solid waste retaining facilities (dike and PE liner)
- Storm water drainage facilities
- Leachate collection facilities
- Leachate pond and treatment facilities
- Access road and approach road
- Truck scale (weigh bridge)
- Landfill gas vent and/or collection pipelines
- Other appurtenant facilities

In addition to the regular inspection, emergency inspection shall be carried out after the occurrence of heavy rain, flood, storm, fire, explosion, landslide, earthquake, and other calamities.

Monitoring of Water Quality

Water quality of leachate, monitoring well and surface water shall be monitored periodically to analyze the potential impact to the water receiving body. The water quality monitoring data shall be evaluated in accordance with the applicable effluent standard and/or the environmental water quality standard. The water quality data of leachate can also be used to evaluate the state of stabilization of the landfill. Water quality monitoring shall be carried out at the regular monitoring points and in accordance with the water quality parameters acceptable to the authorities concerned.

Monitoring of Other Elements for Safe Working and Environmental Quality

Landfill gases shall be monitored at the landfill working area, peripheral area of waste disposal site, the outlet of landfill gas vents, and at the places as required. Monitoring of landfill gases will be carried out monthly for combustible gases represented by methane gas (CH4). Special monitoring on a calm day after the rain may be required. As the methane gas concentration reaches 1.5%, the operators and the works shall be evacuated from the site and all fires shall be extinguished. Operation may be started again after ensuring the safety level of methane gas concentration. In addition, the daily observation of offensive odor by smelling is important for the operators to pay attention for implementing the landfill work. Monitoring of other kinds of gases such as hydrosulfide (H2S) and ammonia (NH3) will be conducted as required.

(4) Implementation Schedule of the Project

Table 12.3.7 shows the implementation schedule of Waste Disposal Facilities Expansion Project. The Project shall be commenced in 2013, finish construction by the end of 2016 and start operation at the new landfill site in 2017. The existing Sharra landfill site shall be closed in 2017 upon commencement of landfill at the new site.

Table 12.3.7 Implementation Schedule of Waste Disposal Facilities Expansion Project

Action Plans	Urgent and Short-term Period					Mid-term Period					Long-term Period				
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-4 Waste Disposal Plan															
SWM-4-2 Coordination with Regional Waste Disposal Plan	■	■												■	■
SWM-4-3 Selection of Construction Site and Procurement		■	■												■
SWM-4-4 Implementation of Waste Disposal Project															
SWM-4-4-1 Construction of Sanitary Landfill															
Civil Work			■	■	■										
Building Work			■	■	■										
Mechanical & Electrical Works				■	■										
Engineering Design and Construction Supervision		■	■	■	■										
SWM-4-4-2 Operation and Maintenance of Sanitary Landfill					■	■	■	■	■	■	■	■	■	■	■
SWM-4-4-3 Closure of Existing Landfill															
Civil Work					■	■									

Source: JICA Study Team

12.3.7 Organizational Strengthening

(1) Objectives of the Project

The Project is aiming at organizing a project management unit called by the Project Task Team to take initiatives for implementing the plans and projects formulated in the Tirana Municipality ISWM Plan. The Project Task Team shall have the primary roles and responsibilities to formulate and update the ISWM Plan, implement the priority projects, appropriate the project cost, procure the required resources, coordinate with the relevant authorities/parties, and other required functions for achieving the Tirana Municipality ISWM Plan as intended and scheduled.

(2) Project Location or the Covered Area

The members of the Project Task Team shall be appointed basically from the staff of MOT and the specialists may be recruited from external resources. The Project Task Team engages in the SWM plans and project in the MOT area and in the regional and national projects where MOT participates.

(3) Components and Contents of the Project

1) Components of the Project

The Project is composed of the following subprojects.

- SWM 5-1-1: Recruiting the Project Task Team Staff
- SWM 5-1-2: Orientation of Action Plans of ISWM Plan, Modification and Finalization
- SWM 5-1-3: Preparation of Implementation Plan of the Priority Projects
- SWM 5-1-4: Budgeting for Implementation of the Priority Projects

The contents of the Programs are as outlined under Section 5.11, Institutional Capacity Development Plan, and additional descriptions are provided below.

2) Main Tasks of the Project Task Team

The Project Task Team shall undertake mainly the following tasks:

- Formulation, updating and revision of Tirana Municipality ISWM Plan;
- Preparation of implementation plans of the proposed action plans and programs;
- Estimation of cost of the action plans and programs and request for budgeting;
- Documentation for obtaining the official approval for implementing the action plans and programs;
- Organize and propose the project management unit(s) for each project/program;
- Supervising the activities of action plans and programs;
- Evaluation of performance and target level of each action plan and program; and
- Preparation of annual report of SWM activities.

3) Budgeting for the Priority Projects

The Project Task Team shall start sounding the financial sources during preparation of the implementation plan of the priority projects and apply financing immediately after completion of the document including the implementation plan, EIA study report, feasibility study report and the application form for the target project. The financial source of the priority projects may be selected from the following options.

- Central government subsidy
- MOT annual budget
- Project loan from the international aid agency or agencies
- Private sector through PPP scheme
- Combination of above financial sources

4) Implementation Schedule of the Project

Table 12.3.8 shows the implementation schedule of Organizational Strengthening in the field of solid waste activities of MOT. The Project Task Team shall be organized in the beginning of 2013 to promote implementation of the priority projects in accordance with the implementation time schedule. The institutional strengthening shall be carried out continuously through the master plan period.

Table 12.3.8 Implementation Schedule of Organizational Strengthening

Action Plans			Urgent and Short-term Period					Mid-term Period					Long-term Period				
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-5	Institutional Capacity Development Plan																
SWM-5-1	Establishment of Project Task Team and Implementation of Priority Projects																
SWM-5-1-1	Recruiting the Task Team Staff																
SWM-5-1-2	Orientation of Action Plans of ISWM Plan, Modification and Finalization																
SWM-5-1-3	Preparation of Implementation Plan of the Priority Projects																
SWM-5-1-4	Budgeting for Implementation of the Priority Projects																

Source: JICA Study Team

12.3.8 Monitoring and Evaluation Strengthening

(1) Objectives of the Project

The Project is aiming at strengthening the activities and capabilities for monitoring, reporting and regular evaluation of the SWM activities through collecting, accumulating and analyzing the baseline data related with SWM activities, including the public awareness data and information such as the income level, willingness to pay, opinions, complaints and/or requests to MOT of the waste generators. Waste generation amount and waste composition shall be carried out to collect and analyze the characteristics of domestic waste, and commercial, business, and institutional waste. In addition, the reporting system shall be regulated for preparation of monthly and annual report describing outcomes of the activities in the month/year together with the analysis of achievement level of the activities.

(2) Project Location or the Covered Area

The Project shall be carried out for the staff of MOT in charge of SWM services especially the members of the Project Task Team.

(3) Components and Contents of the Project

1) Components of the Project

The Project is composed of the following subprojects.

- SWM 5-5-1: Preparation of Monthly and Annual Report
- SWM 5-5-2: Public Awareness/Opinion Survey on SWM Activities
- SWM 5-5-3: Domestic Waste Amount and Composition Survey
- SWM 5-5-4: Commercial/Business Waste Amount and Composition Survey

The contents of the Programs are as outlined under Section 5.11, Institutional Capacity Development Plan, and additional descriptions are provided below.

2) Public Awareness/Opinion Survey

The Project Task Team in collaboration with the relevant agencies carry out the public awareness survey to the domestic, commercial, business and institutional waste generators.

The survey items for the domestic waste generators shall cover, but not be limited, to the following given below. The survey for the commercial, business and institutional waste generators shall be carried out with the items similar to the domestic waste generator survey. The public awareness/opinion survey shall be carried out in collaboration with the solid waste amount and composition survey.

- Name/address/telephone No.
- Nunber of family members/dwellers
- Type of house and area size
- Income/expenditure per month
- Complaints/opinions/requests about the SWM services
- Willingness to pay,

3) Outcome of Waste Amount and Composition Survey

The outcome of the survey shall be summarized by the items similar to the analysis described in the WACS Survey Report, for example, as shown below.

- Waste generation amount per family, per capita per income group and/or per collection service area for domestic waste
- Waste composition per income group and/or collection service area for domestic waste
- Waste generation amount per place per type of establishment and/or per square meter for commercial, business and institutional waste
- Waste composition per type of establishment per square meter for commercial, business and institutional waste
- Ratio of recyclable material per income group, per collection area and per type of establishment
- Moisture content, bulk density and computed low calorific value of waste per income group, per collection area and per type of establishment
- Historical changes of waste characteristics

4) Implementation schedule of the Project

Table 12.3.9 shows the implementation schedule of Monitoring and Evaluation Strengthening. The tasks, according to the schedule, shall be started immediately in 2013. The monthly and annual reports shall be prepared continuously from 2013. Also, the first surveys shall be carried out in the last half of 2013 and at least once in five years and as required.

Table 12.3.9 Implementation Schedule of Monitoring and Evaluation Strengthening

Action Plans			Urgent and Short-term Period					Mid-term Period					Long-term Period				
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-5	Institutional Capacity Development Plan																
	SWM-5-5	Survey of Baseline Data for Performance Indicators and Reporting															
		SWM-5-5-1 Preparation of Monthly and Annual Report															
		SWM-5-5-2 Public Awareness/Opinion Survey on SWM Activities															
		SWM-5-5-3 Domestic Waste Amount and Composition Survey															
		SWM-5-5-4 Commercial/Business Waste Amount and Composition Survey															

Source: JICA Study Team

12.3.9 Financial Strengthening

(1) Objectives of the Project

The Project is aiming at establishing a vital SWM financial capacity through a series of tasks for minimizing the cost, allocating sufficient budget, maximizing recovery of waste fee, setting a fair waste tariff, and practicing a transparent and independent accounting system.

(2) Project Location or the Covered Area

The Project is implemented for the staff related to financial management, the Project Task Team, and the managerial staff of MOT.

(3) Components and Contents of the Project

1) Components of the Project

The Project is composed of the following subprojects.

- SWM 6-3-1: Preparation of Separate SWM Account
- SWM 6-3-2: Implementation and Establishment of Sound Waste Tariff System
- SWM 6-3-3: Implementation and Establishment of Separate SWM Account

The contents of the Programs are as outlined under Section 5.12, Financial Strengthening Plan, and additional descriptions are provided below.

2) Solid Waste Management Account

In order to establish a vital and accountable financial system, the SWM accounting shall be performed based on the items including, but not limited to, the following:

- Cost calculation and analysis for waste collection, intermediate treatment, and waste disposal activities;
- Establishment of a system similar to business accounting including the preparation of balance sheet, cashflow statement, profit and loss statement; and
- Disclosure of financial status to the public.

3) Implementation Schedule of the Project

Table 12.3.10 shows the implementation schedule of Financial Strengthening Programs. According to the schedule, the Programs shall be commenced immediately in 2013 and carried out continuously through the master plan period.

Table 12.3.10 Implementation Schedule of Financial Strengthening

Action Plans			Urgent and Short-term Period					Mid-term Period					Long-term Period				
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-6	Financial Strengthening Plan																
	SWM-6-3	Implementation of Financial Strengthening Plan															
		SWM-6-3-1	Preparation of Separate SWM Account														
		SWM-6-3-2	Preparation and Establishment of Sound Waste Tariff System														
		SWM-6-3-3	Implementation and Establishment of Sound SWM Account														

Source: JICA Study Team

12.3.10 Raising Public Awareness Program

(1) Objectives of the Project

The Project is aiming at raising awareness of all the stakeholders for conducting effective SWM activities, environmental conservation, establishing a sound resource recycling society, etc. that can be achievable with fulfilling the responsibility of each waste generator or the stakeholder.

(2) Project Location or the Covered Area

The Programs are targeted to carry out for the waste generators and the stakeholders in the entire area of MOT and also disseminate the information across the country.

(3) Components and Contents of the Project

1) Components of the Project

The Project comprises the following subprojects.

- SWM 7-2-1: Implementation of Public Information Plan
- SWM 7-2-2: Implementation of School Education Plan
- SWM 7-2-3: Implementation of Non-formal Education Plan
- SWM 7-2-4: Implementation of Community Involvement Plan

The contents of the Programs are as outlined under Section, 5.13 Raising Public Awareness Plan, and additional descriptions are provided below.

2) Contents of Public Relation

The contents of the public relation program shall include, but not be limited, to the following items or concepts:

- Outline of Tirana Municipality ISWM Plan presenting four technical approaches and three institutional and financial approaches to cope with the increasing municipal waste.
- Properly conduct SWM, reduction of wastes, segregation of waste at sources, discharging waste to the designated waste bins, home composting, community composting, etc. are not only the responsibility of the local governments and the central government but also the responsibility of the residents, commercial shops, shopping centers, restaurants, hotels, cafe & bars, schools, offices, and other stakeholders to fulfill their roles.
- Information-education-communication (IEC) campaign is carried out on waste generation amount reduction, segregation of recyclable materials at sources, discharge method of recyclable materials and residual waste to the 3-bins system, use of Town MRF for recyclable materials, separate collection, home composting and community composting, reuse, repair, recycling, etc. to achieve the action plans of Tirana Municipality ISWM Plan with explanation of the meaning of the activities as a public service.
- Proper SWM through the proposed action plans can reduce the handling amount of waste collection and final waste disposal amount.
- Waste generation is a consequence of people's everyday life and consuming the finite natural resources. Popularizing a spiritual word "Mottainai Mindset, to

save whatever usable things" shall set a new fashion in the society to establish a sound resource recycling society (SRRS) in Albania through the SWM activities.

- Illegal dumping of waste causes unsanitary conditions in the surrounding area, and dumping of waste causes water contamination and soil contamination in the downstream section of the streams. Illegal dumping of waste into the open space and the streams not only causes environmental degradation and unsanitary conditions but also disgrace to the citizens and the capital city of Albania.

3) Contents of School Education

The curriculum for school education or formal education shall include, but not be limited, to the items listed below.

- Influence of discarded waste to the environment and public health & sanitation
- Status of current SWM activities
- Outline of action plans and programs of the Tirana Municipality ISWM Plan
- Role and responsibilities of the residents and the stakeholders for implementing the Tirana Municipality ISWM Plan
- Home room to discuss about cooperation of the waste generators to the SWM activities
- Demonstration of waste amount reduction and segregation of recyclable materials at school
- Site visit for waste collection, intermediate treatment and waste disposal
- Composition or writing on SWM and involvement of children

4) Contents of Public Education

In order to commence public education plan or non-formal education in 2015, the following education materials and programs related with 3R activities shall be prepared by the Project Task Team supported by the supervising Ministries for the different types of establishments. The public education shall include, but not be limited, to the following items:

- Status of current SWM activities,
- Outline of action plans and programs of the Tirana Municipality ISWM Plan,
- Roles and responsibilities of each group of waste generator to follow the requirements in the laws, rules, and regulations,
- Site visit for waste collection, intermediate treatment and waste disposal,
- Pilot project(s) for demonstrating waste amount reduction, segregation of recyclable materials at workplace, and recycling, and
- Evaluation of 3R activities by each type of waste generator.

5) Contents of Community Involvement

The community involvement plan comprises the programs to cope with the current problem of waste collection, and trial for the new activities related with separate collection and 3R activities shall include, but not be limited, to the following activities:

- Status of current SWM activities,

- Outline of action plans and programs of the Tirana Municipality ISWM Plan,
- Roles and responsibilities of the residents to cooperate for the action plans and programs implemented by MOT,
- Site visit for waste collection, intermediate treatment, and waste disposal,
- Pilot project for demonstrating waste amount reduction, segregation of recyclable materials at sources, and recovery of recyclable materials through the 3-bin system and Town MRF,
- Pilot project for demonstration of home composting and community composting, and
- Periodic community meetings to cope with the problems faced and improve the pilot project.

(4) Implementation Schedule of the Project

Table 12.3.11 shows the implementation schedule of the Raising Public Awareness Programs. As shown in the table, the Programs shall be commenced in 2013 for public relation plan. The education programs and community involvement shall be commenced from the beginning of 2014. All the programs shall be continued through the master plan period up to the year 2017.

Table 12.3.11 Implementation Schedule of Raising Public Awareness Programs

Action Plans			Urgent and Short-term Period					Mid-term Period					Long-term Period				
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-7	Raising Public Awareness Plan																
	SWM-7-2	Implementation of Raising Public Awareness Plan															
	SWM-7-2-1	Implementation of Public Relation Plan															
	SWM-7-2-2	Implementation of School Education Plan															
	SWM-7-2-3	Implementation of Non-formal Education Plan															
	SWM-7-2-4	Implementation of Community Involvement Plan															

Source: JICA Study Team

12.3.11 Cost of Priority Projects

(1) Annual Cost

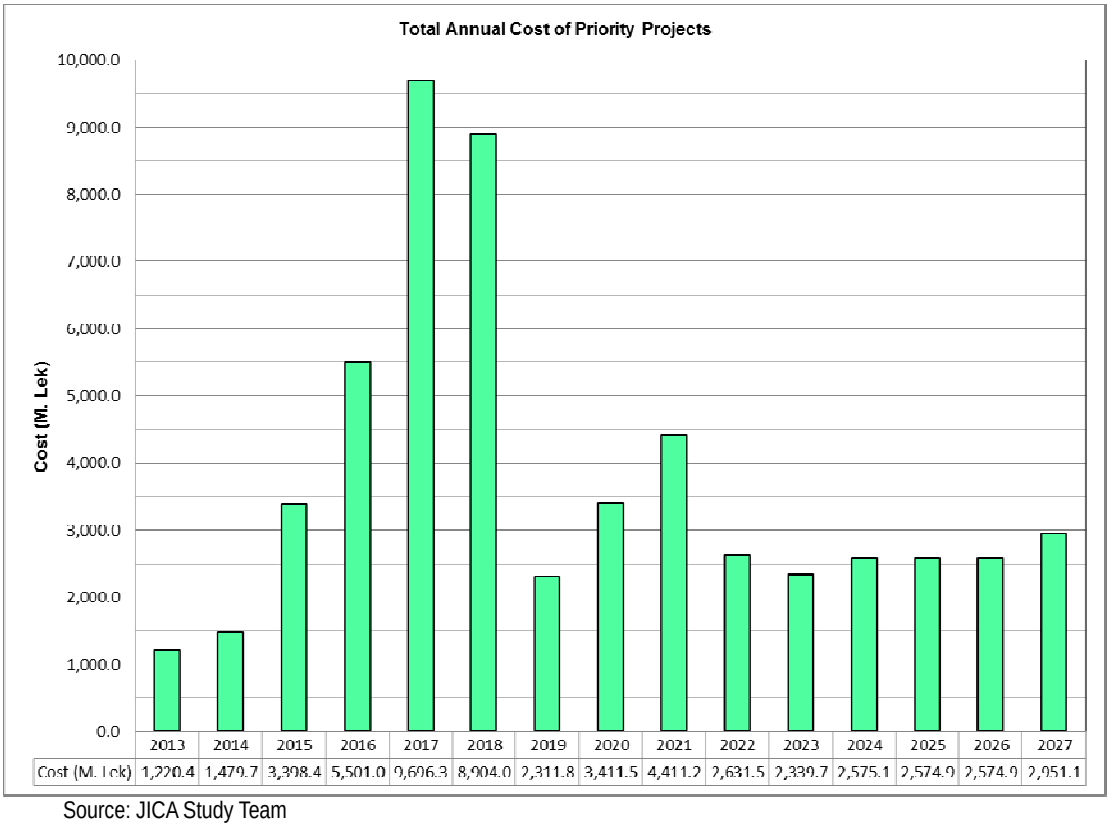
Table 12.3.12 shows the annual cost estimated for investment, operation and maintenance costs of the respective priority projects.

Table 12.3.12 Annual Investment and O&M Costs of Priority Projects

Action Plans	Funding sources		Primary Implementing Body	Urgent and Short-term Period					Mid-term Period					Long-term Period				
	MOT	External/ Loan		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SWM-1 Waste Collection and Transportation Plan																		
SWM-1-3 Implementation of Illegal Dump Site Clean-up Project through Contract	150.0		Contract		50.0	50.0	50.0											
SWM-1-5 Operation of Separate Collection by 3-bins System	21,764.4		Contract	1,100.0	1,257.1	1,257.1	1,257.1	1,257.1	1,257.1	1,492.9	1,492.9	1,492.9	1,492.9	1,492.9	1,728.6	1,728.6	1,728.6	1,728.6
Procurement of Waste Containers	935.0			110.0				242.0					291.5					291.5
SWM-2 Waste Minimization Plan (3R Plan)																		
SWM-2-2-5 Construction of Central Material Recovery Facilities at Sharra																		
Civil Work		20.0	Contract			10.0	10.0											
Building Work		34.6	Contract			17.3	17.3											
Mechanical & Electrical Works		20.0	Contract				20.0											
Engineering (Design 5% :Supervision 5%)		7.5	Contract		2.5	2.5	2.5											
SWM-2-2-6 Operation of Central Material Recovery Facilities at Sharra																		
Operation Cost (Personnel Cost)	112.2		Contract					10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Operation Cost (Electricity & Water)	3.3		Contract					0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Maintenance Cost	7.8		Contract					0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
SWM-3 Intermediate Treatment Plan																		
SWM-3-2 Implementation of Organic Waste Treatment Plan																		
SWM-3-2-1 Organizing Home Composting and Community Composting Groups	MOT																	
SWM-3-2-2 Implementation of Pilot Project of Home and Community Composting	7.2		DWM/MOT	2.4	2.4	2.4												
SWM-3-2-3 Expansion of Home Composting and Community Composting	156.0		DWM/MOT			12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
SWM-3-2-5 Construction of Pilot Scale Composting Facilities																		
Civil Work		10.0	Contract	5.0	5.0													
Building Work		2.8	Contract	1.4	1.4													
Mechanical & Electrical Works		20.0	Contract		20.0													
Engineering (Design 5% :Supervision 5%)		3.2	Contract	1.6	1.6													
SWM-3-2-6 Operation and Maintenance of Pilot Scale Composting Facilities																		
Operation Cost (Personnel Cost)	48.6		Contract		1.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Operation Cost (Water & Chemicals)	7.0		Contract		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maintenance Cost	9.8		Contract		0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
SWM-3-2-7 Construction of Central Biogasification and Composting Facilities																		
Civil Work		400.0	Contract			100.0	100.0				100.0	100.0						
Building Work		11.6	Contract			5.8	5.8				0.0	0.0						
Mechanical & Electrical Works		6,000.0	Contract			1,000.0	2,000.0				1,000.0	2,000.0						
Engineering (Design 5% :Supervision 5%)		641.2	Contract		106.9	106.9	106.9			106.9	106.9	106.9						
SWM-3-2-8 Operation and Maintenance of Central Biogasification and Compost Plant																		
Operation Cost (Personnel Cost)	144		Contract					10.3	10.3	10.3	10.3	10.3	15.4	15.4	15.4	15.4	15.4	15.4
Operation Cost (Water & Chemicals)	658		Contract					38.7	38.7	38.7	38.7	38.7	77.4	77.4	77.4	77.4	77.4	77.4
Maintenance Cost	1,565		Contract					92.1	92.1	92.1	92.1	92.1	184.1	184.1	184.1	184.1	184.1	184.1
SWM-3-4-2 Construction of Waste to Energy Plant																		
Civil Work		2,500.0	Contract				1,000.0	1,000.0	500.0									
Building Work		480.0	Contract					240.0	240.0									
Mechanical & Electrical Works		12,600.0	Contract					6,300.0	6,300.0									
Engineering (Design 5% :Supervision 5%)		1,558.0	Contract			389.5	389.5	389.5	389.5									
SWM-3-4-3 Operation and Maintenance of Waste to Energy Plant																		
Operation Cost (Personnel Cost)	149.4		Contract							16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
Operation Cost (Chemical)	356.4		Contract							39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6
Operation Cost (Fuel)	270.0									30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Operation Cost (Water)	7.2									0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Maintenance Cost	3,670.2		Contract							407.8	407.8	407.8	407.8	407.8	407.8	407.8	407.8	407.8
SWM-4 Waste Disposal Plan																		
SWM-4-4 Implementation of Waste Disposal Project																		
SWM-4-4-1 Construction of Sanitary Landfill																		
Civil Work		820.0	Contract			410.0	410.0											
Building Work		0.0	Contract			0.0	0.0											
Mechanical & Electrical Works		170.0	Contract				85.0											85.0
Engineering (Design 5% :Supervision 5%)		90.5	Contract		30.2	30.2	30.2											
SWM-4-4-2 Operation and Maintenance of Sanitary Landfill																		
Operation Cost (Personnel Cost)	81.4		Contract					7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Operation Cost (Fuel Cost)	253.0		Contract					23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Operation Cost (Cover Soil)	39.8		Contract					4.9	4.6	4.4	4.1	3.8	3.6	3.3	3.0	2.8	2.8	2.5
Maintenance Cost	146.3		Contract					13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
SWM-4-4-3 Closure of Existing Landfill																		
Civil Work	50.0		DWM/MOT					50.0										
Total Cost	30,591.8	25,389.3		1,220.4	1,479.7	3,398.4	5,501.0	9,696.3	8,904.0	2,311.8	3,411.5	4,411.2	2,631.5	2,339.7	2,575.1	2,574.9	2,574.9	2,951.1
Summary-1 Summary of Priority Project Cost																		
SWM 1-3 Illegal Dump Site Clean-up Project	150.0	0.0	150.0	0.0	50.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SWM 1-5 Waste Collection and Transportation Service	22,699.4	0.0	22,699.4	1,210.0	1,257.1	1,257.1	1,257.1	1,499.1	1,257.1	1,492.9	1,492.9	1,492.9	1,784.4	1,492.9	1,728.6	1,728.6	1,728.6	2,020.1
SWM 2-2 Material Recovery Facilities at Sharra	123.3	82.1	205.4	0.0	2.5	29.8	49.8	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
SWM 3-2 Composting and Biogasification Project	2,595.4	7,088.8	9,684.2	10.4	139.9	1,231.9	2,229.5	157.9	157.9	264.7	1,364.7	2,364.7	293.7	293.7	293.7	293.7	293.7	293.7
SWM 3-4 Waste to Energy Project	4,453.2	17,138.0	21,591.2	0.0	0.0	389.5	1,389.5	7,929.5	7,429.5	494.8	494.8	494.8	494.8	494.8	494.8	494.8	494.8	494.8
SWM 4-4 Waste Disposal Facilities Expansion Project	570.5	1,080.5	1,651.0	0.0	30.2	440.2	525.2	98.6	48.3	48.1	47.8	47.5	47.3	47.0	46.7	46.5	46.5	131.2
Summary-2 Summary of Investment, Operation and Maintenance Cost																		
Investment Cost	23,062.6	23,179.5	46,242.1	1,218.8	1,335.9	2,864.6	4,967.2	9,101.1	8,309.1	1,504.9	2,604.9	3,604.9	1,796.4	1,504.9	1,740.6	1,740.6	1,740.6	2,117.1
Engineering Cost	0.0	2,209.8	2,209.8	1.6	110.9	498.8	498.8	389.5	389.5	106.9	106.9	106.9	0.0	0.0	0.0	0.0	0.0	0.0
Operation Cost	2,130.1	0.0	2,130.1	0.0	2.3	4.1	4.1	98.9	98.6	185.4	185.1	184.8	228.4	228.1	227.8	227.6	227.6	227.3
Maintenance Cost	5,399.1	0.0	5,399.1	0.0	0.4	0.7	0.7	106.8	106.8	514.6	514.6	514.6	606.7	606.7	606.7	606.7	606.7	606.7
Total	30,591.8	25,389.3	55,981.1	1,220.4	1,449.5	3,368.3	5,470.9	9,696.3	8,904.0	2,311.8	3,411.5	4,411.2	2,631.5	2,339.7	2,575.1	2,574.9	2,574.9	2,951.1
Summary-3 Summary of Waste Collection, Intermediate Treatment and Waste Disposal Cost																		
Waste Collection and Transportation Cost	22,849.4	0.0	22,849.4	1,210.0	1,307.1	1,307.1	1,307.1	1,499.1	1,257.1	1,492.9	1,492.9	1,492.9	1,784.4	1,492.9	1,728.6	1,728.6	1,728.6	2,020.1
3R & Intermediate Treatment Cost	7,171.9	24,308.8	31,480.7	10.4	142.4	1,651.2	3,668.8	8,098.6	7,598.6	770.8	1,870.8	2,870.8	799.8	799.8	799.8	799.8	799.8	799.8
Waste Disposal Cost	570.5	1,080.5	1,651.0	0.0	30.2	440.2	525.2	98.6	48.3	48.1	47.8	47.5	47.3	47.0	46.7	46.5	46.5	131.2
Total	30,591.8	25,389.3	55,981.1	1,220.4	1,479.7	3,398.4	5,501.0	9,696.3	8,904.0	2,311.8	3,411.5	4,411.2	2,631.5	2,339.7	2,575.1	2,574.9	2,574.9	2,951.1

Source: JICA Study Team

The total cost of the Priority Projects is estimated at 55,981 million Lek for the investment, operation and maintenance costs over the period 2013 to 2017. The financial sources shown in the table is determined by the JICA Study Team for reference only. The land cost and administration cost of MOT are not included in the cost estimates. The annual costs range from the minimum at 1,220 million Lek in 2013 and the maximum at 9,700 million Lek in 2017. In average, MOT spends 3,730 million Lek per year. Figure 12.3.14 shows the trend of annual cost for the ISWM Plan.



Source: JICA Study Team

Figure 12.3.14 Trend of Annual Cost for Implementation of ISWM Plan

(2) Summary of Priority Project Cost

Table 12.3.13 shows the total cost of the Priority Projects derived from the Summary-1 in Table 12.3.12. The total cost of waste collection and transportation service is estimated with the highest cost at 22,700 million Lek, accounting for 41%, followed by the waste-to-energy project cost at 21,600 million Lek, accounting for 39% to the total SWM cost from 2013 to 2027. The total of these project costs accounts for 80% of the total cost. The cost of compost and biogasification is estimated at 9,700 million Lek, accounting for about 17% of the total cost. The cost of waste disposal is estimated at 1,700 million Lek and accounts for only 3% of the total cost.

Table 12.3.13 Summary of Priority Project Cost

Summary-1 : Summary of Priority Project Cost (M. Lek)		MOT	External Source	Total	Percentage (%)
SWM 1-3	Illegal Dumpsite Clean-up Project	150.0	0.0	150.0	0.3
SWM 1-5	Waste Collection and Transportation Service	22,699.4	0.0	22,699.4	40.5
SWM 2-2	Material Recovery Facilities at Sharra	123.3	82.1	205.4	0.4
SWM 3-2	Composting and Biogasification Project	2,595.4	7,088.8	9,684.2	17.3
SWM 3-4	Waste-to-Energy Project	4,453.2	17,138.0	21,591.2	38.6
SWM 4-4	Waste Disposal Facilities Expansion Project	570.5	1,080.5	1,651.0	2.9
Total		30,591.8	25,389.3	55,981.1	100.0

Source: JICA Study Team

(3) Investment, Operation and Maintenance Costs

Table 12.3.14 shows the total cost of investment, engineering, operation and maintenance for the Priority Projects derived from the Summary-2 in Table 12.3.12. The total investment cost reaches 46,240 million Lek for the period 2013 to 2017 and accounts for 83% of the total cost followed by the maintenance cost estimated at 5,400 million Lek and accounts for a little less than 10%. The operation cost and engineering cost are almost the same amount, i.e., in the range of 2,130 – 2,210 million Lek, and account for approximately 4%.

Table 12.3.14 Investment, Operation and Maintenance Cost

Summary-2: Summary of Investment, Operation and Maintenance Cost (M. Lek)	MOT	External Source	Total	Percentage (%)
Investment Cost	23,062.6	23,179.5	46,242.1	82.6
Engineering Cost	0.0	2,209.8	2,209.8	3.9
Operation Cost	2,130.1	0.0	2,130.1	3.9
Maintenance Cost	5,399.1	0.0	5,399.1	9.6
Total	30,591.8	25,389.3	55,981.1	100.0

Source: JICA Study Team

(4) Waste Collection, Intermediate Treatment and Waste Disposal Costs

Table 12.3.15 shows breakdown of the cost for waste collection and transportation services, intermediate treatment including 3R activities, and waste disposal derived from the Summary-3 in Table 12.3.12. The total cost of intermediate treatment and 3R activities is estimated at 31,480 million Lek for the period 2013-2027 and accounts for 56% of the total cost, followed by the waste collection and transportation cost estimated at 22,850 million Lek and accounts for 41%. The cost of waste disposal is estimated at 1,700 million Lek and accounts for approximately 4% as mentioned earlier in the preceding subsection

Table 12.3.15 Waste Collection, Intermediate Treatment and Waste Disposal Cost

Summary-3: Summary of Waste Collection, Intermediate Treatment and Waste Disposal Costs (M. Lek)	MOT	External Source	Total	Percentage (%)
Waste Collection and Transportation Cost	22,849.4	0.0	22,849.4	40.8
3R & Intermediate Treatment Cost	7,171.9	24,308.8	31,480.7	56.3
Waste Disposal Cost	570.5	1,080.5	1,651.0	2.9
Total	30,591.8	25,389.3	55,981.1	100.0

Source: JICA Study Team

(5) Unit Cost of Integrated Solid Waste Management

Table 12.3.16 summarizes the unit cost estimated for the different activities of waste collection and transportation, intermediate treatment and 3R activities and waste disposal. The unit costs are obtained by division of the total cost by the cumulated waste amount handled in each activity. As shown in the table, the unit costs of waste collection, intermediate treatment, and waste disposal are estimated at 4.300 Lek/ton, 17,500 Lek/ton and 800 Lek/ton respectively. And the average unit cost for all the activities is estimated at 10,600 Lek/ton. The unit cost of intermediate treatment is high although the cost is estimated at the moderate level compared with the cost practiced in developed countries.

Table 12.3.16 Unit Cost by Respective Services

Item	Total Cost (M. Lek)	Annual Waste Amount (M. ton)	Unit Cost (Lek/ton)
Waste Collection and Transportation Cost	22,849	5.3	4,300
3R & Intermediate Treatment Cost	31,481	1.8	17,500
Waste Disposal Cost	1,651	2.1	800
Total/Average	55,981	5.3	10,600

Source: JICA Study Team

12.3.12 Implementing Agency

The executing agency or implementing agency and the relevant organization are proposed for the respective projects or programs as shown in Table 12.3.17. The Project Task Team, which has been proposed to be established under the Directorate of Waste Management, shall take initiatives for implementing the priority projects. The actual operation for construction projects may be executed by the ad hoc project management unit(s) to be organized as the construction project is commenced. The organizations listed under "Relevant Organizations" in the table stand for the organizations required to obtain approval, permission or coordination, operation and maintenance of the facilities/system.

Table 12.3.17 Executing Agency and Relevant Organizations

Code	Project Title	Executing Agency	Relevant Organization
SWM 1-3	Illegal Dumpsite Clean-up Project	Directorate of Waste Management, MOT	Waste Collection Service Provider(s) or MOT Waste Management Enterprise or the Contractor for Clean-up Work
SWM 1-5	Separate Waste Collection and Transportation Services	Directorate of Waste Management, MOT	Waste Collection Service Provider(s), MOT Waste Management Enterprise, Recycling Industry, Mini-municipalities
SWM 2-2	Introduction of 3R Programs	Directorate of Waste Management, MOT	Waste Collection Service Provider(s), MOT Waste Management Enterprise, Recycling Industry, Community Groups, Mini-municipalities, Ministry of Environment, Forest and Water Administration- MoEFWA (EIA), Vaquarr Commune (Construction Permit)
SWM 3-2	Organic Waste Treatment Project	Directorate of Waste Management, MOT	Contractors of Construction Wok and for Operation & Maintenance Work, MOT Waste Management Enterprise, MoEFWA (EIA), Vaquarr Commune (Construction Permit)
SWM 3-4	Waste-to-Energy Project	Directorate of Waste Management, MOT	Contractors of Construction Wok and for Operation & Maintenance Work, MoEFWA (EIA), Vaquarr Commune (Construction Permit)
SWM 4-4	Waste Disposal Facilities Expansion Project	Directorate of Waste Management, MOT	Contractors of Construction Wok and for Operation & Maintenance Work, MoEFWA (EIA), Vaquarr Commune (Construction Permit)
SWM 5-1	Organizational Strengthening	Directorate of Waste Management, MOT	MOT Council, Ministry of Local Government
SWM 5-5	Monitoring and Evaluation Strengthening	Directorate of Waste Management, MOT	Mini-municipalities, MOT
SWM 6-3	Financial Strengthening	Directorate of Strategic Planning, Directorate of Waste Management, MOT	Ministry of Finance, Ministry of Public Works and Transport
SWM 7-2	Raising Public Awareness Programs	Directorate of Waste Management, MOT	Mini-municipalities, MoEFWA, Ministry of Education (MoE)

Source: JICA Study Team

12.4 Financial and Economic Analysis

12.4.1 Financial Analysis

A financial analysis of the new sanitary landfill with the composting facility/waste incineration/power generation plant is carried out in this section by comparing the financial costs and revenues of the project. A cashflow statement is prepared based on the assumptions below and Financial Internal Rate of Return (FIRR) on Project is calculated for evaluation.

(1) Basic Assumptions

The following basic assumptions were used for the financial analysis, which also apply to economic analysis, unless otherwise mentioned.

1) Project Case

The new sanitary landfill will be constructed in 2016 to start operation in 2017. The landfill facilities will be expanded in 2026.

The compost facilities as well as the waste incineration and power generation plant will be constructed. Sales of compost and power will start in 2017 and 2019 respectively.

2) Project Evaluation Period

The project life is 34 years from 2013 to 2046, including the construction period of 2013-2018 and evaluation period of 2017-2046.

3) Price Basis and Exchange Rate

The base year of the project is 2012. All costs and revenues are expressed at the price level of 2012. The study assumes 3.0% annual inflation rate during the project life, which is the target inflation rate set by the Bank of Albania for the year 2012.

Exchange rates used are 1 Lek = 0.788 JP Yen= 0.007 Euros = US 0.009 Dollor, which are prevailing rates at the time of survey.

4) Contingencies

Physical contingency of 10% is included in the financial analysis. The price contingency is not expected.

5) Taxes

For the financial analysis, a value added tax (VAT) of 20% and respective import duties are included while corporate tax is excluded.

6) Target Financial Internal Rate of Return (FIRR)

The target FIRR of the project varies depending on the investment share among different investors with different expected rate of return for the project.

It is assumed that the private investors, whether local or foreign, will avail themselves of bank loan to pay for the project. The prevailing long-term corporate lending rates of commercial banks in Albania are about 13.0% at the time of study. The real interest rate is calculated at 9.7%, discounted by expected inflation rate of 3.0% for 2012 (1.13/1.03 (inflation rate) -1 = 0.097). The local private investors' target FIRR is set at 13.5% in consideration of loan administration costs, profit, and risks.

Meanwhile, the target rate of foreign investors should be lower. Japanese investors, for example, should have access to loans with real interest rate of 1.55% or so. Thus, the target rate of foreign investors is assumed to be 7% in consideration of loan administration costs, profit, and risks.

As for MOT, the target FIRR is set at 0%. That is to say, MOT will receive revenue that is just enough to recover the investment costs.

The study assumes the investment share of MOT to be a minimum of 10% as it is to compensate uncollected tariff. The share between the foreign and local private investors is set at 80% to 20% based on the share of foreign and local investment amount of the project. Based on this investment share, the weighted average target FIRR for investors will be 7.5%.

Table 12.4.1 Target FIRR by Investors

Local Private Investor	13.5%
Foreign Private Investor	7.0%
MOT	0.0%
Co-investment (MOT 10%, Foreign Investors 72% and Local Private 18%)	7.5%

Source: JICA Study Team

(2) Financial Project Costs

Financial project costs are composed of investment costs and operation and maintenance (O&M) costs.

1) Investment Costs

Financial investment costs of the project are calculated based on the total engineering investment costs as presented in previous sections

Initial Investment Costs

Table 12.4.2 Initial Investment Costs

(Million Lek)

Land	1,449
Civil Works	2,967
Building	443
Machinery and Equipment	71
Capacity Building	13,252
Total	18,182
Consulting Service (10%)	1,673
VAT (20%)	3,681
Base Cost	23,536
Physical Contingency (10%)	2,354
Total Financial Investment Cost	25,889

*Land costs do not include VAT or consulting services.
Source: Study Team

Replacement Investment Costs

Replacement investment costs, if necessary, are included in the respective years based on the lifespan of assets as shown in the below table.

Table 12.4.3 Expected Life of Assets Initial Investment Costs

Civil Works	50 years
Building	40 years
Mechanical & Electrical Equipment	20 years
Machinery	10 years

Source: Study Team

The salvage value of net assets is ignored in the analysis.

2) Operation Costs

Financial operation costs are shown in the table below as calculated in previous sections.

Table 12.4.4 Annual Operation & Maintenance Costs in 2028-2046

(Million Lek)

Personnel	43.0
Utilities & Cover Soil	8.8
Fuel	167.4
Maintenance	603.4
Waste Collection, MOT Enterprise & WM Directorate Staff	1,892.3
Total	2,714.9

Source: JICA Study Team

(3) Financial Project Revenues

1) Waste Generation

Waste generation is estimated to be reduced by 10% by implementing the project.

Table 12.4.5 Waste Generation Volume (ton)

	2017	2022	2027-2046
Households	87,679	99,825	115,836
Business Sector	169,287	192,737	223,652
Public area (parks, neighborhoods, etc.)	14,276	16,253	18,860
Directly brought to the landfill	14,276	16,253	18,860
Total Waste Generation	285,518	325,069	377,209

Source: Study Team

2) Waste Collection

All the generated wastes will be collected and disposed by the project.

3) Waste Tariffs

The present household tariff is 5,000 Lek per year regardless of waste volume. The tariff for the other users varies depending on the industry group and sales amount.

For the basic analysis, present tariffs are estimated to remain constant net of inflation throughout the project period, unless otherwise explained.

4) Tariff Collection Rates

In January 2012, UKT started to collect waste tariff from households in its service area at 5% commission rate for MOT. The following table summarizes the waste collection rate of households in UKT's water/sewage service coverage.

Table 12.4.6 Waste Collection Rate of Households (HHs) in 2012

Month/2012	UKT and Waste Users (Approximately 125,000 HHs)				Total Users of Waste Collection (185,000 HHs*)
	HHs Paid	HHs Unpaid	Total HHs	Collection rate	Collection Rate
Jan	94,274	31,651	125,925	74.9%	51.0%
Feb	90,920	33,951	124,871	72.8%	49.1%
Mar	78,107	40,535	118,642	65.8%	42.2%

Source: MOT and JICA Study Team

Though the collection rate of households within the UKT's service coverage is approximately 70%, the total average collection rate, including those households outside of UKT's service coverage, is only about 50%.

The financial analysis estimates 50% collection rate throughout the project period and assumes that the uncollected amount will be compensated by MOT (or implementing organization). It is because paying users are not in the position to pay additional money to compensate for the losses incurred from non-paying users. It should also give an incentive to MOT to improve the collection rate.

5) Revenues from Waste Collection and Disposal

The following table shows the cash income forecast for 12 months of 2012, which is made based on half-year result of 2012.

Table 12.4.7 Waste Tariff Cash Income for 2012

(Lek)

User Category	2010 Actual	2011 Actual	2012 Actual (HHs up to June 30, Business up to July 20)	2012 Estimate
HH	68,837,625	49,004,088	173,560,582	364,477,222
Business entity	401,670,213	397,815,444	400,000,000	450,000,000
Restaurant	19,302,026	18,579,775		
Total	489,809,864	465,399,307	573,560,582	814,477,222

Source: MOT and JICA Study Team

Waste tariff revenue from 2013 onward is forecast in line with the population growth made by the JICA Study Team.

6) Other Revenues

It is assumed that the project will generate power and compost, which are expected to be sold in the market. Income from the sale of power and compost is summarized in Table 12.4.8, with the assumptions used shown in Table 12.4.9.

Table 12.4.8 Sales Revenues of Power and Compost (Million Lek)

	2017	2019	2022-2046*
Compost	38	38	74
Electricity	0	55	504

Note: *2024-2046 in case of compost
Source: Study Team

Table 12.4.9 Assumptions for Selling Price of Power and Compost

	Power	Compost
Generation/production amount	6.0 Megawatt	102 ton per day
Annual operation days	330 days	
Yields	-	50%
Unit selling price (VAT exclusive)	10.6 Lek/kwh	6.9 Lek/kg

Source: JICA Study Team and the Albanian Energy Corporation

(4) Financial Evaluation

1) Result of FIRR

A financial cashflow is prepared based on the above assumptions and the project FIRR is calculated as shown in the table below.

FIRR is negative at the present tariff of 417 Lek (Case 1). It is not possible to invite foreign investors to the project at the present tariff. It will, however, improve to 7.5% (=the weighted target FIRR of investors including MOT and foreign/local private investors) if the households' monthly tariff is raised to 951 Lek as in Case 2. The tariffs for other types of users are estimated to increase at the same rate as that of households, assuming that the present tariff structure among all users (household, private enterprise, public institution) is equitable enough.

Table 12.4.10 FIRR Summary of Project

	Initital Investment Costs (MN Lek)				MoT budget to cover uncollected tariff revenue (2017-2046)	Monthly Tariff of HH (Lek) in 2017	Target FIRR of Investors	Project FIRR (for Investors)
	Total	MoT	Foreign Investors	Local Investors				
Case 1 (present tariff)	25,889	25,889	-	-	22,833	417	0%	deficit
Case 2 (breakeven tariff)	**25,889**	**2,589**	**18,640**	**4,660**	**52,060**	**951**	**7.5%**	**7.5%**

Source: Study Team

In conclusion, the project will be feasible at increased tariff as in Case 2. It is very important, however, that MOT improve the household waste collection rate as it has to inject a rather huge amount of budget to compensate for the losses otherwise.

Financial cashflow statement of the project under Case 2 scenario is shown in Technical Notes.

12.4.2 Economic Analysis

Economic analysis of the SWM projects is carried out in this section.

(1) Assumptions for Economic Analysis

In addition to above mentioned basic assumptions for the financial analysis, the following assumptions are applied.

1) Adjustment to Financial Costs and Benefits

In principle, economic costs and benefits are to exclude fiscal distortions such as taxes, and subsidies. The present project costs and benefits exclude the value added tax (VAT) of 20% and import duties and other government fees on diesel oil (66.6%).

2) Target Economic Internal Rate of Return (EIRR)

EIRR is an efficiency index for the use of scarce capital, indicating the average percentage of returns that can be expected every year to the national economy through the planned investment. International financial institutions such as World Bank apply 10% to 12% social discount rate in developing countries.

The project sets the target EIRR at 10%. That is to say, if the project's EIRR is greater than 10%, the project is considered to bring net benefits to the regional economy, or is economically feasible.

3) Willingness to Pay as Economic Benefits

Willingness to Pay

Willingness to Pay is the proxy measurement of the economic value expressed as 'consumers' surplus' and therefore is the amount that the beneficiaries are willing to pay in return for the product or services they receive. The concept of Willingness to Pay is widely used as numerical expression of economic benefits in evaluating projects. If the price, or tariff in this case, is set higher than the WILLINGNESS TO PAY, the users would not receive the service and would use the money for other products or services. Therefore, Willingness to Pay is considered as the maximum satisfaction that the users can achieve in various forms from the project in question. Therefore, 'Willingness to Pay' methodology is used to calculate the economic benefits of the present project.

The World Bank and Asian Development Bank have the benchmark in terms of percentage to income as to how much the users are willing to pay for infrastructure services. According to them, Willingness to Pay for solid waste disposal is 2% of disposable income of users. It is assumed, therefore, that 2.0% of disposable income of households (60,000 Lek per month in 2012) is the total Willingness to Pay of household users of the project.

Willingness to Pay amount of users other than the households are estimated to be in line with that of households.

Disposable Income

Average family income of Tirana Prefecture is taken from the Survey of Monthly Income by Prefecture 2006-2007 (Institute of Statistics, Albania). The amount is adjusted for the inflation and income tax and is calculated to be 60,000 Lek per month in 2012.

(2) Economic Evaluation

EIRR of the project is calculated based on the above assumptions and is summarized in the table below.

EIRR of the project is 26.3%, higher than the target rate of 10%. It therefore could be concluded that the project will be economically feasible.

Economic cashflow statement of the project is shown in Technical Notes.

Table 12.4.11 EIRR Summary of Project

	Willingness to Pay as Economic Benefits (2% of disposable income; 1,290 Lek in 2017)
Project EIRR	26.3%

Source: JICA Study Team

12.4.3 Conclusions and Recommendation

The project will be financially viable enough to be implemented as a PPP if the household tariff is increased from the present 417 Lek to 951 Lek. (The tariffs for other types of users are estimated to increase at the same rate as that of households.)

The project will bring sufficient economic net benefits to the region as its EIRR is 26.3%, comfortably exceeding the target rate of 10%.

Following are the recommendations in implementing the project.

- MOT should confirm the number of users.
- MOT should improve the waste collection rate, especially that of households (currently 50%), before implementing it as a PPP. It will, otherwise, have to compensate the large loss.
- It is recommended that the monthly tariff of households be increased from the present 417 Lek to 951 Lek, based on the assumption that the present tariff structure among all users (household, private enterprise, public institution) is equitable.
- Tariff equity among different groups of users should be analyzed in detail in the following stage of survey in order that users are billed the tariff based on the “Polluter Pays Principle.”
- Economic analysis of the project should further be studied incorporating environmental impacts such as reduction in methane emission.

12.5 Environmental Considerations

12.5.1 Mitigation Measures at Pre-construction Stage

The list of mitigation measures at pre-construction stage is shown in Table 12.5.1.

Land Issues / Resettlement

The proposed projects are associated with the construction work of central material recovery facilities, compost and/or biogasification plants, waste-to-energy plant and final disposal facilities. The construction sites of these facilities are proposed at the adjacent area of the existing Sharra disposal facilities. These sites are located within the administration area of Vaquarr Commune and MOT will procure the site in consultation/negotiation with Vaquarr Commune. There are no residential houses within the proposed construction site. However, in the course of land procurement, MOT shall take due consideration for appropriate compensation measures as required to the neighboring houses and for the land owners.

Table 12.5.1 List of Mitigation Measures at Pre-Construction

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation Measure	Responsible Body
Solid Waste Management Sector					
1.1 Intermediate Treatment					
	1.1.1	Land Issue/ Resettlement	Impacts to the neighboring houses and to the land owner caused by the land acquisition for the project site	Preparation of Resettlement Action Plan (RAP) Advance notification to the land owner(s) and the neighboring residents and the establishments Holding consultation meetings with the affected residents and the establishments Agreement between project proponent and the affected residents, establishment and the land owner(s), Preparation of environmental management and monitoring plan and agreement with the affected residents and the establishments	Ministry of Public Works & Transport, MOT
1.2 Development of Final Disposal Facility					
	1.2.1	Land Issue/ Resettlement	-Ditto-	-Ditto-	-Ditto-

Source: JICA Study Team

12.5.2 Recommended Mitigation Measures at Construction Stage

The environmental elements which may cause adverse influence to air, water, noise, odor, etc. should be mitigated by means of engineering design and construction method. Appropriate measures shall be taken through examination of alternative methods for the engineering design and the construction method to effectively control these impacts. In addition, the Environmental Management and Monitoring Plan should be prepared and the actual mitigation measures should be taken in accordance with the approved procedures based on the Albanian EIA legislative system.

The list of mitigation measures at construction stage is shown in Table 12.5.2 and the details are described in the following paragraphs.

Land Issues / Resettlement

The actual implementation of RAP should be confirmed in order to clarify the objects which may interfere with the commencement of construction works; monitoring them will be necessary.

Public Health, HIV/ AIDS

The contractor should prepare a safety and health management program for the workers to conduct regular health checkups and report the results to the healthcare center which has jurisdiction over the project site. In addition, the contractor should allocate a health supervisor and carry out a health education to raise awareness of the workers to their own hygiene.

Hazard

This issue covers disasters and accidents caused by construction works. The contractor should estimate the potential risks of the construction works and establish the measures to avoid such risks during the construction stage. The contractor should also prepare a safety management and emergency preparedness program. The program should be shared among all the personnel engaged in the construction works. With respect to the traffic accidents to be caused by the construction works, the contractor should also take measures to deploy traffic control persons to direct the construction vehicles and machines for avoiding disturbance to other traffic at the project sites.

Groundwater

Development of final disposal facilities may affect groundwater due to possible infiltration of leachate into underground. The contractor should prepare a construction plan to avoid the adverse impact against the groundwater and the contractor should also monitor the groundwater table and water quality in the neighboring wells.

Air Pollution

Generation of dust and air pollutants such as NOx, SOx, and PM_{10} are assumed by the construction works and operation of heavy machines, equipment, and construction vehicles. Air pollution risk by the construction work is minimal but the contractor should prepare a construction plan for mitigating such air pollution during construction including the measures to use environmentally friendly vehicles, machines, and equipment in addition to regular watering at construction sites to avoid a cloud of dust. Periodic monitoring of air pollutants and dust is recommended to avoid air pollution during the construction stage.

Water Pollution

Water pollution is assumed in construction works to generate turbid water or muddy water during earthworks. The contractor should prepare a construction plan to take measures for turbid waste from the construction work and wastewater treatment for the construction camp.

The following consideration should be taken:

- Direct release of construction wastes into surrounding water body should be avoided;
- Maintain good housekeeping at the construction camp to reduce construction wastes;
- Drainage channels should be provided to convey storm water to sand / silt trap;
- Construction works should be properly programmed to minimize soil excavation in rainy season to prevent soil erosion; and
- Reuse of treated effluent water from cleaning vehicles, machines, equipment, etc. is recommended.

Regular monitoring is recommended during the construction stage.

Solid Waste

Generation of solid waste and construction debris is assumed at construction offices, workshops and construction sites. The contractor should prepare a safety and health management program which covers the following mitigation measures for the assumed generation of solid wastes and construction wastes during the construction stage. Basically, the construction wastes shall be collected, recovered, reused and recycled as much as possible to reduce waste generation amount.

For the general waste generated at construction offices and workshops:

- Wastes should be collected by designated waste collector and disposed of at the designated waste treatment/disposal facilities.

For the construction waste and the waste from workshops:

- Used oil and grease trap sludge should be collected and stored in a tank(s) and transported by a licensed transporter to a licensed facility; and
- Surplus soil should be refilled or disposed of or reused following the specifications of construction work.

Regular monitoring is recommended during construction stage.

Noise and Vibration

Generation of noise and vibration is assumed by the operation of heavy equipment and traveling construction vehicles to and from the site. The contractor should prepare a construction plan for reducing noise and vibration levels according to the following measures during the construction stage:

- Engineering control such as 1) utilization of low noise type vehicles, machines, and equipment, 2) utilization of appropriate mufflers, 3) enclosure of construction sites, and 4) erection of barriers; and
- Administrative control such as 1) arrangement of work rotation, and 2) avoidance of night works especially near the noise sensitive areas (e.g. hospitals, schools).

Regular monitoring is recommended during the construction stage.

Table 12.5.2 List of Mitigation Measures at Construction Stage

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation Measure	Responsible Body
Solid Waste Management Sector					
1.1 Intermediate Treatment					
	1.1.1	Land Issue/ Resettlement	Impacts to the neighboring houses and on the land owner(s) for securing the right of way (ROW) for the construction works	Implementation of monitoring	Ministry of Public Works & Transport, MOT
	1.1.2	Public Health, HIV/AIDS	Impacts by the construction workers during Construction	Same as 1.1.1	Contractor
	1.1.3	Hazard	Accidents by construction works	Same as 1.1.1	Contractor
	1.1.4	Air Pollution	Impact caused by the generation of dust and air pollutants by construction works	Same as 1.1.1	Contractor
	1.1.5	Water Pollution	Impact due to wastewater containing muddy and oily water discharge from the construction work	Mandatory preparation of the construction plan for wastewater treatment Supervision of the contractor's dispatch plan of construction vehicles Implementation of monitoring	
	1.1.6	Solid waste	Impact caused by solid waste generated at the construction camp and offices	Same as 1.1.1	Contractor
	1.1.7	Noise and Vibration	Impact caused by the generation of noise and vibration by construction works	Same as 1.1.1	Contractor
1.2 Development of Final Disposal Facility					
	1.2.1	Land Issue/ Resettlement	Resettlement of residential houses and establishments of ROW for construction works	Implementation of monitoring	Ministry of Public Works & Transport (Third party)
	1.2.2	Public Health, HIV/AIDS	Impacts by the construction workers	Same as 1.2.1	Contractor
	1.2.3	Hazard	Accidents by construction works	Same as 1.2.1	-Ditto-
	1.2.4	Topography and Geography	Impacts caused by land slide at construction sites	Mandatory preparation of a safety management and emergency preparedness program by the contractor	-Ditto-
	1.2.5	Groundwater	Impacts on groundwater due to underground works	Same as 1.2.1	-Ditto-
	1.2.6	Soil Erosion	Impacts on soil erosion due to excavation works	Mandatory preparation of construction plan	-Ditto-

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation Measure	Responsible Body
	1.2.7	Air Pollution	Impact caused by the generation of dust and air pollutants by construction works	Same as 1.2.1	-Ditto-
	1.2.8	Water Pollution	Impact due to wastewater containing muddy and oily water discharge from the construction work	Same as 1.2.1	-Ditto-
	1.2.9	Solid waste	Impact caused by solid waste generated at the construction camp, offices, workshops and construction sites	Same as 1.2.1	Ditto -
	1.2.10	Noise and Vibration	Impact cause d by the generation of noise and vibration by construction works	Same as 1.2.1	Ditto -

Source: JICA Study Team

12.5.3 Recommended Mitigation Measures at Operation Stage

As well as the mitigation measures recommended for the construction stage, the mitigation measures shall be taken also in the operation and maintenance stage. The operators shall follow the procedures stated in the operation and maintenance manual not only to operate and maintain the facilities effectively but also to take actions for mitigating the environmental impacts to the maximum extent. In addition, the operators and the administration staff should take the mitigation measures stipulated in the Environmental Management and Monitoring Plan.

The list of mitigation measures at operation stage is shown in Table 12.5.3 and their details are shown below.

Vulnerable or Ethnic Minorities

In the SWM sector, the promotion of 3R and separate collection and development of intermediate treatment facilities such as MRF, Waste-to-Energy, Biogasification and Composting may cause adverse impact to some extent to the waste pickers who are currently making a living by waste picking at the existing Sharra landfill site and the city area. Most of the waste pickers are Roma people and some loss of their income and livelihood are assumed by the proposed plans in the SWM sector.

Therefore, the following mitigation measures are recommended:

- Formulation of livelihood supporting programs for the waste pickers;
- Holding consultation meetings with the affected waste pickers; and
- Promotion for employment of the waste pickers at the Town MRF, central MRF, intermediate treatment facilities, and final disposal facilities.

Public Health, HIV/ AIDS

In the SWM sector (development of intermediate treatment and final disposal facilities), the employees in these facilities will be exposed to the severe working environment with dust and odor. Some unsanitary condition is assumed in these facilities due to the potential generation of vermin such as rats, flies, and mosquitoes.

Accordingly, the following mitigation measures should be taken:

- Preparation of safety and working environmental manual for operation of solid waste treatment facilities including intermediate treatment and final disposal facilities;
- Implementation of regular pest control;
- Implementation of education and training for sanitation;
- Water quality management of treated effluent water; and
- Implementation of monitoring and inspection.

Scenic Value or Cityscape

Some impact on surrounding landscape may be generated due to the appearance of new landscape of the waste-to-energy plant with a stack.

The following mitigation measures should be taken;

- The height, shape and colors of stack shall be taken into consideration in the design stage to reduce the visual impact; and
- Holding consultation meetings with the affected residents.

Hazard

In the SWM sector, power failure is assumed to cause several risks at the waste-to-energy plant, composting plant, and biogasification plant depending on the state of operation. Also, the generation of hazardous gases such as methane, hydrogen sulfide, and ammonia is assumed at landfill site poses the risks of explosion and health hazard to the operators.

Therefore, the following mitigation measures are recommended:

- Advance identification of potential risks for operation of all the waste management facilities;
- Introduction of fail-safe design, installation of emergency generator(s), automatic emergency operation suspension system, etc.;
- Preparation of operation and maintenance manuals and establishment of preventive measures;
- Preparation of emergency response measures including the initial response measures, emergency response measures, and system restoration;
- The landfill operation manual including the emergency plan shall be formulated to take measures against the dangers posed by landfill gases such as explosion and health hazard to operators;
- Practicing of regular training operation against emergency cases; and
- Establishment of organization to cope with the emergency response for above risks.

Groundwater

The impact on the surrounding groundwater is assumed by the seepage of leachate from the landfill site. Seepage control measures such as laying impermeable liner and/or impermeable wall structures should be taken into consideration for the designing of waste disposal containment facilities. Regular monitoring of water quality of the monitoring well(s) and the surrounding wells is also necessary.

Global Warming

The increase of GHG such as CO_2 gas and methane gas is assumed to be generated from the SWM facilities especially from the final disposal facilities. Organic waste treatment will be one of the mitigation measures in this sector.

The following measures are recommended:

- Construction of organic waste treatment facilities such as composting and biogasification facilities to reduce landfill amount of organic waste to reduce generation of landfill gases; and
- Consideration to adopt the design and operation to maintain aerobic condition to the maximum extent for minimizing generation of methane gas from the landfill site.

Air Pollution

Operation of waste-to-energy plant may cause emission of air pollutants such as NOx, SOx, CO, HCl, SPM, and dioxins.

The following mitigation measures are recommended:

- Study on installation of exhaust gas treatment equipment for NOx, SOx, HCl, SPM, and dioxins at design stage;
- Appropriate temperature control for incineration of solid waste to minimize generation of dioxins;
- Avoid receiving polyvinyl chloride waste and domestic hazardous wastes such as batteries through implementation of separate waste collection to avoid the generation of air pollutants such as HCl, dioxins, and heavy metals; and
- Implementation of monitoring of stack emissions and of the air in the surrounding residential areas.

Offensive Odor

Offensive odor will be generated at the intermediate treatment and the final disposal facilities.

The following measures are recommended to mitigate the offensive odor:

- Consideration for the design of installation of odor removal facilities;
- Consideration of measures to prevent leaking of offensive odor from the plant buildings in the course of designing the facilities;
- Consideration of the location of the facilities and dominant wind direction toward surrounding residential areas;
- Consideration for use of deodorizer at the waste reception pits and the landfill site;

- Daily soil covering for landfill waste; and
- Implementation of monitoring and inspection.

Table 12.5.3 List of Mitigation Measures at Operation Stage

Sector	Plan / Project	Environmental & Social Elements	Potential Adverse Impact	Recommended Mitigation Measure	Responsible Body
Solid Waste Management Sector					
1.1 Intermediate Treatment					
	1.1.1	Vulnerable or Ethnic Minorities	Impact on ethnic minorities (Roma) to be caused by development of the MRF	Formulation of livelihood support program Public consultation meetings with waste pickers Employment of waste pickers as workers in the intermediate treatment facilities including MRF, waste-to-energy plant, composting and biogasification plants, and the final disposal facilities	Operator of intermediate treatment facilities
	1.1.2	Public Health, HIV/AIDS	Impact on working environment for operation of intermediate treatment	Preparation of safety and working environmental manual Pest control Implementation of medical checkup	-Ditto-
	1.1.3	Hazard	Impact on hazard to be caused by malfunction of intermediate treatment facilities/system	Mandatory preparation of a safety management and emergency preparedness program	-Ditto-
	1.1.4	Scenic Value or Cityscape	Impact on visual change to be caused by appearance of the intermediate facilities (e.g., a stack)	Reflection of landscape design for the facilities and the stack	Ministry of Public Works & Transport
	1.1.5	Air Pollution	Impact on air pollution to be caused by generation of air pollutants at waste-to-energy (incinerator), biogasification facilities and traveling of construction vehicles to/from the site	Reflection to the design for prevention of emission of air pollutants Installation of emission gas treatment equipment Implementation of monitoring	Ministry of Public Works & Transport, Operator of intermediate treatment facilities
	1.1.6	Water Pollution	Impact on water pollution to be caused by wastewater from the facilities	Reflection to the design for prevention of wastewater Installation of wastewater treatment facilities Implementation of monitoring	-Ditto-
	1.1.7	Noise and Vibration	Impact on noise to be caused by operation of the facilities	Reflection to the design for prevention of noise Implementation of monitoring	-Ditto-
	1.1.8	Offensive odor	Generation of odor by processing of waste for treatment	Reflection to the design for prevention of odor Pest control Implementation of monitoring	-Ditto-

1.2 Development of Final Landfill				
1.2.1	Hazard	Generation of hazard to be caused by landfill waste exceeding the landfilling capacity	Mandatory preparation of safety management and emergency preparedness programs in the operation manual	Operator of intermediate treatment and final disposal
1.2.2	Groundwater	Impact on groundwater to be caused by seepage of leachate into underground	Reflection to the design for prevention of subsurface infiltration of leachate Laying of liner or impermeable structures for prevention of infiltration of leachate Implementation of monitoring of surrounding wells	Ministry of Public Works & Transport, Operator of final disposal facility
1.2.3	Global Warming	Impact on global warming to be caused by GHG gases (e.g., methane gas)	Reflection to the design for reducing generation amount of GHG Implementation of monitoring	-Ditto-
1.2.4	Air Pollution	Impact on air to be caused by spontaneous fire at the landfill site	Reflection to the design for ventilation of methane gas to avoid causing spontaneous fire Implementation of monitoring	-Ditto-
1.2.5	Water Pollution	Impact on water body to be caused by generation of wastewater	Reflection to the design of leachate treatment facilities Implementation of monitoring	-Ditto-
1.2.6	Noise and Vibration	Impact on noise to be caused by operation of heavy machines and traveling of construction vehicles to/from the site	Reflection to the facility design for mitigation of noise Implementation of monitoring	-Ditto-
1.2.7	Offensive odor	Impact on odor to be caused by landfill operation	Use of deodorizer at the landfill site Regular soil covering Implementation of monitoring	-Ditto-

Source: JICA Study Team

12.5.4 Environmental Management and Monitoring Plan

(1) Environmental Management Plan

The social issues for relief of the socially vulnerable caused by implementation of the projects are assumed in all sectors. The project proponents should prepare the programs for relief of the socially vulnerable people such as the programs for livelihood support program especially for Roma people as shown in Table 12.5.4. Increase of waste fee in future will affect the household budget. The measures are required for setting an appropriate waste tariff and consideration of the socially vulnerable people who will not be able to afford the tariff payments.

The development of SWM facilities is assumed to cause environmental deterioration if the countermeasures are not taken appropriately. Air pollution and water pollution will be the important issues among the several elements against the environmental impacts caused by intermediate treatment facilities and waste disposal facilities. Table 12.5.4 also summarizes the recommendations for preparation of the environmental management plan to cope with air pollution and water pollution.

Table 12.5.4 Recommended Environmental Management Plan

Environmental / Social Element	Issue	Recommended Action	Contents to be Covered	Responsible Body
Land Issue/ Resettlement	Impacts on land owners	Preparation of RAP	Project description Legal framework Institutional framework Valuation of and compensation for losses Compensation procedure on the full replacement value based on a replacement	Municipality of Tirana, Ministry of Public Works & Transport, Municipality of Tirana
Socially Vulnerable People/ Ethnic Minorities	Impacts on socially vulnerable people to be affected by the development of SWM facilities	Formulation and implementation of livelihood support program	Training for job skill-up Support for employment Employment plan of waste pickers for operation of the relevant SWM facilities (e.g., MRF, road sweeping, etc.)	Municipality of Tirana
Livelihood	Impact on civic life due to increase of service tariff	Set-up of appropriate tariff To make widely understood to public	Provision of information to public through TV, radio, flyer, billboard, etc. Establishment of special tariff for the low-income group	Municipality of Tirana
Air Pollution, Offensive Odor and Global Warming	Air pollution and offensive odor to be caused by waste treatment facilities	Reflect in the design of the facilities Preparation of operation manual and implementation	Installation of hazardous gas removal facilities Installation of odor collection and removal facilities Combustion temperature control Operation and regular maintenance of the facilities responding to the operation manual	Municipality of Tirana, Ministry of Environment, Forest and Water Administration
Air Pollution, Offensive Odor and Global Warming	Air pollution and offensive odor to be caused by waste disposal facilities	Reflect in the design of the facilities Preparation of operation manual and implementation	Construction of quasi-aerobic sanitary landfill Installation of gas ventilation facilities Implementation of regular soil cover Installation of fire-fighting facilities/system Operation and regular maintenance of the facilities responding to the operation manual	-Ditto-
Water Pollution	Water pollution to be caused by intermediate treatment facilities	Reflect in the design of the facilities Preparation of operation manual and implementation	Construction of waste treatment facilities Operation and regular maintenance of the facilities responding to the operation manual	-Ditto-
Water Pollution	Water pollution to be caused by generation of leachate from the landfill site	Reflect in the design of the facilities Preparation of operation manual and implementation	Construction of leachate treatment facilities Construction of monitoring well(s) Operation and regular maintenance of the facilities responding to the operation manual	-Ditto-

Source: JICA Project Team

(2) Environmental Monitoring Plan

The recommended social and environmental monitoring plan is shown in Table 12.5.5. At pre-construction stage, the monitoring should be carried out for procurement of the project sites and compensation for the residents of the affected areas and for the land owners. At construction stage, the outcome of mitigation measures for pollution control related with air, surface water, groundwater, and noise should be monitored. At operation stage, the working environment for operation of the SWM facilities should be monitored. The pollution control measures for operation of the facilities should be monitored for exhaust gas from the waste-to-energy plant, wastewater and noise from the intermediate treatment facilities, and landfill gas control, leachate treatment facilities, and offensive odor especially at the final disposal facility.

Table12.5.5 Recommended Environmental Monitoring Plan

Project Phase	Environmental / Social Element	Parameters	Location or Object	Frequency	Responsible Body
Pre-construction	Land issue / Resettlement	Progress on compensation arrangement Number of complaints recorded and their disposition Payment of compensation	Private lands affected by ROW of the project	Once every 3 months	Ministry of Public Works & Transport (Third party)
Construction stage					
	Public health, HIV / AIDS	Number of patients Type of disease Presence or absence of HIV / AIDS Actions taken	Contractor's worker	Once a month	Contractor
	Hydrological situation	State of drainage work	Construction site	Once a month	Contractor
	Air quality	PM_{10}	Inhabited areas near project sites	Once a month	Ministry of Public Works & Transport, Contractor
	Water pollution	pH, BOD, Suspended Solids (SS), n-Hexane extracts	Water area downstream of construction sites	Once a month	Ministry of Public Works & Transport, Contractor
	Solid waste	Generation source Discharge amount Collection methods Littering condition Type of waste Generation amount	Waste discharge areas	Once a month	Ministry of Public Works & Transport, Contractor
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a month	Ministry of Public Works & Transport, Contractor
Operation stage					
	Public health, HIV / AIDS	Working hours Questionnaire to the workers	Inside facilities	Twice a year	Operator of intermediate treatment and final disposal facilities

		Dust Odor Presence or absence of hazardous matters Condition of pest control			
	Groundwater	Parameters for living environment (pH, Temperature, Phenol, Cu, Zn, Fe, BOD, SS, n-Hexane extracts, etc.) Hazardous substances (Hg, Pb, Cyanide, etc.)	Leachate at the landfill area Monitoring well in the down- stream of landfill area Surrounding wells	Every three months	Operator of intermediate treatment and waste disposal facilities
	Global warming	Methane gas	Landfill site Peripheral area of the disposal facilities	Every three months	Ministry of environment
	Air quality	NO_x, SO_x, CO, PM_{10}, HCl, Dioxins, etc.	Exhaust gas from the stack Inhabited areas nearby the project sites	Every three months	Operators of intermediate treatment facilities
	Water pollution	Parameters for living environment (pH, Temperature, Phenol, Cu, Zn, Fe, BOD, SS, n-Hexane extracts, etc.) Hazardous substances (Hg, Pb, Cyanide, etc.)	Wastewater treatment facilities Leachate treatment facilities Surrounding water bodies (Erzeni River)	Every three months	Operators of intermediate treatment facilities
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a year	Operators of intermediate treatment facilities
	Offensive odor	Ammonia Methyl mercaptan H2S Methyl sulfide Methyl disulfide Trimethylamine	Border lines of the facilities	Once a year	Operators of intermediate treatment facilities and waste disposal facilities

Source: JICA Study Team

12.5.5 Recommended TOR for Environmental Process for Proposed Plans

(1) General Requirement in Albanian EIA System

The proposed projects include development of the waste-to-energy plant exceeding the capacity of 50t/day and new development of waste disposal facilities with the incoming waste amount exceeding 50t/day. In the Albanian environmental EIA legislative system, an In-depth EIA is required for the waste-to-energy plant. Meanwhile, a preliminary EIA is required for the waste disposal facilities. The TOR for preparation of In-depth EIA is proposed as shown below.

(2) Basic Requirements of In-depth EIA Document

The following information should be covered in the contents of Profound EIA document.

- Objective of the project and its detailed description

- Baseline social and environmental data in the project site and its vicinity area
- Detailed description of project component (facilities and equipment)
- Construction plan and schedule
- Description of construction works
- Potential social and environmental impacts and their mitigation measures to prevent adverse impacts
- Monitoring program
- Conformity with the state's upper level plan and economic development plan
- Records of stakeholder consultation
- Rehabilitation measures for the pollution or damage of environment and their cost
- Procedures and reasons of selection of project site
- Direct and indirect impact on environment
- Project options and their impact
- Risks of hazards on health and environment and mitigation measures
- Trans-border impact on environment, if any
- Detailed description on savings plan of energy and natural resources

(3) Stakeholder Consultation

The following stakeholders should be involved in the formulation process of EIA approval and the preparation of the EIA documents.

Solid Waste Management Sector

- Project Proponent: Ministry of Public Works and Transportation, Municipality of Tirana
- Supervisory agency for EIA: Ministry of Environment
- Municipalities: Commune, mini-municipalities
- Beneficiary: Citizens
- Affected resident: Local residents, waste pickers (Roma community)
- Others: University, recycling association, NGO groups

(4) Consideration of Scope of Work on In-depth EIA Documents

The proposed project is executed based on the Albanian EIA legal system. In case the financial source is obtained from an international donor agency, say, World Bank or JICA or KfW, the EIA documents should be prepared following the donor's guidelines for environmental and social considerations.

At least the following items shown in Table 12.5.6 should be studied for preparation of the EIA documents.

Table 12.5.6 Recommended Considerations for Preparation of EIA Documents

Item	Issue	Action to be Required
Baseline Social & Environmental Situation	Land Issue/ Resettlement Vulnerable ethnic minorities Groundwater Air Pollution / Global Warming Water pollution Noise	Preparation of RAP Identification of activities of waste pickers Preparation of livelihood reconstruction and employment plan for waste pickers Stakeholder consultation Identification of existing social environment Identification of existing natural environment Monitoring of groundwater in final disposal site Monitoring of air quality Monitoring of water quality Monitoring of noise level
Stakeholder consultation	Information disclosure	Holding of public consultation meetings Involvement of public opinion Recording of meeting results
Construction plan	Environmental problems during construction stage	Preparation of tender documents covering required mitigation measures during construction Request to prepare a construction plan and schedule detailing mitigation measures and monitoring plan
Potential impacts	All environmental issues	Estimation of potential direct and indirect impacts
Mitigation measures	Land Issue / Resettlement Hazard Groundwater Air pollution / global warming Water pollution Noise Odor	Information disclosures to affected residents and agreements Appropriate compensation for affected residents Notification to relevant authorities and their approval Preparation of safety and health management plan for hazard at construction and operation Consideration of exhaust gas treatment equipment for design of waste-to-energy facility Consideration of leachate treatment system for design of final disposal facility Pollution prevention during construction Preparation of environmental monitoring plan
Environmental monitoring plan	Land Issue / Resettlement Vulnerable ethnic minorities Cultural heritage Social infrastructure Hazard Public Health Air Pollution / Global Warming Water pollution Noise	Preparation of monitoring plan Implementation of monitoring before, during construction, and at operation stage

Source: JICA Study Team

12.6 Recommendations and Conclusions

The following paragraphs summarize the recommendations and conclusions for implementation of the Tirana Municipality ISWM Plan and the Priority Projects. In order to modernize the capital city of Albania, this is a good opportunity for the MOT to commence the SWM plans and projects in accordance with the following rationales, recommendations and conclusions.

Significance for Implementation of the Plans and Projects

In recent years, improvement or change of SWM activities has been a crucial matter confronting administrative bodies as nuisances are generated by the consequences of daily life. Implementation of an ISWM with involvement of the stakeholder is considered as one of the solutions for improvement of the situation and local governments across the world are launching efforts to face this challenging task. In Albania, the conditions for implementation are being prepared for commencement of the ISWM plan. The significance or the rationale for implementing the Tirana Municipality ISWM Plan and the Priority Projects are summarized as follows.

- Compliance to the required target level stated in the Law on Integrated Solid Waste Management, the Albanian National Waste Strategy, the National Waste Management Plan, the Tirana Waste Area Management Plan, and EU directives.
- Modernization of urban infrastructures for the capital of Albania and for accession to the EU.
- Reduction of negative legacy to the future generations through executing the environmental conservation and saving natural resources.

Expected Outcomes of Priority Projects

The Priority Projects are selected based on the screening criteria set by the elements of urgency, compliance and effects as the project is carried out properly. Effects or the outcomes are the results of implementation of the Priority Projects and drastic improvements are expected as the plans and projects are implemented. Those visible changes and the basic improvement in SWM activities are brought about through the implementation of the Priority Projects as summarized below.

- Clean-up of discarded waste in open dumpsites drastically changes the landscape, beautifies the town, and improves the neighboring environmental deterioration.
- Implementation of separate collection is a starting point for recovery of more recyclable materials in waste.
- Expansion of waste collection service in the uncovered service area is a basic condition for maintaining cleanliness of town and avoid illegal dumping.
- The 3R activities by the initiatives of MOT and involvement of waste generators, waste pickers, dealers, recycling industry and the stakeholders is the last solution to save the natural resources for establishment of a sound resource recycling society in Tirana and Albania.
- Treatment of the most nuisance-causing municipal waste (organic waste) is effective to improve the odor problems and the recovery of useful by-products in compost and biogas.

- Organic waste treatment contributes to attain the EU target level of 35% of organic waste to landfill.
- Waste-to-energy plant is the most effective means for drastic reduction of waste volume and stabilization of waste for landfill, in addition to the recovery of electricity for reduction of operation cost and generation of income by selling the excess amount of electricity to the electric company.
- The final target level of 75% for recovery and recycling will become achievable with operation of an appropriate scale of "waste-to-energy plant."
- Expansion of Sharra disposal facilities is a basic condition to secure the final destination of residual waste and to commence operation in the beginning of 2017.
- The members of the proposed Project Task Team and additional sector under the Directorate of Waste Management shall have the primary responsibility to promote implementation of the Tirana Municipality ISWM Plan and the Priority Projects.
- Accumulation and analysis of baseline data of SWM activity records, waste amount and composition survey, and public awareness survey are required essentially for evaluation of the SWM activities.
- Establishment of independent and transparent accounting system for SWM activities is a basis for strengthen the financial capacity through setting a fair waste tariff system, allocation of appropriate budget, and application of government subsidy.
- Raising public awareness is an indispensable condition for introduction of 3R activities and separate collection through sorting recyclable materials at source, discharge of waste at the designated waste bins and promotion of recycling industry.

Participation of Private Sector

Currently, waste collection service is carried out by the private service providers through contract with MOT. In addition, cleaning of public spaces including parks are carried out by the MOT-owned corporation called General Directorate No. 1 or MOT Waste Management Enterprise. Involvement of private sector in SWM activities will be the requirement needed even in future. There are several options for involvement of private sector to implement the Priority Projects especially in the services of separate waste collection and transportation, composting and biogasification plants, waste-to-energy plant, and waste disposal. The options for subletting the services and the contract methods shall be sufficiently discussed and studied repeatedly to decide the best options with reference to the proposals recommended in the preceding sections and the following discussion and study points.

- To carry out the service independently for separate waste collection and transportation, composting and biogasification plants, waste-to-energy plant, and waste disposal respectively by individual private contractor or combine more than one service
- To integrate all the services into one private contractor
- To build and own by MOT and recruit operation and maintenance staff
- To build and own by MOT and contract-out the operation and maintenance;
- Concession contract by Build-Own-Operate (BOO) or Build-Operate-Transfer (BOT) or Build-Transfer-Operate (BTO)

- Contract period for each type of contract
- Method of payment by Fixed Price or Fixed Price plus Incentive Fee or Cost plus Incentive Fee or Cost plus Fixed Fee
- Review of assignment activities of MOT-owned Waste Management Enterprise and required restructure if any for implementing the Tirana Municipality SWM Plan
- Technically and financially reliable potential/interesting service providers to the scale of services for contract
- Technically and financially reliable potential/interesting overseas service providers to the scale of services for contract

Cost-sharing Concepts

The budget of SWM in 2012 was proposed at 850 million Lek. The total waste amount in 2012 is estimated at 150,000t/year (683t/day x 366 days). From the relation above, the SWM cost per ton-waste is estimated at 3,400 Lek/ton. Meanwhile, the unit cost for implementing the Tirana Municipality ISWM Plan is estimated at 10,600 Lek/ton without profit as shown in Table 3.11.5. In future, the cost per ton-waste will become almost three times of the present cost. Under the circumstance of increasing SWM cost in future, it is required that MOT rationalizes the SWM activities to suppress the cost and increase the income by the cost-sharing concepts summarized hereunder.

- Establishment of transparent, independent SWM account system for evaluation of the financial status of SWM activities.
- Setting a fair tariff system to domestic waste and business, commercial and institutional waste.
- The waste fees shall be structured by the cost calculation of waste collection and transportation, 3R activities and intermediate treatment, and waste disposal.
- The tipping fee or the gate fee shall be introduced for the vehicles hauling waste directly to the waste disposal site.
- Basically the “beneficiary pay principle” (BPP) shall be applied to set the waste fee and the tariff.
- The waste fee and tariff shall be set at an appropriate level in consideration of the willingness to pay, affordability to pay, income level of the waste generators, and step-wise increase of waste fee.
- The waste fee and tariff shall be set at an appropriate level considering the public service shall not be a profit-oriented business.

Important Issues for Implementing the Priority Projects

In summary, there are several important issues to overcome in the course of implementation of the Priority Projects as shown below.

- Establishment of the Project Task Team in 2013 to commence the tasks initially for the feasibility study, implementation plan, environmental impact assessment, etc. to promote implementation of the Priority Projects.
- Organizing the residents, community groups and stakeholders for raising public awareness to commence the separate collection and 3R activities in the pilot study area in 2014.

- Acquisition of site at Sharra to secure the construction site for the integrated waste management facilities.
- Allocation of budget for the fiscal year 2013 to launch the implementation of the Tirana Municipality ISWM Plan and the Priority Projects.

Conclusions

MOT is responsible for realizing the Tirana Municipality ISWM Plan to comply with the requirements stated in the laws and the superordinate strategies and plans. The most crucial factor for implementing the integrated projects is the participation of the residents, community and the stakeholders to the introduction of separate collection and 3R activities. Accordingly, the programs to raise public awareness shall be started immediately by disclosing the plans to the public and/or conducting the public hearing for implementing the projects to obtain support from the society. Considering the current fragile financial status to allocate a considerably huge amount of budget for the construction work, the alternative financial sources from the external source(s) such as a project loan, subsidy from the central government and/or investment from the private sector will be the appropriate solution. Improvement and/or upgrading of SWM system will be achieved through implementation of the Tirana Municipality ISWM Plan and the outcomes will contribute to the modernization of urban infrastructures required for accession to the EU.

13. Action Plan for Water Supply System Development

13.1 General (Selection of Priority Projects, Assumptions and Premises)

(1) Basic Policy for Selection of Priority Project

Establishment of stable water supply system is indispensable and urgent issues for the sustainable development of Municipality of Tirana (MOT). The water supply system is required to provide safe water constantly for 24 hours. Priority projects are proposed here to resolve the issues of the current water supply system of Tirana Water Supply and Sewage Company (UKT), implementing agency for water supply to MOT and surrounding areas. Basic policy for prioritization is shown below.

- Selection of quick-impact projects whose effects emerge in short term as the priority projects.
- Excluding the promising projects that UKT is implementing currently or is planning to implement soon.

(2) Selection of Priority Projects

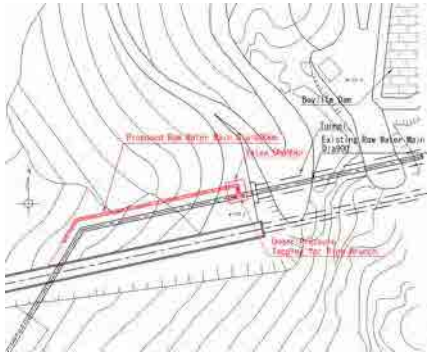
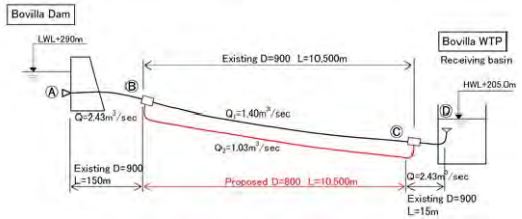
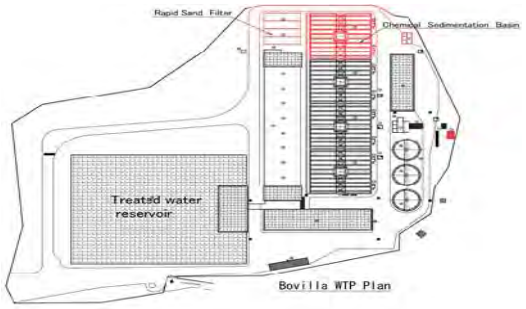
Priority projects include (1) Expansion of Bovilla Water Treatment Plant (WTP) and laying of additional raw water main to utilize overflow water of Bovilla dam, (2) Energy saving plan to reduce power cost which account for one fourth of total UKT Operational and Maintenance (O&M) cost, (3) Non-Revenue Water (NRW) reduction plan, (4) Introduction of pipeline mapping system to help O&M work for water distribution network and (5) Capacity development for strengthening of UKT organization.

Construction of water distribution reservoirs, main transmission/distribution pipe installation, and water meter installation/replacement work are excluded from the priority projects since UKT has already started these projects as the urgent projects.

13.2 Components of the Integrated Water Management Project

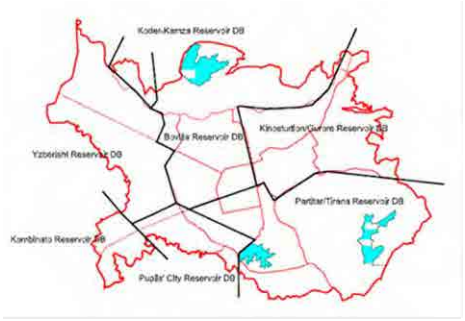
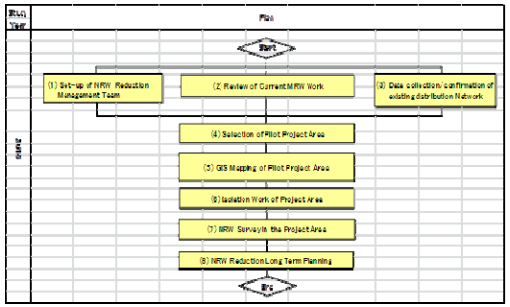
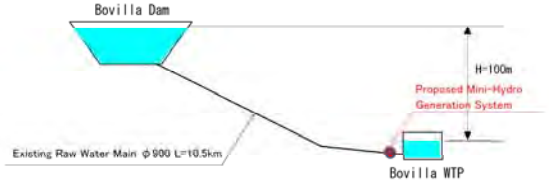
Main components of the priority projects are shown in Table 13.2.1.

Table 13.2.1 Main Components of Priority Projects (1/3)

No.	Name	Concept/Figure	Main Component	Schedule
WS1-1	Utilization of overflow water of Bovilla Dam (Increase of Intake Quantity)		Pipe branch by under-pressure tapping method for additional raw water main dai.800mm from existing raw water main dai.900mm.	2018-2019
WS1-2	Laying of additional raw water main between Bovilla Dam and Bovilla WTP		Laying of additional raw water main dai.800mm and 10.5km long with the route of the existing raw water main.	2018-2021
WS2-1	Expansion of purification capacity of Bovilla WTP		Increase the purification capacity of Bovilla WTP by 50,000 m³/d. Total purification capacity will goes to 206,000 m³/d from existing 156,000 m³/d after the project completion.	2020-2022

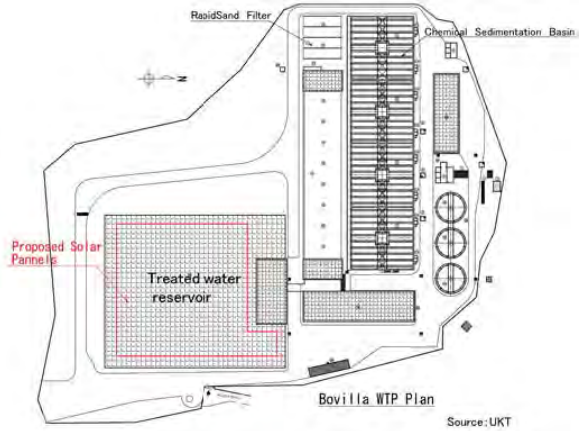
Source: JICA Study Team

Table 13.2.1 Main Components of Priority Projects (2/3)

No.	Name	Concept/Figure	Main Component	Schedule
WS4-7	Introduction of pipe mapping system		Pipe mapping system using GIS data is recommended to prepare the water supply area expansion, repair and replacement plan corresponding to the increase of water demand and urbanization of the area. UKT staff member have to master the know-how of the system through in-class or on-the-job training.	2020-2021
WS5-1	Reduction of non-revenue water		Technical assistance project for leakage detection and repair by JICA staff. Experts will carry out field survey and will make Long-term Non-revenue Water Reduction Plan.	2016
WS6-1	Installation of mini-hydro generation system on the raw water main		Installation of mini-hydro generation equipment for the capacity of 200kw on the raw water main from the Bovilla dam to Bovilla WTP to reduce the power cost of UKT.	2013-2014

Source: JICA Study Team

Table 13.2.1 Main Components of Priority Projects (3/3)

No.	Name	Concept/Figure	Main Component	Schedule
WS6-2	Installation of solar panels at the Bovilla WTP		Installation of solar-panels at the open space of the Bovilla WTP for example on the top slab of clear water tank to reduce the power cost of UKT.	2015-2016
WS7-1	Enhancing capacity building of UKT		Participation to JICA Training Course in Japan to enhance the capacity building of UKT staff.	2017

Source: JICA Study Team

13.3 Outlines and Technical Proposals of the Project

(1) Outlines of the Projects

Outline of selected eight priority projects are summarized in Table 13.3.1.

Table 13.3.1 Objective and Contents of the Priority Projects

Code	Project Title	Objective and Contents of Work
WS 1-1	Utilization of Overflow Water of Bovilla Dam	Increase additional intake flow from Bovilla Dam by the amount of 20 Million cubic meters per year. Branching work of the dia.800mm new raw water main from the existing dia.900mm raw water main at the outlet from the Dam.
WS 1-2	Laying additional Raw Water Mains between Bovilla Dam and Bovilla WTP	Installation of additional raw water mains dia. 800 mm and 10.5 km long along with the route of the existing raw water mains to convey additional flow of 20 million m^3/year, or 0.63 m^3/sec from Bovilla Dam to Bovilla WTP.
WS 2-1	Expansion of Purification Capacity of Bovilla WTP	Increase the purification capacity of Bovilla WTP to treat the additional flow of 0.63 m^3/sec. Construction of one series of water purification process including chemical sedimentation basin and rapid sand filters. .
WS 4-7	Introduction of Pipe Mapping System	Pipeline information shall be integrated to make use of the information for repair, replacement and maintenance purposes. To install pipeline GIS mapping system at the Bovilla WTP or at the UKT head office.
WS 5-1	Reduction of Non-revenue Water	To reduce the non-revenue water amount to increase the income for stabilizing the financial condition of waterworks. The plan shall be prepared by the proposed NRW management team to carry out the survey and study at the isolated water service block of the pilot project area and practice the learned model in the entire water service area.
WS 6-1	Installation of Mini-hydro Equipment on the Raw Water Main.	To reduce the electricity cost paid to the electric company by installation of self-power generation facilities. Install mini-hydro power generation equipment for the capacity of 200 kW on the raw water mains from the Bovilla Dam.
WS 6-2	Installation of Solar Panels at the Bovilla WTP	To reduce the electricity cost paid to the electric company by installation of self-power generation facilities. Installation of solar panels at the open space of Bovilla WTP for example on the top slab of clear water tank, etc.
WS 7-1	Capacity Development of UKT Staff	To enhance the capabilities of the staff for upgrading overall services of the waterworks. Dispatch the staff of Engineers Department, Finance Department, etc to the JICA training course to learn the modern technology and management practices and apply the learned knowledge for the service of water by UKT

Source: JICA Study Team

(2) Cost of the Project

The total cost of water supply action plan is estimated at 3,480.0 Million Lek as shown together with the breakdown in Table 13.3.2.

Table 13.3.2 Cost of the Priority Projects

Code	Project Title	Project Cost (Million Lek)
WS 1-1	Utilization of Overflow Water of Bovilla Dam	84.0
WS 1-2	Laying additional Raw Water Mains between Bovilla Dam and Bovilla WTP	1,080.0
WS 2-1	Expansion of Purification Capacity of Bovilla WTP	1,890.0
WS 4-7	Introduction of Pipe Mapping System	3.0

Code	Project Title	Project Cost (Million Lek)
WS 5-1	Reduction of Non-revenue Water	83.0
WS 6-1	Installation of Mini-hydro Equipment on the Raw Water Mains	262.0
WS 6-2	Installation of Solar Panels at the Bovilla WTP	76.0
WS 7-1	Capacity Development of UKT Staff	2.0
Total		3,480.0

Source: JICA Study Team

13.4 Financial and Economic Analysis

13.4.1 Financial Analysis

Financial evaluation of the water management project is carried out in this section by comparing the financial costs and revenues between With the Project Case and Without the Project Case. Incremental cash flow difference between With the Project Case and Without the Project Case is prepared based on the assumptions below and the Financial Internal Rate of Return (FIRR) on the Project Case is calculated for evaluation.

(1) Basic Assumptions

The following is the basic assumptions used for the financial analysis of the water management project. It also applies to economic analysis of the project, unless otherwise mentioned.

- Project Period

The project period is 39 years from 2013 to 2051, including the construction period of 2014-2022 and evaluation period of 2017-2051.

- Price Basis and Exchange Rate

The base year of the project is 2012. All costs and revenues are expressed at the price level of 2012. The study assumes 3.0% annual inflation rate during the project life, which is the target inflation rate set by the Bank of Albania for the year 2012.

Exchange rates used are 1 Lek = 0.788 JP Yen = 0.007 Euro = 0.009 US Dollar, which are prevailing rates at the time of survey.

- Contingencies

Physical contingency of 10% is included in the analyses. The price contingency is not included.

- Taxes

For financial analysis, the value added tax (VAT) of 20% is included while corporate tax is excluded.

- Target FIRR on Project

It is assumed that UKT will either avail bank loan and/or use its available cash to pay for the water management project. The prevailing long-term corporate lending rates of commercial banks in Albania are approximately 13.0% at the time of study. The real interest rate is calculated at 9.7%, discounted by expected inflation rate of 3.0% for 2012 (1.13/1.03 (inflation rate) -1 = 0.097).

The target FIRR of the water management project, therefore, should vary depending on the share of financial sources between UKT's own cash and bank loan. However, the maximum target FIRR will be 9.7%.

(2) Financial Project Costs

The financial project costs are comprised of investment costs and O&M costs.

- Investment Costs

Financial investment costs of the projects are calculated based on the total engineering investment costs as presented in previous sections.

Initial Investment Costs

Table 13.4.1 Initial Financial Investment Costs of the Project

(Million Lek)

Civil Work	1,521
Building	218
Machinery & Equipment	1,090
Capacity Building	69
Total	2,898
Consulting Service (10%)	96
VAT (20%)	599
Base Cost	3,594
Physical Contingency (10%)	359
Total Financial Investment Cost	3,953

Source: JICA Study Team

Replacement Investment Costs

Replacement investment costs, if necessary, are included in the respective years based on respective lifetime of assets as shown in Table13.4.2.

Table 13.4.2 Expected Lifetime of Assets

Civil Work	50 years
Machinery and Equipment	15 years

Source: JICA Study Team

The salvage value of net assets is ignored in the analysis.

- Operation Costs

Financial operation costs of the Project Case are shown in Table13.4.3 as calculated in previous sections.

Table 13.4.3 Annual Operation & Maintenance (O&M) Costs of the Project in 2030-2046

(Million Lek)

Personnel Costs	298.4
Utilities	5.5
Fuel and Power Costs	117.4
Maintenance Costs	60.9
Material Costs (including chemicals)	50.3
Total	532.5

Source: JICA Study Team

(3) Financial Project Revenue

- Water Selling Volume

Water selling volume is estimated based on UKT's actual data of 2011 and is summarized in Table13.4.4

Table 13.4.4 Water Sales Volume of Project Case (000 m^3)

Year	2017	2020	2023	2030-2051
Water Sales Volume	920	3,580	13,230	17,630

Source: JICA Study Team

- Project Users

Incremental number of users by the project is calculated based on above water sales volume and 2012 user number provided by Albanian Regulatory Authority of the Water Supply and Waste Water Disposal and Treatment Sector (WRA). It is assumed that average water usage volume per user will remain stable from 2012 onwards.

Table 13.4.5 Increased Users by Project Case

	2017	2020	2023	2030
Households	3,539	13,770	50,887	67,811
Other Users	521	2,026	7,486	9,976

Source: JICA Study Team

- Water Tariff

The recent tariff trend is shown in Table13.4.6.

Table13.4.6 Historical Tariff Trend*

(Lek/ m^3)

	2008-2009	2010-2011	2012
Households	20	33	45
Private Enterprises	95	120	135
Public Institutions	75	110	120

*Figures are shown in current prices.
Source: WRA

It is planned that UKT will increase the tariff in 2014 as shown in Table 13.4.7.

Table13.4.7 Tariff Structure Factors for Different Consumption Blocks and Users

User Category	Tariff Structure Blocks (cubic meters/month)			
	< 4.5	4.5 to 20	20 to 30	> 30
Households	1.0*	1.0 to 3.0	1.5 to 4.0	2.5 to 6.0
Public Institutions	1.0 to 2.0	1.0 to 3.0	1.5 to 5.0	2.5 to 10.0
Private Enterprises	1.0 to 2.0	1.5 to 4.0	2.0 to 6.0	3.0 to 12.0

* factor = times of the present tariff
Source: WRA

- Tariff Collection Rates of Water Management Project

The collection rate is estimated to improve as shown in Table 13.4.8.

Table 13.4.8 Average Collection Rate of Tariff

2011	2012	2022	2026	2030
90.0%	92.0%	94.7%	95.9%	97.0%

Source: WRA and the Study Team

The financial analysis, however, uses 100% collection rate and assumes that uncollected amount is to be compensated by UKT and not by paying users.

- Revenue of Project Case

Revenues of the project case is calculated based on above assumptions and is summarized in Table13.4.9.

Table 13.4.9 Revenue of Project Case

(Million Lek)

	2022	2030-2051
Water Tariff from Households	312	1,076
Water Tariff from Other Users	491	1,652
Other Revenues	12	42
Total	815	2,770

Source: JICA Study Team

(4) Financial Evaluation

FIRR of the water management project at the following two different tariffs is calculated based on the above assumptions and are summarized in Table13.4.10. FIRR is much higher than the maximum target rate of 9.7% both under Case 1 (present tariff) and Case 2 (increased tariff in 2014).

As far as the present project is concerned, UKT should be able to benefit greatly.

Table 13.4.10 FIRR Summary of Water Management Project

	Initial Investment Amount (MN Lek)	Monthly Tariff by HH in 2022 (Lek)	FIRR
Case 1 (present tariff)	3,953	745	20.4%
Case 2 (scheduled increase in 2014)	3,953	1,188	65.6%

Source: JICA Study Team

Financial cash flow statements of water management project under Case 2 scenario is in Technical Notes.

13.4.2 Economic Analysis

Economic analysis of the water management project is carried out in this section.

(1) Assumptions for Economic Analysis

In addition to above mentioned basic assumptions for the financial analysis, the following assumptions are applied to the economic analysis.

- Adjustment to Financial Costs and Benefits

In principle, economic costs and benefits are to exclude fiscal distortions such as taxes, and subsidies. The present project costs and benefits exclude the value added tax (VAT) of 20%.

- Target Economic Internal Rate of Return (EIRR)

EIRR is an efficiency index for the use of scarce capital, indicating the average percentage of returns that can be expected every year to the national economy through the planned investment. International financial institutions such as World Bank and Asian Development Bank apply 10% to 12% social discount rate in developing countries.

The project sets the target EIRR at 10%. That is to say, if the project's EIRR is greater than 10%, the project is economically feasible and should bring net benefits to the regional economy.

- Willingness to Pay as Economic Benefits

Willingness to Pay (WTP)

WTP is the proxy measurement of the economic value as expressed as 'consumers' surplus' and therefore is the amount that the beneficiaries are willing to pay in return for the product or services they receive. The concept of WTP is widely used as numerical expression of economic benefits in evaluating projects. If the price, or tariff in this case, is set higher than the WTP, the users would not receive the service and would use the money for other products or services. Therefore, WTP is considered as the maximum satisfaction that the users can achieve in various forms from the project in question. Therefore, 'Willingness to Pay' methodology is used to calculate the economic benefits of the present project.

The World Bank and Asian Development Bank have the benchmark in terms of percentage to income as to how much the users are willing to pay for infrastructure services. According to them, WTP for water is 4% of disposable income of users.

It is assumed, therefore, that 4.0% of disposable income of households (60,000 Lek per month in 2012) to be WTP of household beneficiaries of the present water project.

Disposable Income

Average family income data of Tirana Prefecture is taken from the Survey of Monthly Income by Prefecture 2006-2007 (Institute of Statistics, Albania). The amount is adjusted for the inflation and income tax and is calculated to be 60,000 Lek per month in 2012.

(2) Economic Evaluation

Economic cash flow statement of the water management project is prepared and is in Technical Notes. EIRR of the water management project, however, is incalculable due to extremely high profitability. The economic net present value (ENPV) and benefit-cost ratio (B/C) adopting 10% discount rate are 11,704 million Lek and 4.7, both highly exceeding respective target of "0" and "1".

It is concluded that the project is economically viable.

13.4.3 Conclusion

The water management project is expected to generate an extremely high FIRR of 65.6% with the scheduled tariff increase of 2014 and thus UKT should comfortably be able to finance it by itself.

As the project's ENPV and B/C are large at 11.704 million Lek and 4.7, it should bring extremely high net benefits to the region.

Given the above, it is concluded that it is worthwhile to implement the project.

13.5 Environmental Considerations

13.5.1 Recommended Mitigation Measures

The following mitigation measures are recommended for each project phase of the development plan of water supply System sector.

13.5.2 Mitigation Measures at Pre-construction Stage

The list of mitigation measures at pre-construction stage is shown in Table 13.5.1.

Land Issues / Resettlement

The proposed projects will require the project land for water pipelines and distribution reservoirs. The projects will require land acquisition to secure these project areas. The land acquisition should be proceeded including appropriate compensation measures for the land owners.

Social Infrastructure

The water supply sector will include underground construction works. These construction works may affect the underground facilities such as electric power, telephone lines, water supply and sewerage pipes. The identification of these utilities before construction will be needed to be

reflected on the tender documents or contract documents of those construction works.

Table 13.5.1 List of Mitigation Measures at Pre-construction

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation Measures	Responsible Body
Water Supply Sector					
	1.1	Land Issue / Resettlement (In case of construction of Dam Reservoir)	Impacts on land owner to be caused by the land acquisition of project site	Advance Notification to land owners, landlord and proprietor of establishments Holding consultation meetings with affected residents Agreement between project proponent and affected residents Preparation of monitoring plan Implementation of monitoring	Ministry of Public Works, Transport (MOPWT)
	1.2	Social Infrastructure	Impacts on existing social facilities (telephone, sewer pipes, water supply pipes, etc.)	Baseline survey of existing social facilities Preparation of tender or contract document in relation to indemnification for the case of damage of social facilities Preparation of monitoring plan	MOPWT

Source: JICA Study Team

13.5.3 Recommended Mitigation Measures at Construction Stage

The list of mitigation measures at construction stage is shown in Table 13.5.2 and their details are shown as below.

Land Issues / Resettlement

The actual implementation of Resettlement Action Plan should be confirmed in order to clarify the objects which may interfere the commencement of construction works and its monitoring will be necessary.

Social Infrastructure

Contractor should get approval for the actual construction work from the relevant authorities of the social facilities (water supply, sewerage, telephone and power line) by submitting their construction plan that the construction work will not interfere these facilities and the contractor indemnify the authorities for the unexpected damage when he damage their facilities. Regular monitoring will be necessary.

Public Health, HIV / AIDS

Contractor should prepare a safety and health management program for workers, conduct regular health checkup and report the results to a healthcare center which has jurisdiction over the project site. In addition, the contractor should allocate a health supervisor and carry out a health education to enhance the workers' awareness toward their own hygiene in order not to affect the surrounding environment.

Hazard

This issue covers disasters and traffic accidents caused by construction works. The contractor should estimate potential risks during construction, establish measures to be taken for avoidance such risks during construction and prepare a safety management, emergency preparedness program. The program should be shared among all staffs including construction workers. With respect to the traffic accidents to be caused by the construction works, the contractor also take measures to allocate traffic controllers who controls the construction vehicles and equipment no to disturb other traffics at the project sites.

Groundwater

The laying works of water supply pipes in water supply sector will include underground works which may affect existing groundwater. Contractor should prepare a construction plan to avoid the adverse impact on existing groundwater. The monitoring by the contractor of groundwater table in surrounding wells is also recommended.

Air Pollution

The generation of dust and air pollutants of NOx, SOx and SPM are estimated by the construction works and operation heavy equipment and construction vehicles. Contractor should prepare a construction plan for mitigating such air pollution during construction which covers appropriate arrangement plan and schedule of such vehicles and heavy equipment and regular watering at construction sites. The periodical monitoring of above air pollutants is recommended to avoid air pollution during construction stage.

Water Pollution

Water pollution is estimated by the generation of turbid or mad water during earthworks. Contractor should prepare a construction plan dealing with wastewater treatment.

The following consideration should be taken;

- Direct release of construction wastes into surrounding water body should be avoided.
- Good housekeeping should be avoided to reduce generation of construction wastes
- Silt curtains should be provided to restrict spreading of sediment plumes
- Drainage channels should be provided to convey storm water to sand / silt trap
- Construction works should be properly programmed to minimize soil excavation in rainy seasons to prevent soil erosion
- Reuse of treated effluent of vehicle washing, dust suppression and cleaning is recommended

Regular monitoring is recommended during construction stage.

Solid Waste

General solid waste and construction debris is estimated at construction offices, workshops and construction sites. Contractor should prepare a safety and health management program which covers the following mitigation for the estimated generation of solid wastes and construction debris during construction stage.

For the general waste generated at construction offices and workshops;

- The waste should be collected by designated waste collector and disposed in a designated disposal facility
- For the construction waste and the waste from workshops;
- Used oil and grease trap wastes should be collected and stored on-site in a tank and transported by licensed transporter to a licensed facility,
- Oily water should be separated from water and transported to a licensed facility
- Excavated waste should be refilled in the embankment works
- Production of concrete should be a minimum only for required amount.

Regular monitoring is recommended during construction stage.

Noise & Vibration

Generation of noise and vibration is estimated by the operation of heavy equipment and travelling of construction vehicles.

Contractor should prepare a construction plan for reducing noise and vibration consisting of the following measures during construction stage;

- Engineering control such as 1) utilization of low noise type equipment, 2) utilization of mufflers, 3) enclosure of construction sites and 4) erecting barriers
- Administrative control such as 1) arrangement of work rotation, 2) avoidance of night works especially near the sensitive area to noise (.e.g. hospitals, schools)

Regular monitoring is recommended during construction stage.

Table 13.5.2 List of Mitigation Measures at Construction Stage

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation	Responsible Body
Water Supply					
	1.1	Land Issue / Resettlement	Impact to be caused by land acquisition	Implementation of monitoring	MOPWT
	1.2	Social Infrastructure	Impacts on existing social facilities (telephone, sewer pipes, water supply pipes, etc.)	Advance notification to relevant agencies or authorities Application for permission of disturbance of social facilities from relevant authorities Implementation of monitoring	MOPWT Directorate of Project and Engineering Network, MOT
	1.3	Water use or Water Right	Impacts on existing water right for additional water	Consultation with relevant authorities Obtaining a water right	MOPWT MOEFWA
	1.4	Public Health, HIV/AIDS	Impacts by the Construction Workers during Construction	Mandatory preparation of a safety and health management program by the contractor Assignment of a health supervisor Implementation of health education Implementation of monitoring	Contractor
	1.5	Hazard	Accidents by construction	Mandatory preparation of a safety management and emergency	Contractor

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation	Responsible Body
			works	preparedness program by the contractor Deployment of traffic controllers	
	1.6	Topography & Geography	Impacts caused by land collapse at construction work (surface, underground)	Mandatory preparation of a safety management and emergency preparedness program by the contractor	Contractor
	1.7	Groundwater	Impact on groundwater to be cause by draw-up of ground water	Baseline survey of existing groundwater and surrounding wells Reflection on design on available water amount of groundwater to avoid lowering water table Implementation of monitoring	MOPWT
	1.8	Hydrological Situation (In case of dam reservoir)	Impact on downstream flow regime to be caused by dam-up	Consideration on water use to keep downstream maintenance flow	MOPWT
	1.9	Flora & Fauna (- Ditto -)	Impact on flora and fauna to be caused by tree cutting	Baseline survey of existing vegetation, flora and fauna Transplanting of important species	MOPWT
	1.10	Air Pollution	Impact caused by the generation of dust and air pollutants by construction works	Mandatory preparation of a construction plan on air pollution prevention by the contractor Mandatory sprinkling of water at construction sites Mandatory preparation of appropriate allocation plan of construction vehicles Supervision of the contractor's allocation plan of construction vehicles Implementation of monitoring	Contractor
	1.11	Water Pollution	Impact caused by construction wastewater containing muddy and oily contents	Mandatory preparation of a construction plan on wastewater treatment Implementation of monitoring	Contractor
	1.12	Noise & Vibration	Impact caused by the generation of noise & vibration by construction works	Mandatory preparation of a construction plan on reduction of noise & vibration Adoption of construction machinery and equipment capable of prevention against noise & vibration Implementation of monitoring	Contractor
	1.13	Ground Subsidence	Ground subsidence due to draw-up of groundwater	Mandatory preparation of a construction plan Supervision of the contractor's construction works Implementation of monitoring	Contractor

Source: JICA Study Team

13.5.4 Recommended Mitigation Measures at Operation Stage

The list of mitigation measures at operation stage is shown in Table 13.5.3 and their details are shown as below.

Public Health, HIV / AIDS

In water supply sector, in addition, some risks of contamination with bacteria and heavy metals in the treatment process from taking-in raw water to distribution of treated water is expected and may cause adverse impact on citizens.

The following mitigation measures should be taken;

- Implementation of education and training
- Water quality management of treated water in water supply sector
- Implementation of monitoring

Hazard

In water supply sector, some accidents of system malfunction will occur by unexpected events such as power failure or natural disasters.

Therefore, the following mitigation is recommended in relation to their system malfunction,

- Advance identification of potential hazard risks
- Establishment of organization for emergency response for above risks
- Establishment of preventive measures and implementation body for its practice (organization structure, preparation of manuals for emergency measures, cooperation with relevant authorities, implementation of education / training, installation of backup equipment such as private power generator)
- Preparation of emergency response measures (initial response measures, emergency response measures, system restore)

Groundwater

In this sector some impact on water table of surrounding groundwater is estimated by the excess drawing-up of groundwater. In preparation of water supply plan, appropriate drawing-up mount of groundwater and continuous monitoring is recommended in order not to affect the water table of surrounding groundwater.

Solid Waste

The generation of sludge is estimated by flocculating agent addition at treatment process in this sector.

The following mitigation measures should be taken;

- Appropriate treatment and disposal of treated sludge
- Securement of final disposal sites of treated sludge

Noise and Vibration

An operation of pump equipment and blower also may generate noise at operation stage in this

sector.

The following mitigation measures are recommended;

For water supply and sewerage sector, on the other hand;

- Sound proof design of facility building and study on barrier at boundary
- Implementation of monitoring at surrounding residential areas

Others

In water supply and sewerage sector, the O&M cost will be increased because of the increased staff number and maintenance of newly developed facilities such as fuel and electricity.

The increased cost for O&M may cause adverse impact on psychological effects or livelihood.

The following mitigation measures are recommended;

- Identification of willingness and affordability to pay of the citizens to be served by the service
- Advance publicity activities through media
- Improvement of service to match with the raising of tariffs

Table 13.5.3 List of Mitigation Measures at Operation Stage

Sector	Plan / Project	Environmental & Social Elements	Potential Adverse Impact	Recommended Mitigation	Responsible Body
Water Supply					
	1.1	Water Use or Water Rights	Impacts on existing water right for additional water	Consultation with relevant authorities Obtaining a water right	MOPWT UKT
	1.2	Public Health	Impact on water quality by the treated water at water treatment process	Reflection of disinfection of raw water on facility design Maintenance of water pipes for prevention contamination at process Monitoring and water quality analysis in compliance with water quality standards	Ditto -
	1.3	Hazard	Impact on hazard to be caused by malfunction of water supply and treatment system	Mandatory preparation of a safety management and emergency preparedness program in the operation manual	UKT
	1.4	Topography and Geography	Impact of topographical or geographical change to be caused by	Reflection of minimizing change of topography and geography on facility design	MOPWT
	1.5	Groundwater	Impact of lowering groundwater table to be caused by draw-up of	Implementation of monitoring	UKT

			groundwater		
	1.6	Hydrological Situation	Impact on downstream flow regime to be caused by dam-up	Reflection of keeping downstream maintenance flow on facility planning or design	MOPWT
	1.7	Flora and Fauna	Impact on ecosystem to be caused by dam-up of river flow	Consideration of downstream maintenance flow and fish-way on design	Ditto -
	1.8	Scenic Value or Cityscape	Impact on visual change to be caused the appearance of reservoir dam	Reflection on landscape design	Ditto -
	1.9	Water Pollution	Water pollution to be caused by eutrophication	Control of human activities such as use of fertilizers in the upstream Implementation of monitoring	MOPWT UKT
	1.10	Solid Waste	Impact to be caused by generation of treated sludge and their disposal	Appropriate treatment and disposal of treated sludge Securement of final disposal sites of treated sludge	Ditto -
	1.11	Noise & Vibration	Impact of noise to be caused by operation of pump equipment	Reflection on design on soundproofing for building and equipment Compliance with environmental standards Implementation of monitoring	Ditto -
	1.12	Ground Subsidence	Ground subsidence due to draw-up of ground- and spring water	Reflection on design on draw-up amount to avoid ground subsidence Implementation of monitoring	Ditto -
	1.13	River Sediment	Downstream river-line erosion to be caused by the dam-up of river water	Reflection on design on drainage of dammed sediment to downstream	MOPWT

Source: JICA Study Team

13.5.5 Environmental Management and Monitoring Plan

(1) Environmental Management Plan

The future raising of tariffs on water supply service and sewerage will affect the household budget. The management program toward setting of appropriate tariff and consideration of vulnerable people who will not be affordable to pay. The environmental management plan is shown in Table 13.5.4.

Table 13.5.4 Recommended Environmental Management Plan

Environmental / Social Element	Issue	Recommended Action	Contents to be Covered	Responsible Body
Livelihood	Impact on civic life to be caused by increase of service tariff	Set-up of appropriate tariff To make widely understand to public	Provision of information to public through TV, radio, brochure and billboard Establishment of special tariff for poverty group	Municipality of Tirana

(2) Environmental Monitoring Plan

The recommended social and environmental monitoring plan is shown in Table 13.5.5.

At pre-construction stage, the monitoring should be carried out for the securement of the project land and the compensation for the land owners. At construction stage, the social facilities (utilities) such as electric line, roads, telephone lines which will be affected by the construction should be monitored for commencement of the construction works. Pollution control for drawdown of groundwater, water pollution and noise also should be monitored. At operation stage, water quality after the treatment should be monitored. Noise also should be monitored for the operation of pump.

Table 13.5.5 Recommended Environmental Monitoring Plan

Project Phase	Environmental / Social Element	Parameters	Location or Object	Frequency	Responsible Body
Pre-construction	Land issue / Resettlement	Progress on compensation arrangement Number of grievances recorded and their disposition Payment of compensation	Private lands affected by ROW of the project	Once every 3 months	MOPWT
Construction stage					
	Social infrastructure	Scale or area of interfered object Progress on application to relevant authorities for commencing construction works Progress on approval from relevant authorities	Social facilities to be affected by the project	Once every 3 months	MOPWT Contractor
	Public health, HIV / AIDS	Number of patient Type of disease Presence or absence of HIV / AIDS Actions taken	Contractor's worker	Once a month	Contractor
	Groundwater	Water table	Surrounding wells	Once a year	Contractor

Project Phase	Environmental / Social Element	Parameters	Location or Object	Frequency	Responsible Body
	Air quality	NO_x, SO_2, CO, PM, PM_{10}	Inhabited areas near project sites	Once a month	Contractor
	Water pollution	pH, BOD Suspended Solids (SS), n-Hexane extracts	Water area downstream of construction sites	Once a month	Contractor
	Solid waste	Generation source Discharge amount Collection methods Littering condition Type of generated waste Generation amount	Waste discharge areas	Once a month	Contractor
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a month	Contractor
	Ground subsidence	Water table Ground level	Construction sites	Once a month	Contractor
Operation stage					
	Public health, HIV / AIDS	Parameters for raw and treated water which is recommended for drinking water by WHO guideline	Raw water Water after water treatment Water at water supply valve	Once a month	UKT
	Groundwater	Water table	Surrounding wells	Once a year	UKT
	Water pollution	Following parameters of reservoir: Water level Temperature Turbidity DO chlorophyll a COD Total Nitrogen Total Phosphorus Bottom sediment	Reservoir	Once a year	UKT
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a year	Operators of intermediate treatment facilities

Source: JICA Study Team

13.5.6 Recommended TOR for Proposed Plans

(1) General Requirement in Albanian EIA System

The proposed projects in this sector will develop water supply facilities with their capacity

exceeding 100 million m^3/year which basically requires Profound EIA according to Albanian legislative system. However, the water purification plant will be expanded in the existing Bovilla water treatment plant and may less environment impact. The decision of environmental permit if profound EIA or IEE is required will depend on the Albanian environmental authority. In this section, the TOR is prepared for the case that the proposed projects will require Profound EIA.

(2) Basic Requirements of Profound EIA Document

The same requirement which was already mentioned in previous sectors should be covered in the EIA documents.

(3) Stakeholder Consultation

The following stakeholders should be involved in the formulation process of EIA approval and the preparation of the EIA documents in this sector.

- Project Proponent: Ministry of Public Works and Transportation, UKT(DPUK)
- Supervisory agency for EIA: Ministry of Environment
- Municipalities: Commune, mini-municipalities
- Beneficiary: Citizens
- Affected resident: Local residents
- Others: University or NGO groups

(4) Consideration of Estimated Scope of Work on Profound EIA Documents

The proposed project is basically preceded based on Albanian EIA legal system and also will be implemented by utilizing international donor's fund such as World Bank or JICA. Therefore, the EIA documents also should follow the donor's operational manual or guidelines for environmental and social consideration.

The following consideration as shown in Table 13.5.6 should be taken for preparation of the EIA documents in each sector.

Table 13.5.6 Recommended Consideration for Preparation of EIA Documents

Item	Issue	Action to be Required
Baseline Social & Environmental Situation	Social infrastructure Groundwater Air Pollution / Global Warming Water pollution Noise	Stakeholder consultation Identification of affected social utilities (e.g. water, electricity, telephone) Identification of existing social environment Identification of existing natural environment Monitoring of groundwater Monitoring of air quality Monitoring of water quality Monitoring of noise level
Stakeholder consultation	Information disclosure	Holding public consultation meetings Involvement of public opinion Recording of meeting results
Construction plan	Environmental problems during	Preparation of tender documents covering required

Item	Issue	Action to be Required
	construction stage	mitigation measures during construction Request to prepare a construction plan & schedule detailing mitigation measures and monitoring plan
Potential impacts	All environmental issues	Estimation of potential direct and indirect impacts
Mitigation measures	Social infrastructure Hazard Groundwater Solid waste Air Pollution / Global Warming Water pollution Noise	Notification to relevant authorities and their approval Preparation of safety and health management plan Preparation of treatment and disposal of treated sludge Pollution prevention during construction Preparation of environmental monitoring plan
Environmental monitoring plan	Land / Resettlement Vulnerable ethnic minorities Cultural heritage Social infrastructure Hazard Public Health Air Pollution / Global Warming Water pollution Noise	Preparation of monitoring plan Implementation of monitoring before, during construction and at operation stage

Source: JICA Study Team

13.6 Recommendations for Actions

(1) Items to be considered in implementation

Following points shall be considered prior to proceed implementation of the priority projects

- Annual overflow volume of Bovilla dam is 20,000,000m^3, according to hearing from UKT staff. This water volume has to be checked before commencement of the project, and dimension of the raw water main and expansion volume of Bovilla dam have to be precisely decided.
- Prior to the introduction of mapping system, UKT has to conduct detailed research and survey of pipe specifications (material, diameter, age, location and leakage record) including valves and fire hydrant.
- Mini-hydro power generation system to be installed in the existing 900mm raw water main is proposed due to its quick-impact effect as the first priority project. And the total output power of 411kw can be produced by the systems with the additional installation of the same system in the proposed 800mm raw water main, enables more cost reduction.
- Since monitoring and management of water quality data like residual chlorine, turbidity and water pressure at the control center of UKT or Bovilla WTP is useful for precise water distribution control and improvement of the service level, introduction of auto water quality monitoring system should be considered in near future.

14. Action Plan for Sewerage and Drainage System Development

14.1 General

(1) Importance of Selected Action Plan

An action plan for drainage system development is not proposed considering that the existing drainage system is actually a part of the combined sewer system, and it would be difficult to have a separate discussion of it.

In the listing of projects comprising the priority project in Part I of this report, there are two successive projects both for Kashar Sewer District (SD) Area of which Phase I is on-going and the Phase II service area is defined as follows:

1) Central and north area of Municipality of Tirana (MOT), now covered by two large interceptors, Tirana Interceptor and Dibres Interceptor;
2) Strategically important western area of MOT; and
3) Paskuqan Commune, which is expected to develop together with MOT along the Central Boulevard and Tirana River.

These areas locate in the center of Greater Tirana Area and the environmental improvement of the area occupies a high priority.

(2) Arrangement of Project

From the characteristics of sewerage works, sewage treatment is an environment-improving project that will benefit a large number of people living around the receiving body of water, while sewage collection project, mainly sewer pipe installation works, directly impacts the local residents, and this project can easily identify the beneficiaries for collection of sewage tariff. In the economic and financial analysis, the priority project is divided into two projects, that is, sewage treatment project and sewage collection project based on their different characters. The project cost is also divided into these two projects before analysis.

14.2 Components of the Priority Project

(1) Summary of the Components of the Priority Project

The components of the priority project are described in Table 14.2.1 respectively by stage.

Construction period for Kashar Phase II project is expected to be from 2016 – 2021 (6 years), and the expansion project is from 2024 – 2026 (3 years).

The Sewage Treatment Plant （STP） for Phase II project has no grit chamber since sewage is pumped from Kashar Pump Station (PS) and a large portion of grits are removed at the PS. A flowchart of the treatment process at STP is shown in Figure 14.2.1.

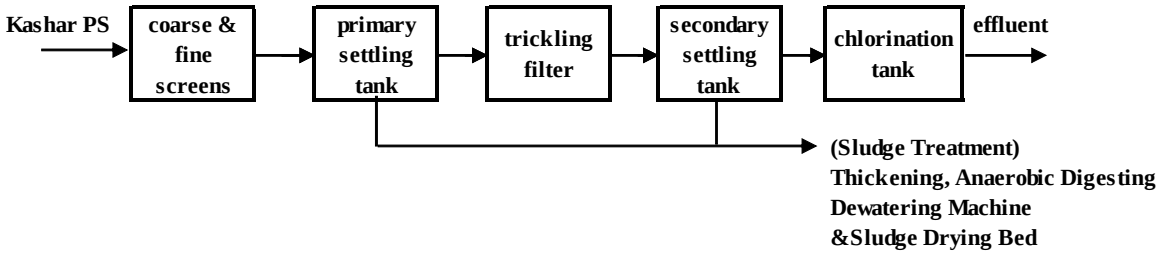
The priority project area map and the STP site area are presented in Figure 14.2.2 and Figure 14.2.3, respectively. Trunk mains sewer configuration is shown in Figure 14.2.4.

Expansion volume includes excess volume from Phase I STP, whose capacity is designed for the target year of 2013.

Table 14.2.1 Components of the Priority Project

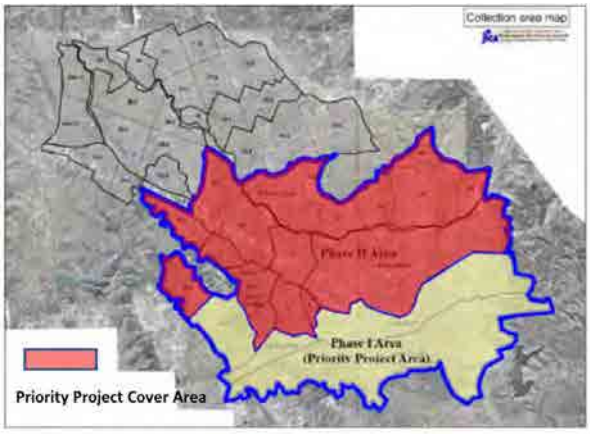
Project	Kashar SD Phase II Project	Kashar SD Expansion Project
Construction Period	2016 to 2021	2024 to 2026
Kashar Sewage Treatment Plant	Expansion volume: 159,200 m³/d (Daily Maximum) Secondary treatment method of sewage is Trickling Filter Treatment method of sludge Thickening, Digesting, Sludge Drying Bed and Dewatering.	Expansion volume: 67,400 m³/d (Daily Maximum) Treatment method is same as Phase II plan
Kashar PS	Kashar PS: 141 m³/min (Hourly Maximum)	Kashar PS Expansion: 65 m³/min (Hourly Maximum)
Trunk Main Sewer	Trunk Main Sewer 250 mm – 2,000 mm 10.3 km (including 2.9 km x 2 of 1,000 mm Force Main)	Trunk Main Sewer (Force Main) 1,000 mm 2.9 km
Main and Branch Sewer	Main and Branch Sewer 200 mm – 600 mm 79.6 km	-
Land Area	18.0 ha （for expansion of STP） 0.7 ha (for Kashar PS)	11.3 ha (for future expansion)

Source: JICA Study Team



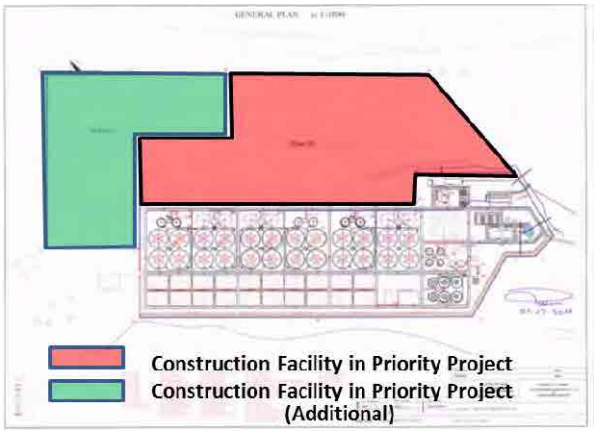
Source: JICA Study Team

Figure 14.2.1 Flowchart of Treatment Process at STP



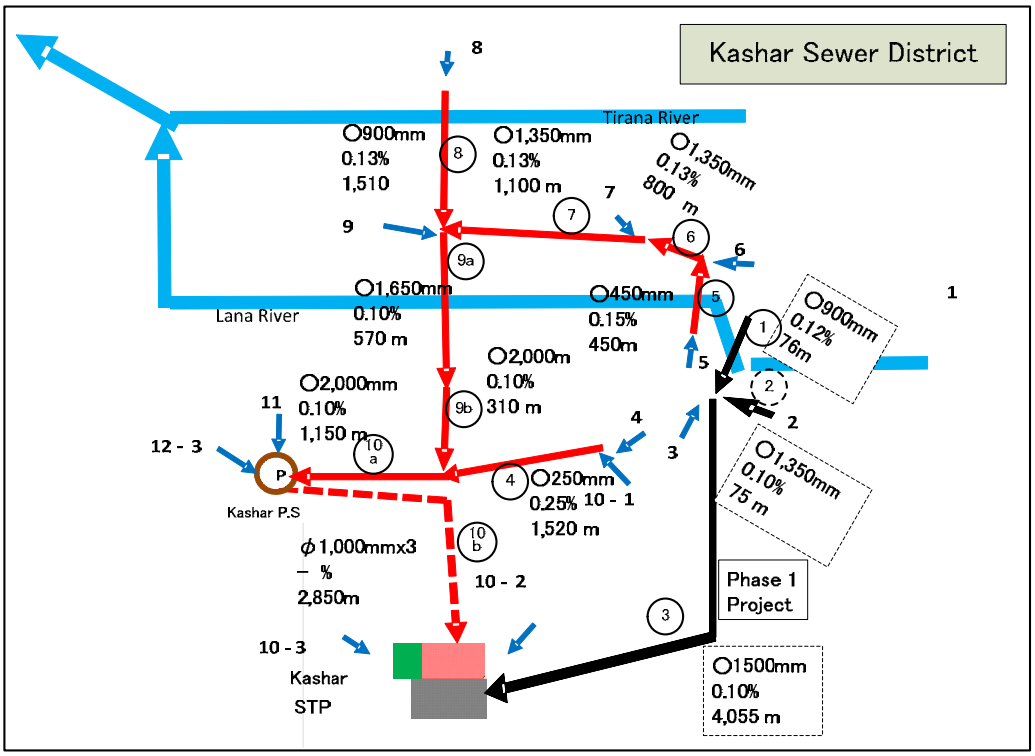
Source: JICA Study Team

Figure 14.2.2 Priority Project Area Map



Source: JICA Study Team

Figure 14.2.3 STP Construction Area



Source: JICA Study Team

Figure 14.2.4 Trunk Main Configuration in Priority Project Area

Construction cost of the priority project is summarized in Table 14.2.2. Only direct construction cost is summarized here unlike in the economic and financial analysis described in section 14.5 which includes indirect costs. Annual investment plan for each facility of the priority project is shown in Table 14.2.3.

Table 14.2.2 Priority Project Cost

Unit; Million Lek

Component	Kashar 2nd Phase			Kashar Expansion project			Project Total		
	FC	LC	Total	FC	LC	Total	FC	LC	Total
Direct Construction Cost									
Trunk Sewer	2167	272	2,439	101	13	114	2,268	285	2,553
Main Sewer		1748	1,748			0	0	1,748	1,748
Kashar PS	328	298	626	299	26	325	627	324	951
Kashar STP	2626	2598	5,224	1,114	911	2,025	3,740	3,509	7,249
Total of Direct Construction Cost	5,121	4,916	10,037	1,514	950	2,464	6,635	5,866	12,501

Source: JICA Study Team

Table 14.2.3 Annual Investment Cost

Item	Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Kasahar STP	C&A											
		232.7	698.1	698.1	465.4	232.7				91.1	546.6	273.3
	M&E											
				289.7	579.4	869.1	1,158.8				557.0	557.0
Kashar PS	C&A											
				134.5	134.5							
	M&E											
						178.5	178.5				162.5	162.5
Trunk Main Sewer	C&A											
		677.3	704.4	487.8	487.8	54.4	27.2					114.0
Main&Branch Sewer	C&A											
		174.8	524.4	349.6	349.6	174.8	174.8					
Land Acquisition												
		90.0								57.0		
Capacity Building												
							109.1					

Source: JICA Study Team

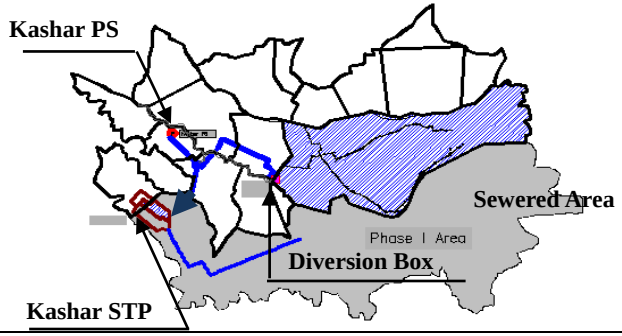
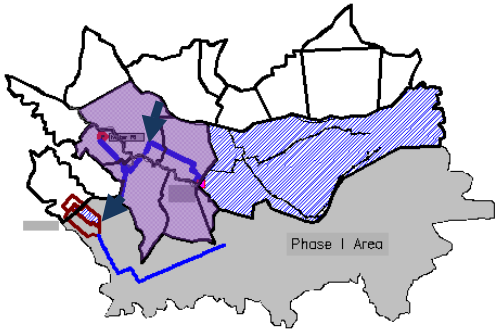
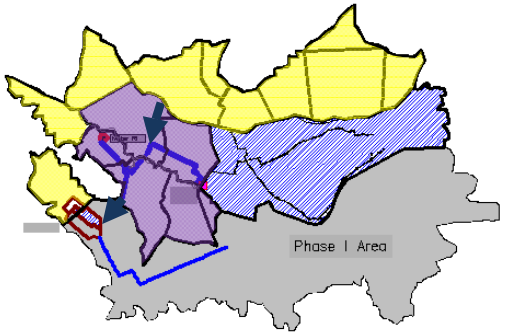
(2) Staged Development in Phase II Area

Staged development for Phase II area is recommended as shown in Table 14.2.4.

Diversion of Tirana's interceptor sewage to the trunk main sewer is the first step of the Phase II project since discharge of raw sewage from this outfall has a high potential to pollute the down-stream section of Lana River.

Sewer pipe installation in the western part of MOT and Kashar Commune has a higher priority than that in the Paskuqan Commune and Koder-Kamza areas as the former area is strategically the key area for the development of Greater Tirana zone.

Table 14.2.4 Staged Development Plan for Kashar SD Phase II Area

Stage	Outline of Development	Main Facilities to be Developed	Development Area
1	Sewage discharged to Lana River through Tirana Interceptor is collected to Kashar PS by gravity trunk main pipe and then pumped up to the Kashar Phase II STP.	● Diversion box (overflow structure) at Tirana Interceptor discharging point ● Trunk Main from Diversion point to Kashar PS ● Trunk Main (Force Main) from Kashar PS to Kashar Phase II STP ● Kashar PS ● Kashar Phase II STP	
2	Sewer network is developed to the area along the trunk main sewer, north-west of MOT and to the center of Kashar Commune area since these areas are densely inhabited and already urbanized areas. Kashar Development Area with final service population of 225,000 persons shall be sewered although development is on the way.	● Trunk Main Sewer from Tirana River to the Main Trunk ● Branch sewer is installed within the purple area shown in the right figure.	
3	Sewer network is developed further to the outer area beyond Tirana River, Paskuqan and Koder-Kamza. Eastern side of Phase II area is also sewered in this stage.	● Main sewer from Paskuqan and Koder-kamza crossing the Tirana River ● Branch sewer development in above stated area and also in eastern area of Phase II project area. See right figure.	

Source: JICA Study Team

(3) Transformation to "Sewage Collection Project" and "Sewage Treatment Project"

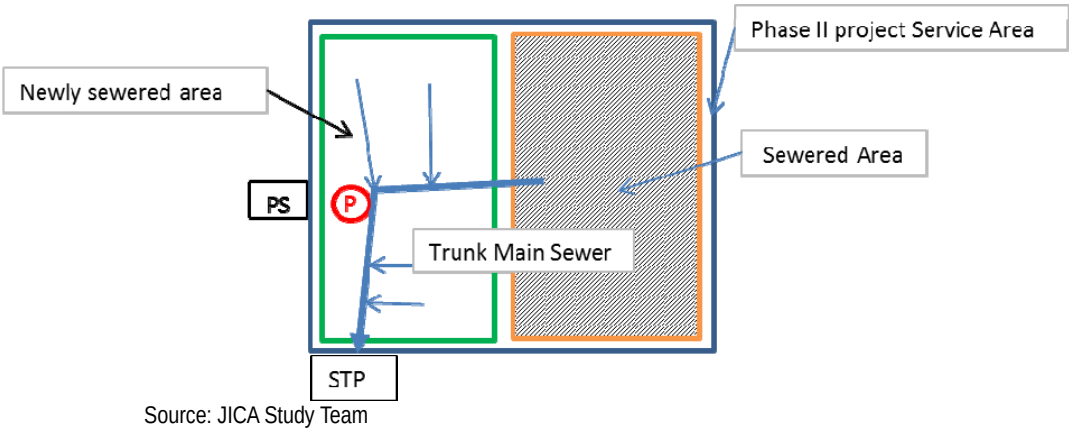
For the economic and financial analysis, 1) Sewage Collection Project and 2) Sewage Treatment Project are created to focus on "collection" and "treatment" respectively.

Construction cost including land cost and capacity building cost was allocated to each project as shown in Table 14.2.5. In the table, part of the cost of Trunk Main Sewer and Kashar PS is allocated to each project in accordance with the number of beneficiaries. The concept for allocation is shown in Figure 14.2.4 and the allocation rate is shown in Table 14.2.6.

Table 14.2.5 Cost Allocation for Economic/Financial Analysis

		Sewage Collection	Sewage Treatment	Total	Remarks
Kashar STP	Phase II Project	0	5,224	5,224	
	Expansion Project	0	2,025	2,025	
Kashar Pump Station	Phase II Project	213	413	626	Collection : Treatment = 0.34 : 0.66
	Expansion Project	325		325	
Trunk Main Sewer	Phase II Project	829	1,610	2,439	Collection : Treatment = 0.34 : 0.66
	Expansion Project	114		114	
Main & Branch Sewer	Phase II Project	1,748	0	1,748	
	Expansion Project			0	
Sum	Phase II Project	2,790	7,247	10,037	
	Expansion Project	439	2,025	2,464	
	Sum	3,229	9,272	12,501	
STP site	Phase II Project	0	90	90	
	Expansion Project	0	57	57	
Capacity Building	Phase II Project	21.8	87.3	109.1	Collection : Treatment = 0.2 : 0.8
	Expansion Project				
Sum	Phase II Project	2,812	7,424	10,236	
	Expansion Project	439	2,082	2,521	
	Sum	3,251	9,506	12,757	

Source: JICA Study Team



Source: JICA Study Team

Figure 14.2.5 Concept for Allocation

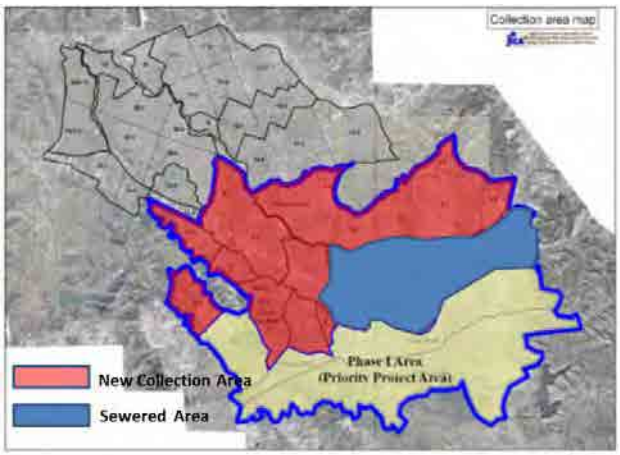
Table 14.2.6 Cost Allocation Rate for Economic and Financial Analysis

Classification	Content	Population	Percentage
Collection Project	Number of new customers connected to sewer in 2022 (sewage tariff can be newly collected from them.)	156,369	34%
Treatment Project	Number of existing customers within sewered area in 2022 (no additional tariff will be charged them)	302,558	66%
Trunk Mains and Kashar PS works contribute to both projects and so the cost is divided between them with above allocation rate			

Source: JICA Study Team

14.3 Sewage Collection Project

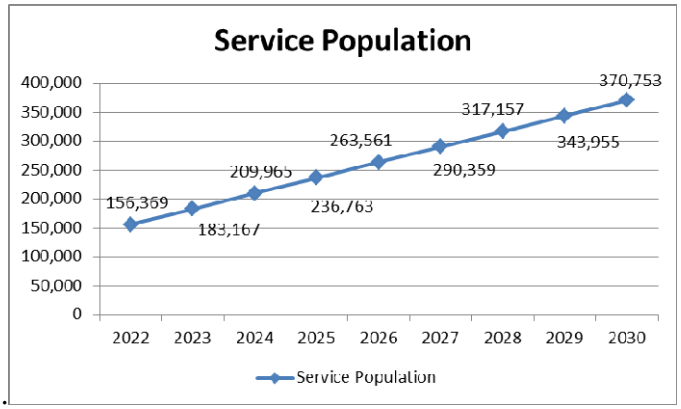
This project consists of mainly pipe installation works in the red area shown in Figure 14.3.1 below.



Source: JICA Study Team

Figure 14.3.1 Sewage Collection Area

The collection area is 2,464 ha and service (collection) population increases from 2022 to 2030 as shown in Figure 14.3.2.



Source: JICA Study Team

Figure 14.3.2 Increase of Service Population

Construction cost and capacity building cost for this project are summarized as shown in Table

14.3.1. Part of the trunk main sewer cost and PS cost is included in this collection system project.

Table 14.3.1 Investment Cost

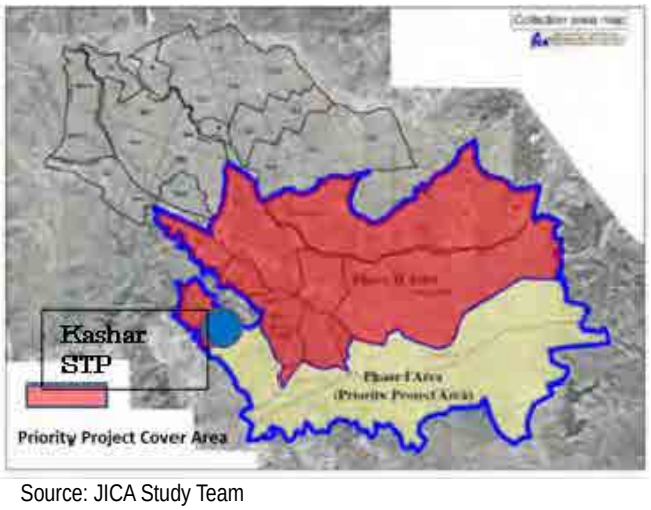
(Million Lek)

	Initial Investment (2016 to 2021)	Expansion stage (2024 to 2026)	Total
Main and Branch sewer 0.3 m to 0.6 m L=79.6 km	1,748	-	1,748
Part of Trunk Main Sewer 0.25 m to 2.0 m L=10.3 km	829	114	943
Part of Kashar PS Q=141 m^3/min (Initial stage) Q=206 m^3/min (Initial stage)	213	325	538
(Total)	(2,790)	(439)	(3,229)
Capacity Building	21.8	-	21.8
(Total)	2,811.8	439	3,250.8

Source: JICA Study Team
*O&M cost in 2022 is 42.9 million Lek and gradually increasing through 2030.

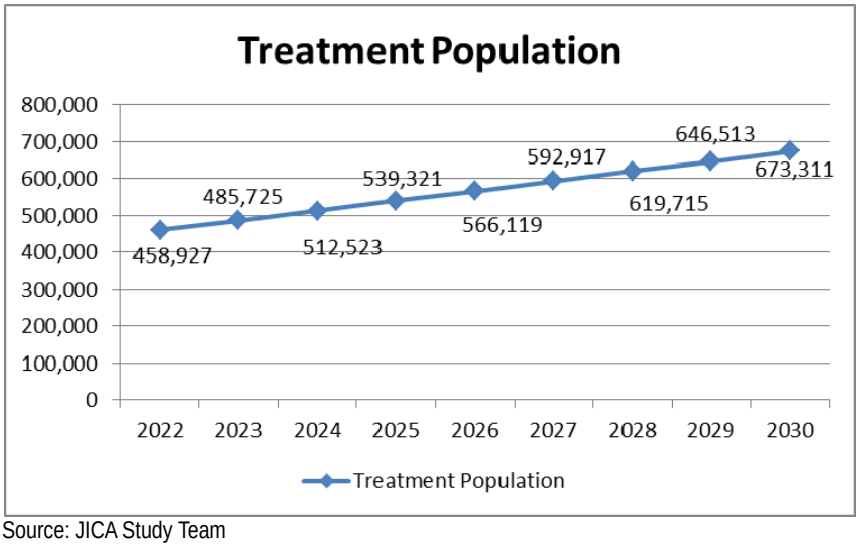
14.4 Sewage Treatment Project

This project consists of mainly STP construction works. Sewage to be treated in STP will come from not only the sewage collection project area but also the existing sewered area where no new tariff collection will be imposed. The service area is whole Kashar Phase II area, shown in Figure 14.4.1, covering 3,885 ha. Increases in service population are shown in Figure 14.4.2.



Source: JICA Study Team

Figure 14.4.1 Service Area for Kashar STP Phase II Facilities



Source: JICA Study Team

Figure 14.4.2 Increase of Treatment Population

Construction cost and capacity building cost for this project are summarized as shown in Table 14.4.1. Part of the trunk main sewer cost and PS cost is included in this collection project.

Table 14.4.1 Investment Cost

(Million Lek)

	Initial Investment (2016 to 2021)	Expansion stage (2024 to 2026)	Total
Kashar STP Capacity Phase II : 159,200 m^3/d Expansion : 226,600 m^3/d	5,224	2,025	7,249
Part of Trunk Main Sewer 0.25 m to 2.0 m L=10.3 km	1,610	-	1,610
Part of Kashar PS Q=141 m^3/min (Initial stage) Q=206 m^3/min (Initial stage)	413	-	413
(Total)	(7,247)	(2,025)	(9,272)
Capacity Building	87.3	-	87.3
Land Cost	90	57	
Total	7,424.3	2,082	9,506.3

Source: JICA Study Team
*O&M cost in 2022 is 137 million Lek and gradually increasing through 2030.

14.5 Economic and Financial Analysis

14.5.1 Financial Analysis

A financial evaluation of the sewage collection is carried out in this section by comparing the financial costs and revenues. Cash flow is prepared based on the assumptions in the following subsections and the Financial Internal Rate of Return (FIRR) on Project is calculated for evaluation.

A financial evaluation of the sewage treatment project is not made. It is assumed that the project should be financed by the public as it is not expected to generate any cash income at the time of the study.

(1) Basic Assumptions

Following are the basic assumptions used for the financial analysis of the sewage collection project. It also applies to economic analysis of the sewage treatment project, unless otherwise mentioned.

1) Project Period

The project period is 35 years from 2016 to 2051, including the construction periods of 2016-2021 and 2024-2026, and evaluation period of 2022-2051.

2) Price Basis and Exchange Rate

The base year of the project is 2012. All costs and revenues are expressed at the price level of 2012. The study assumes 3.0% annual inflation rate during the project life, which is the target inflation rate set by the Bank of Albania for the year 2012.

Exchange rates used are 1 Lek = JPY 0.788 = Euro 0.007 = USD 0.009, which are prevailing rates at the time of survey.

3) Contingencies

Physical contingency of 10% is included in the analyses. The price contingency is not included.

4) Taxes

For the financial analysis, the value added tax (VAT) of 20% is included while corporate tax is excluded.

5) Target FIRR on Project

It is assumed that UKT will either avail itself of a bank loan and/or use its available cash to pay for the sewage collection project. The prevailing long-term corporate lending rates of commercial banks in Albania are approximately 13.0% at the time of study. The real interest rate is calculated at 9.7%, discounted by expected inflation rate of 3.0% for 2012 (1.13/1.03 (inflation rate) -1 = 0.097).

The target FIRR of the sewage collection project, therefore, should vary depending on the share of financial sources between UKT's own cash and bank loan.

(2) Financial Project Costs

The financial project costs comprise investment costs and operation and maintenance (O&M) costs.

1) Investment Costs

Financial investment costs of the projects are calculated based on the total engineering investment costs as presented in previous sections.

Initial Investment Costs

Table 14.5.1 shows investment costs up to 2021, Phase II project, but the financial and economic analysis involves investment of the expansion project. The initial financial investment cost is converted to market prices.

Table 14.5.1 Initial Financial Investment Costs

(Million Lek)

	Sewage Collection	Sewage Treatment
Land	-	96.5
Civil Works	2,223.9	3,428.6
Machinery and Equipment	101.2	2,610.5
Capacity Building	18.2	72.8
Total	2,343.3	6,201.8
Consulting Service (10%)	234.3	611.2
VAT (20%)	515.5	1,344.6
Base Cost	3,093.1	8,157.6
Physical Contingency (10%)	309.3	815.8
Total Financial Investment Cost	3,402.4	8,973.4

*Land costs do not include VAT or consulting services.
Source: JICA Study Team

Replacement Investment Costs

Replacement investment costs, if necessary, are included in the respective years based on respective life of assets as shown in the table below.

Table 14.5.2 Expected Life of Assets

	Sewage Collection	Sewage Treatment
Civil Works	50 years	50 years
Machinery and Equipment	15 years	15 years

Source: JICA Study Team

The salvage value of net assets is ignored in the analysis.

2) Investment Costs

Financial operation costs of the Project Case are shown in the table below as calculated in previous sections.

Table 14.5.3 Annual O&M Costs in 2030-2051

(Million Lek)

	Sewage Collection	Sewage Treatment
Personnel	10.8	12.0
Utilities/chemicals		28.0
Power	27.9	113.5
Maintenance/repair	14.0	19.8
Sludge Disposal	-	13.7
Total	52.7	187.0

Source: JICA Study Team

(3) Financial Project Revenue

1) Sewage Collection Project

Number of Users

The number of users by category, i.e., households and the other users (private enterprises and public institutions) is estimated based on the 2012 data provided by the Albanian Regulatory Authority (WRA) of the Water Supply and Waste Water Disposal and Treatment Sector.

Table 14.5.4 Users of Sewage Collection

	2022	2023	2024	2025	2026	2027	2028	2029	2030-2051
Population	156,369	183,167	209,965	236,763	263,561	290,359	317,157	343,955	370,753
Household	26,962	31,583	36,204	40,824	45,445	50,066	54,687	59,307	63,928
Others*	3,596	4,212	4,828	5,444	6,060	6,677	7,293	7,909	8,525

*Others include private enterprises and public institutions.
Source: JICA Study Team

Sewage Collection Tariff

The recent tariff trend is shown below.

Table 14.5.5 Historical Tariff Trend*

(Lek/m^3)

User Category	2002-2009	2010-2011	2012
Household	5	10	11
Private Enterprise	10	25	35
Public Institution	6	25	30

*Figures are shown in current prices.
Source: WRA

It is planned that UKT will increase the tariff in 2014 as shown below. Furthermore, the sewage volume, which is now estimated at 80% of water volume, will be counted as 100% of water volume after 2013.

Table 14.5.6 Tariff Structure Factors for Different Consumption Blocks and Users

User Category	Tariff Structure Blocks (cubic meters/month)			
	< 4.5	4.5 to 20	20 to 30	> 30
Household	1.0*	1.0 to 3.0	1.5 to 4.0	2.5 to 6.0
Public Institution	1.0 to 2.0	1.0 to 3.0	1.5 to 5.0	2.5 to 10.0
Private Enterprise	1.0 to 2.0	1.5 to 4.0	2.0 to 6.0	3.0 to 12.0

* Factor = multiplied by the present tariff
Source: WRA

Tariff Collection Rates of Sewage Collection Project

The collection rate is estimated to improve as follows.

Table 14.5.7 Average Collection Rate of Tariff

2011	2012	2022	2026	2030
90.0%	92.0%	94.7%	95.9%	97.0%

Source: WRA and JICA Study Team

The financial analysis, however, uses 100% collection rate and assumes that uncollected amount is to be covered by UKT and not by paying users.

Revenue of Sewage Collection Project

Revenues of sewage collection project is calculated based on the above assumptions and are summarized in the table below. It is assumed that average sewage volume per beneficiary will remain stable from 2012 onward.

Table 14.5.8 Sewage Tariff Revenue

(Million Lek)

	2022	2030-2051
Household	73	173
Other User	149	354
Total	222	527

Source: JICA Study Team

2) Sewage Treatment Project

The covered population of sewage treatment, as shown in the table below, shows a gradually increasing growth from 2022 to 2030 and then a stable trend until 2051.

Table 14.5.9 Users of Sewage Treatment (Population)

2022	2023	2024	2025	2026	2027	2028	2029	2030-2051
458,927	485,725	512,523	539,321	566,119	592,917	619,715	646,513	673,311

Source: JICA Study Team

It is assumed that there is no financial revenue for the sewage treatment project.

(4) Financial Evaluation

FIRRs of the sewage collection project by the following three different tariffs are calculated based on the above assumptions and summarized in the table below. FIRR is minus 2.0% at the present tariff (Case 1) and is 7.4% at scheduled increased tariff of 2014 (Case 2).

UKT should be able to finance the project by funds that include its own money and a bank loan. UKT should increase the tariff as scheduled in 2014.

For the sake of comparison, Case 3 (affordable tariff) is included in the table. Affordable tariff of sewage collection is assumed to be the same as 'willingness to pay' amount, or 1% of disposable income of the users based on the analysis of the World Bank.[1] FIRR of the project at the affordable tariff is 13.6%.

Table 14.5.10 FIRR Summary of Sewage Collection Project

	Initial Investment Cost (mil. Lek)	Monthly Tariff by HH in 2022 (Lek)	Project FIRR
Case 1 (present tariff)	3,402	110.2	-2.0%
Case 2 (scheduled increase in 2014)	3,402	225.9	7.4%
Case 3 (affordable tariff)	3,402	692.3	13.6%

Source: JICA Study Team

Financial cash flow statements of sewage collection project under Case 2 scenario are attached in the appendix.

14.5.2 Economic Analysis

Economic analysis of both (1) sewage collection project and (2) sewage treatment project is carried out in this section.

(1) Assumptions for Economic Analysis

In addition to the above-mentioned basic assumptions for the financial analysis, the following assumptions are applied to the economic analysis.

1) Adjustment to Financial Costs and Benefits

In principle, economic costs and benefits are to exclude fiscal distortions such as taxes, and subsidies. The present project costs and benefits exclude VAT of 20%.

2) Target Economic Internal Rate of Return (EIRR)

EIRR is an efficiency index for the use of scarce capital, indicating the average percentage of returns that can be expected every year to the national economy through the planned investment. International financial institutions such as World Bank and Asian Development Bank apply a social discount rate of 10% to 12% in developing countries.

The project sets the target EIRR at 10%. That is to say, if the project's EIRR is greater than 10%, the project is economically feasible and should bring net benefits to the regional economy.

[1] The World Bank, The United Nations of Development Program, The Government of Indonesia, *Project Appraisal Manual,* draft, 1994, p.8.

3) Willingness to Pay as Economic Benefits

Willingness to Pay (WTP)

Sewage Collection Project:

Willingness to Pay (WTP) is the proxy measurement of the economic value expressed as 'consumer surplus' and therefore is the amount that the beneficiaries are willing to pay in return for the product or services they receive. The concept of WTP is widely used as numerical expression of economic benefits in evaluating projects. If the price, or tariff in this case, is set higher than the WTP, the users would not receive the service and would use the money for other products or services. Therefore, WTP is considered as the maximum satisfaction that the users can achieve in various forms from the project in question. Therefore, willingness to pay methodology is used to calculate the economic benefits of the present project.

The World Bank and Asian Development Bank have the benchmark in terms of percentage to income as to how much the users are willing to pay for infrastructure services. According to them, WTP for sewage is 1% of disposable income of users. Therefore, 1.0% of disposable income of households (60,000 Lek per month in 2012) is assumed to be the what household beneficiaries are willing to pay for sewage collection.

Sewage Treatment Project:

The study assumes that WTP of the sewage treatment project is also 1.0% of disposable income of household beneficiaries.

WTP of the other users (private enterprises and public institutions) are estimated to be in line with that of households for both sewage collection and sewage treatment.

Disposable Income

Average family income data of Tirana Prefecture is taken from the Survey of Monthly Income by Prefecture 2006-2007 (Institute of Statistics, Albania). The amount is adjusted for the inflation and income tax and is calculated to be 60,000 Lek per month in 2012.

(2) Economic Evaluation

EIRR of sewage collection project and sewage treatment project is calculated based on the above assumptions and summarized in the below table.

EIRR of sewage collection and sewage treatment is 15.4% and 12.4% respectively, which are higher than the target rate of 10.0%. It therefore could be concluded that both projects are economically feasible.

Economic cash flow statements of sewage collection and sewage treatment project are attached in the appendix.

Table 14.5.11 EIRR Summary of Sewage Collection and Sewage Treatment Projects

	Sewage Collection Project	Sewage Treatment Project
EIRR	15.4%	12.4%

Source: JICA Study Team

14.5.3 Conclusion

The sewage collection project generates 7.4% FIRR with the scheduled tariff increase of 2014 and thus UKT should be able to finance the project without any public subsidy. The sewage treatment project, however, should be financed by the public as it is not expected to generate any cash income at the time of the study.

Both sewage collection project and sewage treatment project generate sufficient EIRR (15.4% and 12.4% respectively) and should bring net economic benefit to the region.

Given the above, it is concluded that both sewage collection and sewage treatment projects should be implemented.

14.6 Environmental Consideration

14.6.1 Recommended Mitigation Measures

Adverse impact is assumed at each project phase, namely, at pre-construction, construction and operation stage, by the development plans proposed by each sector. Appropriate mitigation measures should be taken at each project phase for the adverse impact.

The following mitigation measures are recommended for each project phase of the development plan of this sector.

14.6.2 Mitigation Measures at Pre-construction Stage

The list of mitigation measures at pre-construction stage is shown in Table 14.6.1.

Land Issues / Resettlement

The proposed projects will require the project land for sewer main and pumping stations. The projects will require land acquisition to secure these project areas. The land acquisition should be proceeded including appropriate compensation measures for the land owners.

Social Infrastructure

This sector will include underground construction works. These construction works may affect the underground facilities such as electric power, telephone lines, water supply and sewerage pipes. The identification of these utilities before construction will be needed to be reflected on the tender documents or contract documents of those construction works.

Table 14.6.1 List of Mitigation Measures at Pre-construction

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation Measures	Responsible Body
Sewerage / Drainage					
	1.1	Land Issue / Resettlement (In case of construction of Dam Reservoir)	Impacts on land owner to be caused by the land acquisition of project site	Advance notification to land owners, landlord and proprietor of establishments Holding consultation meetings with affected residents Agreement between project proponent and affected residents Preparation of monitoring plan Implementation of monitoring	Ministry of Public Works, Transport & Tourism
	1.2	Social Infrastructure	Impacts on existing social facilities (telephone, sewer pipes, water supply pipes, etc.)	Baseline survey of existing social facilities Preparation of tender or contract document in relation to indemnification for the case of damage of social facilities Preparation of monitoring plan	Ministry of Public Works, Transport & Tourism

Source: JICA Study Team

14.6.3 Recommended Mitigation Measures at Construction Stage

The list of mitigation measures at construction stage is shown in Table 14.6.2 and their details are shown as below.

Table 14.6.2 List of Mitigation Measures at Construction Stage

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation	Responsible Body
Sewerage / Drainage Sector					
	1.1	Land Issue / Resettlement	Impact to be caused by land acquisition	Implementation of monitoring	
	1.2	Social Infrastructure	Impacts on existing social facilities (telephone, sewer pipes, water supply pipes, etc.)	Advance notification to relevant agencies or authorities Application for permission of disturbance of social facilities from relevant authorities Implementation of monitoring	Ministry of Public Works, Transport & Tourism Directorate of Project and Engineering Network, MOT
	1.3	Public Health, HIV/AIDS	Impacts to the construction workers during construction	Mandatory preparation of a safety and health management program by the contractor Assignment of a health supervisor Implementation of health education Implementation of monitoring	Contractor
	1.4	Hazard	Traffic congestion and accidents caused by construction works and	Mandatory preparation of a safety management and emergency preparedness program by the	Ditto -

Sector	Plan / Project	Parameter	Potential Adverse Impact	Recommended Mitigation	Responsible Body
			machinery	contractor Assign traffic control persons	
	1.5	Topography & Geography	Impacts caused by land collapse at construction	Mandatory preparation of a safety management and emergency preparedness program by the contractor	Ditto -
	1.6	Groundwater	Impacts on groundwater due to underground works	Baseline survey of existing groundwater and surrounding wells Reflection on design on available water amount of groundwater to avoid lowering water table Implementation of monitoring	Ministry of Public Works, Transport & Tourism
	1.7	Air Pollution	Impact caused by the generation of dust and air pollutants by construction works	Mandatory preparation of a construction plan on air pollution prevention by the contractor Mandatory sprinkling of water at construction sites Mandatory preparation of appropriate allocation plan of construction vehicles Supervision of the contractor's allocation plan of construction vehicles Implementation of monitoring	Contractor
	1.8	Water Pollution	Impact caused by muddy and oily wastewater generated at construction camp or office	Mandatory preparation of a construction plan on wastewater treatment Implementation of monitoring	Ditto -
	1.9	Solid waste	Impact caused by solid waste generated at construction camp or office	Mandatory preparation of a safety and health management program by the contractor Implementation of monitoring	Ditto -
	1.10	Noise & Vibration	Impact caused by the generation of noise and vibration by construction works	Mandatory preparation of a construction plan on reduction of noise and vibration Adoption of construction machinery and equipment capable of reducing/ suppressing noise and vibration Implementation of monitoring	Ditto -
	1.11	Ground Subsidence	Ground subsidence due to underground works of trunk main or branch lines	Mandatory preparation of a construction plan Supervision of the contractor's construction works Implementation of monitoring	Ditto -

Source: JICA Study Team

Land Issues / Resettlement

The actual implementation of Resettlement Action Plan should be confirmed in order to clarify the objects which may interfere with the commencement of construction works and its monitoring will

be necessary.

Social Infrastructure

Contractor should get approval for the actual construction work from the relevant authorities of the social facilities (water supply, sewerage, telephone and power line) by submitting the company's construction plan showing that the construction work will not interfere with these facilities and that the contractor will indemnify the authorities for damage to the facilities by the construction activities. Regular monitoring will be necessary.

Public Health, HIV/AIDS

Contractor should prepare a safety and health management program for workers, conduct regular health checkup and report the results to a healthcare center which has jurisdiction over the project site. In addition, the contractor should allocate a health supervisor and carry out a health education to enhance the workers' awareness toward their own hygiene in order not to affect the surrounding environment.

Hazard

This issue covers disasters, traffic accidents, and traffic congestion caused by construction works. The contractor should estimate potential risks during construction, establish measures to be taken for avoidance of such risks during construction, and prepare a safety management and emergency preparedness program. The program should be shared among all personnel including construction workers. With respect to the traffic accidents and traffic congestion to be caused by the construction works, the contractor also take measures to assign traffic control persons to direct the construction vehicles and equipment so as not to disturb other traffic at the project sites.

Groundwater

The laying works of sewer main in sewerage sector include underground works which may affect existing groundwater. Contractor should prepare a construction plan to avoid the adverse impact on existing groundwater. The monitoring by the contractor of groundwater table in surrounding wells is also recommended.

Air Pollution

The generation of dust and air pollutants of NOx, SOx and SPM is estimated by the construction works and operation of heavy equipment and construction vehicles. Contractor should prepare a construction plan for mitigating such air pollution during construction which covers an appropriate arrangement plan and schedule of such vehicles and heavy equipment and regular watering at construction sites. The periodic monitoring of above air pollutants is recommended to avoid air pollution during construction stage.

Water Pollution

Water pollution is assumed by the generation of turbid or muddy waters during earthworks. Contractor should prepare a construction plan dealing with wastewater treatment.

The following considerations should be taken:

- Direct release of construction wastes into surrounding water body should be avoided;
- Good housekeeping should be adopted to reduce construction waste;
- Silt curtains should be provided to restrict spreading of sediment plumes;
- Drainage channels should be provided to convey storm water to sand/ silt trap;
- Construction works should be properly programmed to minimize soil excavation in rainy season to prevent soil erosion; and
- Reuse of treated effluent of vehicle washing, dust suppression and cleaning is recommended.

Regular monitoring is recommended during construction stage.

Solid Waste

General solid waste and construction debris are estimated at construction offices, workshops and construction sites. Contractor should prepare a safety and health management program which covers the following mitigation for the estimated generation of solid wastes and construction debris during construction stage.

For the general waste generated at construction offices and workshops:

- The waste should be collected by designated waste collector and disposed of in a designated disposal facility.

For the construction waste and the waste from workshops:

- Used oil and grease trap wastes should be collected and stored on-site in a tank and transported by a licensed transporter to a licensed facility,
- Oil in oily waste water should be separated and transported to a licensed facility
- Excavated waste should be refilled in the embankment works
- Production of concrete should be a minimum only for required amount.

Regular monitoring is recommended during construction stage.

Noise and Vibration

It is assumed that the operation of heavy equipment and travel of construction vehicles to and from the project site will generate noise and vibration.

Contractor should prepare a construction plan for reducing noise and vibration consisting of the following measures during construction stage:

- Engineering control such as 1) utilization of low noise type equipment, 2) utilization of mufflers, 3) enclosure of construction sites, and 4) erecting barriers; and
- Administrative control such as 1) arrangement of work rotation, 2) avoidance of night works especially near noise sensitive areas (.e.g., hospitals and schools).

Regular monitoring is recommended during construction stage.

14.6.4 Recommended Mitigation Measures at Operation Stage

The list of mitigation measures at operation stage is shown in Table 14.6.3 and a detailed explanation is provided below.

Hazard

In sewerage sector, some accident related to system malfunction can occur due to unexpected events such as power failure or natural disasters.

Therefore, the following mitigation measures are recommended.

- Advance identification of potential hazard risks;
- Establishment of organization for emergency response for above risks;
- Establishment of preventive measures and implementation body for its practice (organization structure, preparation of manuals for emergency measures, cooperation with relevant authorities, implementation of education/ training, installation of backup equipment such as private power generator); and
- Preparation of emergency response measures (initial response measures, emergency response measures, system restore).

Solid Waste

Sludge is estimated to be generated by flocculating agent addition at treatment process in treated sewage sludge in sewerage sector.

The following mitigation measures should be taken:

- Formulation of institutional framework on appropriate treatment and disposal of treated sludge; and
- Securement of final disposal sites and practice of appropriate disposal.

Noise and Vibration

The operation of pump equipment and blower also may generate noise at operation stage in this sector.

The following mitigation measures are recommended:

- Sound proof design of facility building and study on barrier at boundary; and
- Implementation of monitoring at surrounding residential areas.

Offensive Odor

In this sector, offensive odor will be generated at intermediate treatment, final disposal facilities in solid waste management sector, and sewage treatment facilities in sewerage sector.

The following mitigation measures are recommended:

- Consideration of measures for leakage of odor for facility buildings at design stage;
- Consideration of operation hours of facilities and wind direction toward surrounding residential areas;
- Use of deodorizer at treatment process;
- Regular practice of soil covering for piled solid waste at final disposal facility in solid waste management sector; and
- Implementation of monitoring.

Others

In this sector, the O&M cost will rise because of the increase in personnel and the maintenance of

newly developed facilities in terms of increased fuel and electricity use.

The increased cost for O&M may cause adverse psychological effects or negative livelihood impacts.

The following mitigation measures are recommended:

- Identification of willingness and affordability to pay of the citizens to be served by the service;
- Advance publicity activities through media; and
- Improvement of service to match with the raising of tariffs.

Table 14.6.3 List of Mitigation Measures at Operation Stage

Sector	Plan / Project	Environmental & Social Elements	Potential Adverse Impact	Recommended Mitigation Measure	Responsible Body
Sewerage / Drainage Sector					
	1.1	Hazard	Impact on hazard to be caused by malfunction of water supply and treatment system Impact on human maintenance work by generation of H_2S or methane gas	Mandatory preparation of a safety management and emergency preparedness program in the operation manual Implementation of monitoring during maintenance work	UKT
	1.2	Groundwater	Impact on groundwater to be caused by the underground structure of trunk main or branch lines	Implementation of monitoring of surrounding wells	Ditto -
	1.3	Solid Waste	Impact to be caused by generation of treated sewage sludge and its disposal	Mandatory preparation of a hygiene management program in the operation manual	Ditto -
	1.4	Noise and Vibration	Impact of noise to be caused by operation of pump equipment or blower	Reflection on design on soundproofing for building and equipment Compliance with environmental standards Implementation of monitoring	Ditto -
	1.5	Offensive Odor	Impact of odor to be caused by sewage treatment process	Reflection on design on prevention of generation of odor Pest management Use deodorizer	Ditto -

Source: JICA Study Team

14.6.5 Environmental Management and Monitoring Plan

(1) Environmental Management Plan

The project proponents should prepare appropriate compensation measures for the land owners who will be affected by the project land for securement of the lands for the sewage treatment facility and pumping stations. The future raising of tariffs on the sewerage service will affect the household budget. The management program should be toward setting of appropriate tariff and consideration of vulnerable people who will not be able to afford to pay it.

Table 14.6.4 Recommended Environmental Management Plan

Environmental / Social Element	Issue	Recommended Action	Contents to be Covered	Responsible Body
Land / Resettlement	Impacts on land owners	Preparation of Compensation Plan	Project description Legal framework Institutional framework Valuation of and compensation for losses Compensation procedure on the full replacement value based on a replacement Community participation Implementation schedule	Ministry of Transport, MOT
Livelihood	Impact on civic life to be caused by increase of service tariff	Set-up of appropriate tariff To make widely understood to public	Provision of information to public through TV, radio, brochure and billboard Establishment of special tariff for poverty group	MOT

Source: JICA Study Team

(2) Environmental Monitoring Plan

The recommended social and environmental monitoring plan is shown in Table 14.6.5.

At pre-construction stage, the monitoring should be carried out for the securement of the project land and the compensation for the land owners. At construction stage, the social facilities (utilities) such as electric line, roads, and telephone lines which will be affected by the construction should be monitored for commencement of the construction works. Pollution control for air, water pollution and noise should also be monitored. At operation stage, water quality after the treatment should be monitored. Noise should also be monitored for the operation of pump.

Table 14.6.5 Recommended Environmental Monitoring Plan

Project Phase	Environmental / Social Element	Parameters	Location or Object	Frequency	Responsible Body
Pre-construction	Land issue / Resettlement	Progress on compensation arrangement Number of grievances recorded and their	Private lands affected by right-of-way of the project	Once every 3 months	Ministry of Transport (Third party)

Project Phase	Environmental / Social Element	Parameters	Location or Object	Frequency	Responsible Body
		disposition Payment of compensation			
Construction stage	Social infrastructure	Scale or area of object causing interference Progress on application to relevant authorities for commencing construction works Progress on approval from relevant authorities	Social facilities to be affected by the project	Once every 3 months	Ministry of Public Works & Transport, Contractor
	Public health, HIV / AIDS	Number of patients Type of disease Presence or absence of HIV/ AIDS Actions taken	Contractor's worker	Once a month	Contractor
	Air quality	NO_x, SO_2, CO, PM, PM_{10}	Inhabited areas near project sites	Once a month	Contractor
	Water pollution	pH, BOD Suspended Solids (SS), n-Hexane extracts	Water area downstream of construction sites	Once a month	Contractor
	Solid waste	Generation source Discharge amount Collection methods Littering condition Type of generated waste Generation amount	Waste discharge areas	Once a month	Contractor
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a month	Contractor
Operation stage	Groundwater	Water table	Surrounding wells	Once a year	UKT
	Water pollution	Following parameters of reservoir: Water level Temperature Turbidity DO chlorophyll a COD Total Nitrogen Total Phosphorus Bottom sediment	Reservoir	Once a year	UKT
	Noise and vibration	Noise level (dB)	Inhabited areas near project sites	Once a year	UKT

Source: JICA Study Team

14.6.6 Recommended TOR for Proposed Plans

The proposed projects in this sector will develop sewerage facilities with its service population exceeding 150,000 which shall require an in-depth EIA as set forth in the Albanian EIA legal

system. Therefore, the TOR assumes that the proposed projects will require an in-depth EIA.

(1) Basic Requirements of In-depth EIA Document

The following information should be covered in the contents of In-depth EIA document.

- Objective of the project and its detailed description
- Baseline social and environmental data in the project site and its vicinity area
- Detailed description of project component (facilities and equipment)
- Construction plan and schedule
- Description of construction works
- Potential social and environmental impacts and their mitigation measures to prevent adverse impacts
- Monitoring program
- Conformity with the state's upper level plan and economic development plan
- Records of stakeholder consultation
- Rehabilitation measures for the pollution or damage of environment and their cost
- Procedures and reasons of selection of project site
- Direct and indirect impact on environment
- Project options and their impact
- Risks of hazards on health and environment and mitigation measures
- Trans-border impact on environment, if any
- Detailed description on saving plan of energy and natural resources

(2) Stakeholder Consultation

The consultation with stakeholders and their involvement in the formulation process of project planning is one of basic requirements not only pursuant to Albanian EIA system but also based on the requirements of the operation manual or guidelines for social and environmental consideration of international donors such as World Bank and JICA.

The following stakeholders should be involved in the formulation process of EIA approval and the preparation of the EIA documents in this sector:

- Project Proponent: Ministry of Public Works and Transportation, UKT(DPUK)
- Supervisory agency for EIA: Ministry of Environment
- Municipalities: Commune, mini-municipalities
- Beneficiary: Citizens
- Affected resident: Local residents
- Others: University, recycling association, NGO groups

(3) Consideration of Estimated Scope of Work on In-depth EIA Documents in Each Sector

The proposed project is basically preceded based on Albanian EIA legal system and also will be implemented by utilizing funds from such international donor as World Bank or JICA. Therefore, the EIA documents also should follow the donor's operational manual or guidelines for environmental and social consideration. The following consideration as shown in Table 14.6.6 should be taken for preparation of the EIA documents in each sector.

Table 14.6.6 Recommended Consideration for Preparation of EIA Documents

Item	Issue	Action to be Required
Baseline Social & Environmental Situation	• Social infrastructure • Groundwater • Air Pollution /Global Warming • Water pollution • Noise	• Stakeholder consultation • Identification of affected social utilities (e.g., water, electricity, telephone) • Identification of existing social environment • Identification of existing natural environment • Monitoring of groundwater • Monitoring of air quality • Monitoring of water quality • Monitoring of noise level
Stakeholder consultation	• Information disclosure	• Holding public consultation meetings • Involvement of public opinion • Recording of meeting results
Construction plan	• Environmental problems during construction stage	• Preparation of tender documents covering required mitigation measures during construction • Request to prepare a construction plan and schedule detailing mitigation measures and monitoring plan
Potential impacts	• All environmental issues	• Estimation of potential direct and indirect impacts
Mitigation measures	• Social infrastructure • Hazard • Groundwater • Solid waste • Air Pollution /Global Warming • Water pollution • Noise • Odor	• Notification to relevant authorities and their approval • Preparation of safety and health management plan • Preparation of treatment and disposal of treated sludge • Pollution prevention during construction • Preparation of environmental monitoring plan
Environmental monitoring plan	• Land / Resettlement • Social infrastructure • Hazard • Public Health • Air Pollution /Global Warming • Water pollution • Noise • Odor	• Preparation of monitoring plan • Implementation of monitoring before, during construction and at operation stage

Source: JICA Study Team

14.7 Recommendations for Actions

(1) Resource Allocation

As to the project fund, since on-going Kashar SD Phase I project is financed by the Japanese Government through JICA Official Development Service (ODA) Loan, it is desirable that the following Phase II project covering the rest of same SD also will be funded by same loan. According to the TOR of Consulting Service of Japanese ODA loan project, the Loan Team is also expected to conduct the feasibility study of Kashar SD Phase II. Based on the result of Feasibility

Study, JICA should take some action on the Phase II project.

(2) Time Horizon and Separation of Expansion Project

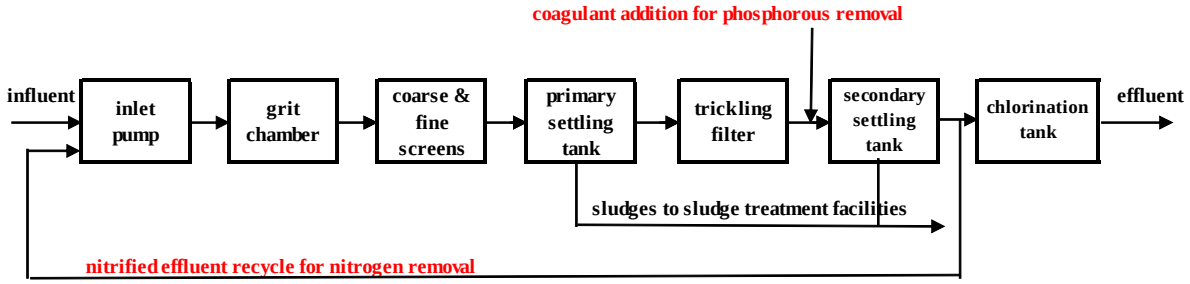
Kashar Phase II project is expected to start from 2016 and finish in 2021, and the expansion project is carried out from 2024 to 2026. Although the two-staged project is selected as the priority project considering future population increase, Kashar SD Phase II project should be initially funded to cover near future population. Future expansion should be re-scheduled checking actual population increase. When the Japanese ODA loan team currently doing the Kashar SD Phase I project finishes the feasibility study of Kashar SD Phase II project, which is part of the Loan Team's TOR, it is required to judge if the Phase II project is financially and economically feasible.

(3) Sewerage Development of Sauk Area by Own Fund of UKT

Although the sewerage development of Sauk area is dropped from the priority project, UKT shall try to construct sewerage facilities in that area using its own money, considering the strategic jurisdictional importance of the area, after the Kashar Phase I STP will be completed. Construction cost is not an overburden introducing government/municipality subsidy.

(4) Technical Issues for Environmental Protection

In anticipation of stricter EU directives on nitrogen (N) and phosphate (P) removal, some technical modification or upgrading of the treatment process is recommended. Figure 14.7.1 shows a sample of modified treatment flow to respond to higher rate of N and P removal.



Source: Japanese ODA Loan Consultant

Figure 14.7.1 Modification of Treatment Flow for N and P removal

In case the EU directives require higher level of BOD, SS, N and P removal, a total review of treatment method may be necessary for the Kashar SD Phase II treatment plant. Activated sludge treatment method and oxidation ditch method, both rejected due to expensive O&M cost, shall be considered again before the feasibility study of priority project, that is, Kashar SD Phase II project..

(5) Participation to the Training Course in Japan

UKT has no experience to operate and maintain a sewerage treatment plant. Although the capacity building for the O&M personnel for STP and sewer pipes is proposed in the priority project, participation to the JICA training course on O&M of sewerage facilities is desirable besides on-the-job training at actual site. Not only facility O&M aspect, but also management training is required for manager class personnel.

15. Step Forward

This report addresses basic development directions of major infrastructure sectors and priority actions to be taken for assuring the sustainable and balanced growth of the Tirana Metropolitan Area targeting the year 2027, based on a long-term perspectives, or two decades ahead.

A Thematic Plan, including Land Use Plan, Road and Transportation Development Plan, Solid Waste Management Plan, Water Supply System Development Plan, and Drainage and Sewerage Systems Development Plans have been drafted herewith, however, the plan, as whole, is still subject to further coordination with the New Regulatory Plan which is now being finalized by MOT though public hearing sessions. All proposals and recommendations in this report should be clarified to be accorded with the final regulatory plan, if is necessary.

Action Plans for priority projects/programs are profiled in the separate volume titled "General Profile of Priority Projects", indicating technical information necessary for preparation of the project execution. Three (3) elements are clearly depicted, namely:

1. Specific Tasks: **What, where and how** will be done and by **whom**?
2. Time Horizon: **When** will be done, targeting the time **when** the completion shall be?
3. Resource Allocation: **What** funds and inputs shall be prepared, available or considerable?

The implementing body or the responsible authority is requested to carefully review the project profile so that those may become good and useful guidelines for the project implementation.

In parallel with the planning work, a ***Strategic Environmental Assessment*** was conducted in compliance with the new Regulatory Planning Law. However, a more enhanced participatory approach should be employed to elaborate the planned project by stakeholders before the implementation of the project.

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Appendices

SCOPE OF WORK
FOR
THE PROJECT FOR TIRANA THEMATIC URBAN PLANNING

AGREED UPON
BETWEEN
THE GOVERNMENT OF ALBANIA REPRESENTED
BY
MUNICIPALITY OF TIRANA (MOT)
AND
THE JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
Tirana,
9th December, 2010

Altiana Dhimitri
Deputy Mayor

Kenichi Tsukahara
Leader
Preparatory Study Team
Japan International Cooperation Agency

Dritan Agolli
General Manager
Municipality of Tirana

I. INTRODUCTION

In response to the request of the Government of the Republic of Albania (hereinafter referred to as "GOA"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct "The Project for Tirana Thematic Urban Planning" hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the technical cooperation program of GOJ, will undertake the Study in close cooperation with the concerned authorities of GOA.

The present document sets forth the scope of work with regard to the Study. The sectors covered by the Study are listed on the Scope of the Study (Section IV).

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To develop the thematic urban plans and short-term and mid-term action plans for their implementation, based upon the Urban Regulatory Plan in Tirana Municipality (URPTM)
2. To transfer relevant skills to Albanian counterpart personnel in the course of the Study in order to pursue steady implementation of the plans to be developed under the Study.

III. STUDY AREA

The Study will cover entire Tirana metropolitan area proposed by the URPTM[1] as shown in APPENDIX 1.

The Study will develop implementable thematic urban plans for the area within the Tirana "yellow line".

IV. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study shall cover the following activities:

1. Review and analysis of the present situation
   - 1-1. To review and analyze existing urban planning (i.e. URPTM, Transport Master plan etc.) and related data
   - 1-2. To collect and analyze supplementary data, required to formulate the thematic urban plans and action plans and re-examine the direction of urban planning
   - 1-3. To evaluate institutional arrangement for the urban planning such as organizational structure, capacity for implementation, laws and regulations and financial situation and possible relevant proposals
2. Formulation of action plans for the urban development
   - 2-1. To review present condition of urban infrastructure and on-going projects
   - 2-2. To formulate thematic urban plans and 5 years and 10 years action plans for roads and urban transport, engineering infrastructure, and solid waste management, including technical solutions for main networks and facilities, estimation of approximate investment costs, conduct of preliminary economic and financial impacts, and implementation of environmental and social considerations (initial environmental examination (IEE) level)
     1) Roads and urban transport sector includes roads, including junctions, parking, and

[1] Study area will be 60 km2, as per Appendix 1.

passengers and goods terminals subsectors. Outputs would be integrated in generic technical plans of the above three subsectors and identification of priority projects.

2) Engineering Infrastructure includes water supply (including the water system for the green areas), sewerage, power, and telecommunication subsectors. Outputs of power and telecommunication subsector would be generic plans of multi-purpose ducts, and road lightings. Outputs of sewerage and water supply subsectors would be review and update of existing Master Plans, technical plans for the main networks and facilities, rough cost estimation and identification of priority projects.
3) Solid waste sector technical support includes collection, recycle, pre-selection, and final disposal, for formulating Tirana Local Solid Waste Management Plan, consisting, among other, in generic activates and facilities for the above subsectors.

3. Technical/knowledge transfer, including on job training, through the implementation of the Study.

V. STUDY SCHEDULE

The Study will be carried out for approximately 14 months, as shown in APPENDIX 2.

VI. REPORTS

JICA shall prepare and submit the following reports to GOA.

1. Inception Report covering the methodology of the Study:
   Twenty (20) copies in English at the commencement of the Study
2. Progress Report covering the result of the review and analysis of the present situation.
   Twenty (20) copies in English within five (5) months after the commencement of the Study
3. Interim Report covering the formulation of draft technical plans and action plans for the urban development
   Twenty (20) copies in English within ten (10) months after the commencement of the Study
4. Draft Final Report covering all result of the Study (with the outputs as described in point IV above)
   Twenty (20) copies in English and twenty (20) copies in Albanian, same number of copies of executive summary within fourteen (14) months after the commencement of the Study
   The authorities concerned with the Study in the Republic of Albania will provide written comments within one (1) month after receiving the report.
5. Final Report (with the outputs as described in point IV above)
   Twenty (20) copies in English and twenty (20) copies in Albanian, same number of copies of executive summary and a digital file copy. Within one (1) month after the receiving of the written comments from Albanian side on preceding Draft Final Report

VII. UNDERTAKING OF GOA

GOA shall accord privileges, exemptions and other benefits to the JICA study team (hereinafter referred to as "the Team") in accordance with the Agreement on Technical Cooperation[2] between

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[2] Ratified with the Law No. 9688, date 05.03.2007 "Ligji per Ratifikimin e "Marreveshjes se Bashkepunimit Teknik

the GOJ and GOA.

1. To facilitate the smooth implementation of the Study; GOA shall take necessary measures:
   1-1. To permit the members of the Team to enter, leave and sojourn in Republic of Albania duration of their assignments therein and exempt them from foreign registration requirements and consular fees for the implementation of the Study;
   1-2. To exempt the members of the Team (international consultants, assigned by JICA) from taxes, duties and any other charges on equipment, machinery and other material brought into and out of the Republic of the Albania for the implementation of the Study;
   1-3. To exempt the members of the Team (international consultants, assigned by JICA) from income taxes and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the team for their services in connection with the implementation of the Study; and
   1-4. To provide necessary facilities to the Team for the remittance as well as utilization of the funds introduced into Albania and Japan in connection with the implementation of the Study

2. GOA shall bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or wilful misconduct on the part of the team.

3. MOT shall act as a counterpart agency to the Team and also as a coordinating body with other relevant organizations for the smooth implementation of the Study, on behalf of the GOA.

4. GOA shall, at its own expense, provide the Team with the following, in cooperation with other organizations concerned:
   4-1. Available data and information including maps and photos in relation to the Study
   4-2. Arrangement with related ministries and organizations to have meetings and access to necessary data and information for the Study.
   4-3. Security-related information as well as measures to ensure the safety of the Team;
   4-4. Information on as well as support in obtaining medical service;
   4-5. Counterpart personnel;
   4-6. Suitable office space with basic office equipment and facilities and
   4-7. Credentials or identification cards.

VIII. UNDERTAKING OF JICA

1. To dispatch, as its own expenses, the Team to Albania for the Study;
2. To pursue technical/knowledge transfer to Albania counterpart personnel in the course of the Study.

IX. OTHERS

JICA and GOA shall consult with each other in respect of any matter that may arise from or in connection with the Study.

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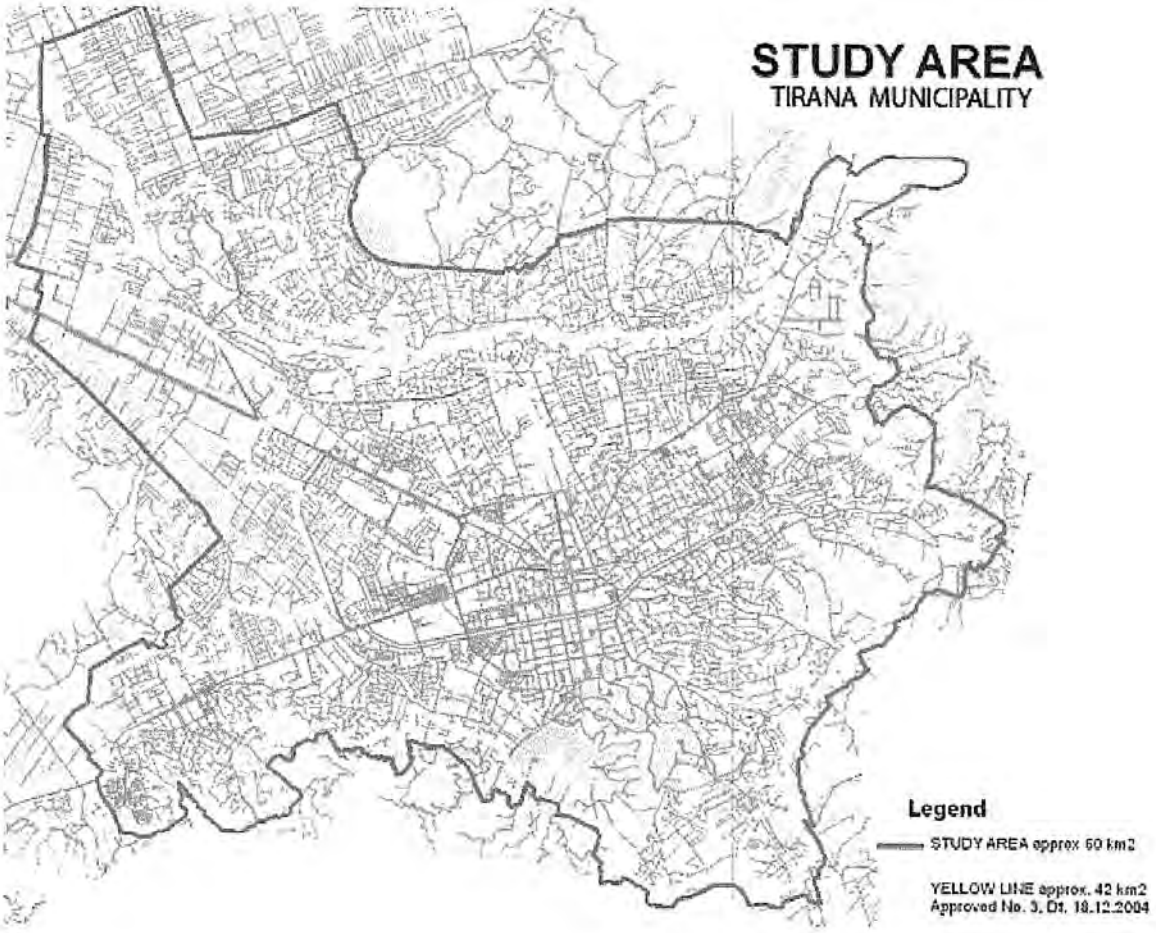
ndermjet Qeverise se Republikes se Shqiperise dhe Qeverise se Japonise", by the Albanian Parliament.

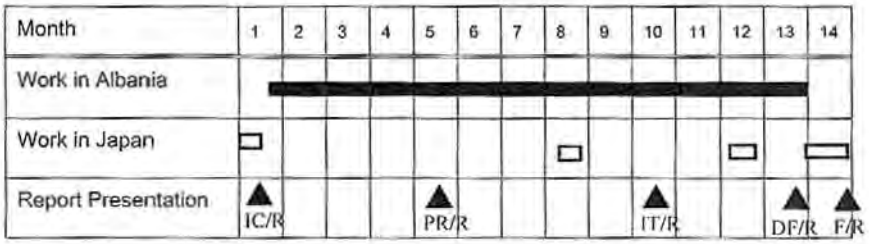
APPENDIX 1 Study Area
APPENDIX 2 Tentative Study Schedule

APPENDIX 1


STUDY AREA
TIRANA MUNICIPALITY
Legend
STUDY AREA approx 60 km2
YELLOW LINE approx. 42 km2
Approved No. 3, Dt. 18.12.2004

APPENDIX 2

Tentative Study Schedule



IC/R: Inception Report
PR/R: Progress Report
IT/R: Interim Report
DF/R: Draft Final Report
F/R: Final Report

MINUTES OF MEETING
ON
The 1st MEETING OF STEERING COMMITTEE

FOR

THE PROJECT
FOR
TIRANA THEMATIC URBAN PLANNING
IN
ALBANIA

Tirana, 18th October, 2011

Dr. Jorida TABAKU
Deputy Mayor
Municipality of Tirana,
Albania

Dr. Katsuhide NAGAYAMA
Team Leader
JICA Study Team

Witnessed by:

Mr. Sokol KONOMI
Technical Coordinator,
JICA Albania Office

1. Introduction

Based upon the Minutes of Meeting on the Scope of Work for the Project for Tirana Thematic Urban Planning, agreed between the Government of Albania, represented by Municipality of Tirana (MOT) and Japan International Cooperation Agency (JICA) in Tirana on 28th February 2011, JICA dispatched a Study Team, headed by Dr. Katsuhide NAGAYAMA, to Albania to commence "the Project for Tirana Thematic Urban Planning" (hereinafter referred to as "the Project") on 6th July 2011.

JICA Study Team started its work activities in Tirana with holding a kick-off meeting with counterpart personnel at the meeting room of MOT on 7th July 2011. At the kick-off meeting, the objectives, expected outcomes and deliverables and the schedule of the Study were confirmed and basic approaches to the Study were shared with both the Counterpart Team and JICA Study Team. Nevertheless, the Counterpart Team was dissolved soon after then, because the new administration was due to be realized under a new municipal leader.

The New Mayor, Mr. Lulzim BASHA, entered into his office at Municipality of Tirana on 25th July 2011, and started organizing his new administration. JICA Study Team first paid a courtesy call to the Mayor and Deputy Mayor, Dr. Jorida TABAKU who is in charge of Territorial Planning on 3rd August, 2011, and requested for their continuous supports to uneventful implementation of the Project.

Dr. NAGAYAMA, the team leader, also paid a courtesy call to Deputy Mayor and made intensive discussions on the planning process, new time-schedule and organization of a Steering Committee of the Project, and confirmed close collaboration with the Tirana Territorial Planning Team, headed by Mr. Flamur KUCI, on 7th October 2011. Based on this discussion, Deputy Mayor officially organized the Steering Committee and officially named the members of the committee, as shown in Appendix 1 attached herewith.

The Mayor, Mr. Lulzim BASHA, received JICA Study Team's visit to his office on 18th October 2011, and addressed the importance of the JICA's technical assistance to formulate a practical and balanced development plan to achieve his visions and key strategies. He promised to extend his support to the JICA Study Team.

To resume the Project officially under the new administration, the 1st Meeting of the Steering Committee, chaired by Dr. Jorida TABAKU, Deputy Mayor, MOT, was held at the Tirana International Hotel from 11:00 a.m. on 18th October, 2011. The attendants are as shown in Appendix 2 attached herewith. The JICA Study Team submitted the members "Inception Report (Revised on October 2011)" which describes the study outline, overall work items and approaches, revised work schedule and the organization of the study implementation.

The 1st Steering Committee started with the chairwoman's opening address, followed by opening remarks by Mr. Sokol Konomi, the representative of JICA Albania Office. Then, Mr. Mr. Flamur KUCI made a presentation on the approach and methodologies of the Tirana Territorial Planning, and mentioned its relevance to the JICA Study in terms of coverage of research/analysis and the time-framework.

2. Comments on the Inception Report

Dr. Katsuhide NAGAYAMA, Team Leader, made a presentation on the Inception Report. Then, the following noteworthy comments were raised by the members of the Steering Committee.

- Mr. Romeo Hanxhari, Director of Environmental Policy Unit, MOT:
  - The issue of waste management for Tirana City, which is recognized as a priority of the Mayor, Mr. Basha, is expected to be appropriately drafted by JICA Study Team. Since a National Law on Integrated Management of Waste, under process of approval, will be enacted soon, the plan needs to be complied with this legal framework in drafting local plans for waste management.
  - On the matter of waste management process, 3 important topics should be kept in consideration during drafting the local plan, that is, 1) the education and public awareness; 2) promotion of public-private partnership in this sector, 3) the stimulation of the economical instruments in the process of the solid waste management.
- Mr. Vladimir Bezhani, Chief Sector of Waste Management, MOEFWA:
  - The JICA Study is expected to address the improvements of the legal framework, drafting a regulation and guideline on the treatment of the biodegradable waste, the appropriate technologies, public awareness and the implementation of a pilot project.
  - Regarding the economical instruments, under the limited competencies of the local government to deal with waste management issue, the Ministry is now considering a proposal to collect the waste tariff/cleaning tariff with the energy bill or the water supply bill.
  - KfW has proposed conduct of a feasibility study of the regional landfill project at the central level. The project will soon start, and so we need a close cooperation with the City team, including the JICA team.
- Mr. Flamur Kuçi, external advisor, Team Leader of Tirana Regulatory Planning:
  - As for the time schedule and phasing process, the JICA team will come up with the thematic assessments, as a first product, in January 2012 by, and the thematic plans on May 2012. The part beyond May 2012, it's mostly for the priority projects, and for more concrete projects to be implemented. Even if this process goes beyond the mandate of the regulatory planning team, MOT will continue the strong cooperation with the JICA team toward a well marriage of us.
  - The JICA team is requested to share data/information, analyses of survey results, overall assessment of the city, and projections of future demands in the process even before January 2012, because a preliminary draft of the Tirana Urban Plan should be depicted at the end of the year 2011.
  - A general vision of Tirana development, in order to draft the technical aspects of the Urban Plan, will be delivered to the JICA team by the regulatory planning team, in a public announcement, or in form of a written document officially approved.
- Mr. Kujtim Harshorva, Director of Roads Directory, MPWT
  - Tirana holds an important issue, the lack of a multimodal terminal, as one of the contributors of the chaotic traffic in Tirana.

- The improvement of the railway infrastructure needs to be examined. The Ministry is carrying out a study on the rehabilitation of the railway Durres-Tirana, and train express which will be operated with the next 2 years.
- Tirana is a city with no preferential lanes for mobility and for emergency cases, such as the fire department vehicles or ambulances, and there's a lack of parking places and flyovers to assure smooth traffic flows in the city.

• Mr. Arjan Jovani, Water Regulatory Authority

- One of the important issues is the improvement of the water supply management system. In this regard, the institutionalization process of the Water Company under authority of the local government should be accelerated based on the decentralization law. As the result of this process, the management of the water supply systems is expected to be improved.
- Another important topic to be considered is the new tariff structure for water supply. Water Regulatory Authority is now evaluating a new water tariff structure proposed by Tirana Water Company. A rational tariff system should be regulated, taking into account the feasibility of the investment and management of Tirana Water Company, which must be financially self-sustainable.

3. Conclusions Made by the 1st Steering Committee

After such constructive discussions as above, the followings were concluded as the result of the 1st Steering Committee:

1) The Inception Report, which contains the revised time-schedule and revised members of the Steering Committee, was officially accepted by the Steering Committee.
2) All members of the Steering Committee will provide official cooperation for JICA Study Team to collect data and/or information related to the Project.
3) JICA Study Team shall carry out the Study, taking into account the comments mentioned above by the members of the Steering Committee, in close collaboration with the counterpart team and the Tirana Territorial Planning (TTP) Team.
4) The TTP Team shall provide JICA Study Team "visions" on Tirana urban development, targeting the year 2020, whilst JICA Study Team shall share findings of surveys and analytical outcomes time to time with the TTP Team.
5) Progress Report, which compiles findings and preliminary outcomes to be derived from surveys, will be submitted to the Steering Committee in January 2012, and basic directions of thematic plan for four (4) subsectors, that is: i) road and urban transport; ii) solid waste management; iii) water supply system; and iv) sewerage/drainage system developments. The 2nd Steering Committee shall be held on that occasion.

* * * *

Appendix 1

Members of the Steering Committee
for
The Project for Tirana Thematic Urban Planning (TRIMP)

1.	Dr. Jorida Tabaku,	Deputy Mayor, MOT (Chairperson)
2.	Flamur Kuci,	GOA, Advisor of PM on Territorial Planning
3.	Taulant Zeneli,	General Director of Services, MOT
4.	Renato Barbullushi,	Director of Urban Control (Tirana Technical Secretariat), MOT
5.	Henrik Hysenbegasi,	General Director of Strategic Projects, MOT
6.	Namik Simixhi,	Director of Waste Management, MOT
7.	Romeo Hanxhari	Director of Environmental Policies, MOT
8.	Jamarber Malltezi,	Expert on Environment (Civil Society)
9.	Rudolf Shllaku,	Region of Tirana (Architect)
10.	Ervin Minarolli,	General Director of Policies, Ministry of Transport, GOA
11.	Pellumb Abeshi,	General Director of Environmental Policies, GOA
12.	Kreuza Leka,	Head of National Territorial Planning Agency, GOA,
13.	Avni Dervishi,	Head of Water and Sewerage Entity, GOA
14.	Ken Yamada	Senior Representative, JICA Balkan Office

Appendix 2

Attendants at the 1st Steering Committee Meeting

Date / Time: 11:00 – 13:00 hrs. 18th October, 2011
Venue: Tirana International Hotel

List of Attendants

No.	Name	Position/Organization	Tel. No.	E-mail Address
Albanian Side				
1	Dr. Jorida TABAKU	Chairperson, Deputy Mayor / MoT	069 20 84 508	jorida.tabaku@tirana.gov.al
2	Flamur KUÇI	Council of Ministers	068 20 64 814	flamurkuci@gmail.com
3	Henrik HYSENBEGASI	Gen. Dir. Str. Proj./ MoT	067 40 45 752	henrik.hysenbegasi@tirana.gov.al
4	Namik SIMIXHIU	Dir. Waste Manag. / MoT	068 20 84 425	namik.simixhiu@tirana.gov.al
5	Romeo HANXHARI	Dir. Envin. Pol. / MoT	069 20 74 907	romeo.hanxhari@gmail.com
6	Renato BARBULLUSHI	Dir. Urban Contr. / MoT	068 20 66 763	renato.barbullushi@tirana.gov.al
7	Rodolf SHLLAKU	Tirana Region	069 20 86 475	rodolfshllaku@yahoo.com
8	Vladimir BEZHANI	MMPAU (Min. Envin)	068 21 68 188	vladimirbezhani@yahoo.com
9	Redi BADUNI	MMPAU (Min. Envin)	067 20 42 259	redibaduni@moe.gov.al
10	Arjan JOVANI	ERRU (Water Entity)	068 20 36 369	arjanjovani@gmail.com
11	Kujtim HASHORVA	MPWT (Director of Roads)	068 20 87 599	
JICA				
12	Sokol KONOMI	JICA Tirana/Coordinator	068 20 74 475	tirana@jica.rs
JICA Study Team				
13	Dr. Katsuhide NAGAYAMA	JICA Study Team/ Leader (Urban Planning)	066 65 44 849	nagayama@valueplanning.org
14	Masaharu TAKASUGI	JICA Study Team/ Deputy Team Leader (SWM)	066 20 18 771	takasugi-m@jcom.home.ne.jp
15	Isao MITSUNAGA	JICA Study Team (Water)	066 65 44 894	njs_mitsunaga@yahoo.co.jp
16	Kreshnik BAJRAKTARI Jr.	JICA Study Team, Local Staff (Secretary)	066 20 18 773	kreshnikbaj@yahoo.com
17	Erjola MUKA	JICA Study Team, Local Expert (Environment)	066 20 18 772	erjola.muka@gmail.com
18	Kreshnik BAJRAKTARI Sr.	JICA Study Team, Local Staff (Transport)	066 20 18 775	k.bajraktar@gmail.com

MINUTES OF MEETING
ON
The 2nd MEETING OF STEERING COMMITTEE

FOR

THE PROJECT
FOR
TIRANA THEMATIC URBAN PLANNING
IN
ALBANIA

Tirana, 26th January, 2012

Dr. Jorida TABAKU
Deputy Mayor
Municipality of Tirana,
Albania

for Dr. Katsuhide NAGAYAMA
Team Leader
JICA Study Team

Witnessed by:

Mr. Toru OGURA
Project Formulation Advisor,
JICA Balkan Office

1. Introduction

Based upon the Minutes of Meeting on the Scope of Work for the Project for Tirana Thematic Urban Planning, agreed between the Government of Albania, represented by Municipality of Tirana (MOT) and Japan International Cooperation Agency (JICA) in Tirana on 28th February 2011, JICA dispatched a Study Team, headed by Dr. Katsuhide NAGAYAMA, to Albania to commence "the Project for Tirana Thematic Urban Planning" (hereinafter referred to as "the Project") on 6th July 2011.

Dr. NAGAYAMA, the team leader, paid a courtesy call to and made intensive discussions with Deputy Mayor and Mr. Flamur KUCI, team leader of the Tirana Territorial Planning Team, on the submission of Progress Report and a series of Technical Workshops for thematic issues on 12th January 2012. Based on this discussion, Deputy Mayor officially organized the Technical Workshops and the 2nd Steering Committee, as shown in Appendix 1 and 2 attached herewith.

The 2nd Meeting of the Steering Committee, chaired by Dr. Jorida TABAKU, Deputy Mayor, MOT, was held at the Tirana International Hotel from 11:00 a.m. on 26th January, 2012. The attendants are as shown in Appendix 2 attached herewith. The JICA Study Team submitted the members "Progress Report" which describes findings and preliminary outcomes to be derived from surveys. The Progress Report consists of three separate volumes: 1) Summary in English, 2) Summary in Albanian; and 3) Main Text in English.

The 2nd Steering Committee started with the chairperson's opening address, followed by opening remarks by Mr. Toru OGURA, JICA Balkan Office. Then, Dr. Katsuhide NAGAYAMA made a presentation on the progress of the project.

2. Comments on the Progress Report

The following noteworthy comments were raised by the members of the Steering Committee.

Dr. Jorida TABAKU (Deputy Major / Tirana Municipality)

- Expressed the need for immediate strategic decision to be taken by the team of MOT, on the main proposals per topics, such as in, Road & Transport, Solid Waste Management and Water Supply & Sewerage.
- There must be a better coordination between the team of JICA experts and relevant departments, and moreover the technical group of the new regulatory plan, to enable reflection of decisions taken by this group to preliminary and final proposals that JICA team will further make. On this terms JICA team needs to elaborate a number of project ideas have already been officially committed by the technical group, including:
  - Five Ring Roads;
  - Outer Ring Road; and
  - Interurban Road Tirana-Elbasan.
- MOT is waiting for updated information and data on the 2011 census from the Institute of Statistics, in relation to the population and economy. The statistical information should be shared with JICA team, in order to analyze and make further projections on social and economic framework in target years, based on the same data-base.

- It is necessary to include representatives of the communes and all the groups of interest in discussions and meetings, as the strategic group has already done.

Ms. Nerejda HOXHA (Director of Transport and Mobility / MOT)

- To elaborate proposals that JICA team will make on the Road & Transport Sector, there's a need to set up a planning system for data collection, traffic forecasting based on modeling analyses, including software application. In the further studies and evaluations, JICA team should take in account the new areas such as, Kamëz, Kashar, etc.

Mr. Ervin MINAROLLI (Ministry of Public Works and Transport)

- JICA team should take in account a new proposal for reallocation of the train stations.
- JICA team should reflect in their final proposals on Road & Transport, the key goals set up by the EC Transport White Paper 2011, by 2050.

Mr. Avni DERVISHI (Water Regulatory Entity)

- There should be a better coordination and cooperation between relevant departments, and it is necessary to define the service area, or better the area of service coverage.
- After drafting of the action plans and definition of terms by JICA team, there should be a further prioritization of projects per each term of implementation.
- Regarding the water supply tariffs, there should be taken in consideration other countries' cases similar to Albania in the Balkan Region.

Mr. Jamarbër MALLTEZI (Environmental Expert / Regulatory Plan Technical Group)

- Regarding the Road Network and Transport:
  - JICA team should take into account the proposal and decision of the Technical and Strategic Group related to the five ring roads structure;
  - Needs to be foreseen bike lines in almost every road of the city;
  - Must provide transportation modes fitting with different needs of people.
- Regarding the Waste Management:
  - JICA team should include in the short-term actions the incinerator plant in the short-term actions, as the lifespan of Sharra is decreasing.
  - One of the ways to treat the solid waste might be the combustion in the cement factories, to produce energy for the city.
  - It is noted that the technical group is working with complete different data regarding the waste amount generated and disposed. The waste amount that the technical group has taken from the MOT is 282,000 ton/year. Divided by 365 days, it stands for 772 ton/day, and further divided per 0.45 kg/person, which is identified by JICA team, it gives a population of 1.7 million. This figure seems strange.

Mr. Henrik HYSENBEGASI (General Director of Strategic Projects and Foreign Investments / MOT)

- Regarding the LRT, the MOT has identified 2 routes for the tram system, based on the number and traffic studies done previously. As the study for tram system is being conducted by the German consultants financed by EBRD, JICA team will be able to refer to the study outcomes.

Mr. Gjergj BAKELLBASHI (Director of Urban Planning / MOT)

- We should be modest in the ambitious for Tirana to provide the index for municipality, referring to the municipality stands in comparison with Balkan region countries.

Mr. Romeo HANXHARI (Director of Environmental Policy Unit / MOT)

- Practical scenarios in the solid waste management is expected to be developed by the JICA team, including the improvement of final disposal at the Sharra landfill, and the best options to be implemented after closure of the Sharra landfill site.
- Models of partnership with the private sector or PPP schemes are expected to be prepared by JICA team, taking into account available technologies such as incineration facilities, utilization of cement factories, recycling initiatives, etc.

Mr. Pëllumb ABESHI (Director of Environmental Policy / Ministry of Environment, Forests and Waters Administration (MOEFAW))

- Regarding the solid waste management, the actual waste fee cannot cover the total cost of waste management, therefore, there's a need for better calculation of real cost and also to have a separate calculation for each service.
- Intermediate treatment is a needed action and should be developed as a new approach of solid waste management. In this connection, it's necessary to propose a way on how to share the cost of solid waste treatments.
- Regarding the water supply, it is necessary to develop ways and proposals on how to minimize the water usage.

Mr. Taulant ZENELI (General Director of Planning and Service Management / MOT)

- Regarding the water sources, the Study should go in depth of the topic, in terms of other sources and a time schedule of the development in the urgent or middle/long terms.
- In order to lessen the huge amount of water loss, the Study needs to address what actions MOT should take in a phasing manner.
- Regarding the solid waste management, the Study should propose options based on new technologies used in other countries, which MOT could afford to invest and provide the citizens the best service. The option should be the one that citizens afford to pay, and is

financially feasible. Cooperation with the private sector may be indispensable to realize such an option.

3. Conclusions Made by the 2nd Steering Committee

After such constructive discussions as above, the followings were concluded as the result of the 2nd Steering Committee:

1) The Progress Report which compiles findings and preliminary outcomes derived from surveys, was officially accepted by the Steering Committee.

2) JICA Study Team shall carry out the Study, taking into account the comments by the members of the Steering Committee as mentioned above, in closer collaboration with the counterpart team and the Tirana Territorial Planning (TTP) Team.

3) Interim Report, which compiles sector development plans and priority projects, shall be submitted to the Steering Committee in May 2012, and master plans for four (4) subsectors, that is: i) road and urban transport; ii) solid waste management; iii) water supply system; and iv) sewerage/drainage system developments. The 3rd Steering Committee shall be held on that occasion.

* * * *

Appendix 1

Schedule of Technical Workshops

17th January (Wd):	Technical Workshop on "Road and Transportation Sector": Findings and Planning Directions
20th January (Fr):	Technical Workshop on "Solid Waste Management": Findings and Planning Directions
23rd January (Mn):	Technical Workshop on "Water Systems": Findings and Planning Directions
8th February (Wd):	Technical Workshop on "Multi-municipal Administrative System for Development Management in the Tirana Metropolitan Region"

Appendix 2

Attendants at the 2nd Steering Committee Meeting

Date / Time: 11:00 – 13:00 hrs., 26th January, 2012
Venue: Tirana International Hotel

List of Attendants

No.	Name	Position/Organization	Tel. No.	E-mail Address
Albanian Side				
1	Dr. Jorida TABAKU	Chairperson, Deputy Mayor / MOT	069 20 84 508	jorida.tabaku@tirana.gov.al
2	Romeo HANXHARI	Dir. Envin. Pol. / MOT	069 20 74 907	romeo.hanxhari@gmail.com
3	Namik SIMIXHIU	Dir. Waste Manag. / MOT	068 20 84 425	namik.simixhiu@tirana.gov.al
4	Avni DERVISHI	Water Entity / Chairman	069 20 80 306	avnidervishi@erru.al
5	Fatlinda STRUGA	Nat. Age. Territorial Plan.	068 23 05 978	strugaf@yahoo.com
6	Rodolf SHLLAKU	Tirana Region	069 20 86 475	rodolfshllaku@yahoo.com
7	Jamarber MALLTEZI	Environment Expert	069 20 81 973	abi.mallteZi@gmail.com
8	Taulant ZENELI	Gen. Dir. / MOT	067 40 06 111	taulant.zeneli@tirana.gov.al
9	Ervin MINAROLLI	Min. Pub. Works Transport	067 20 30 212	ervinminarolli@mppt.gov.al
10	Irida HASA	MOT	067 40 96 672	irida.hasa@tirana.gov.al
11	Henrik HYSENBEGASI	Gen. Dir. Str. Proj./ MOT	067 40 45 752	henrik.hysenbegasi@tirana.gov.al
12	Aida GJIMISHKA	MOT	069 40 73 432	aida.gjimishka@tirana.gov.al
13	Nerejda HOXHA	Dir. Transport / MOT	067 40 96 799	nerejda.hoxha@tirana.gov.al
14	Gjergj BAKALLBASHI	Dir. Urban Planning / MOT	069 26 87 604	gjergj.bakallbashi@tirana.gov.al
15	Pëllumb ABESHI	Dir. Policies / Min. Environ.	068 20 72 812	pellumb.abeshi@moe.gov.al
JICA				
16	Toru Ogura	Project Formulation Advisor, JICA Balkan Office	+381-11-2200-750	Ogura.Toru@jica.go.jp
17	Sokol KONOMI	JICA Tirana/Coordinator	068 20 74 475	tirana@jica.rs
JICA Study Team				
18	Dr. Katsuhide NAGAYAMA	JICA Study Team/ Leader (Urban Planning)	066 65 44 849	nagayama@valueplanning.org
19	Masaharu TAKASUGI	JICA Study Team/ Deputy Team Leader (SWM)	066 20 18 771	takasugi-m@jcom.home.ne.jp
20	Isao MITSUNAGA	JICA Study Team (Water)	066 65 44 894	njs_mitsunaga@yahoo.co.jp
21	Kunihiko OZAWA	JICA Study Team (Land Use)	066 20 18 771	ozawa@valueplanning.org
22	Shio KUWABARA	JICA Study Team (Coordinator /Gender & Poverty)	066 20 18 770	kuwabara@valueplanning.org
23	Kreshnik BAJRAKTARI Sr.	JICA Study Team, Local Staff (Secretary)	066 20 18 773	kreshnikbaj@yahoo.com
24	Erjola MUKA	JICA Study Team, Local Expert (Environment)	066 20 18 772	erjola.muka@gmail.com
25	Kreshnik BAJRAKTARI Jr.	JICA Study Team, Local Expert (Transport)	066 20 18 775	k.bajraktar@gmail.com

MINUTES OF MEETING
ON
The 3rd MEETING OF STEERING COMMITTEE

FOR

THE INTERIM REPORT

THE PROJECT
FOR
TIRANA THEMATIC URBAN PLANNING
IN
ALBANIA

Tirana, 6th July, 2012

Dr. Jorida TABAKU
Deputy Mayor
Municipality of Tirana,
Albania

Dr. Katsuhide NAGAYAMA
Team Leader
JICA Study Team

Witnessed by:

Mr. Sokol KONOMI
JICA Technical Coordinator Albania

1. Introduction

Based upon the Minutes of Meeting on the Scope of Work for the Project for Tirana Thematic Urban Planning, agreed between the Government of Albania, represented by Municipality of Tirana (MOT) and Japan International Cooperation Agency (JICA) in Tirana on 28th February 2011, JICA dispatched a Study Team, headed by Dr. Katsuhide NAGAYAMA, to Albania to commence "the Project for Tirana Thematic Urban Planning" (hereinafter referred to as "the Project") on 6th July 2011. Since then, the JICA team has been working in Tirana in accordance with the Inception Report which was officially approved.

The 3nd Meeting of the Steering Committee, chaired by Dr. Jorida TABAKU, Deputy Mayor, MOT, was held to discuss the Interim Report at the Tirana International Hotel from 11:00 a.m. on 6th July, 2012. Attendants are as shown in Appendix 1 attached herewith. The JICA Study Team submitted the members "Interim Report" which describes findings and recommendations on Master Plans for selected sectors such as: 1) Road and Urban Transportation; 2) Solid Waste Management; 3) Water Supply; and 4) Sewerage and Drainage Systems. The Interim Report consists of three separate volumes: Summary in English, Summary in Albanian; and Main Text in English.

The 3rd Steering Committee started with the chairperson's opening address, followed by opening remarks by Mr. Sokol KONOMI, JICA Tirana Coordinator. Then, Dr. Katsuhide NAGAYAMA made a presentation on the Interim Report. After the presentation, intensive and enthusiastic discussion was made.

2. Comments on the Progress Report

The following are noteworthy comments raised by the members of the Steering Committee.

Mr. Pellumb ABESHI (Director of Environmental Policy / MoEFAW)

Regarding the Waste Management Plan:

- The master plan should be integrated, not only with the national plan, but also with the regional plan and its proposals. The master plan also needs to take into consideration the national targets and objectives on recycling.
- The planning of waste management for Tirana should go beyond the regional administrative boundary, based on the potential of future economic development. Some foreign donors have made some attempts in evaluating the possibility of Tirana-Durres region, in waste management. IFC has already made a feasibility study for the landfill of Durres region and KfW for the regional landfill of Tirana, Durres and Kavaja.
- The assessment for future disposal site, besides Sharra, should be made even outside the administrative boundary of Tirana, identifying a new potential site.
- The waste management should include a consideration on not only the urban waste, but also construction waste and debris as construction activities are growing in Tirana. In this regard, it is important to provide for Municipality of Tirana recommendations on how to manage and how to establish a system for reuse and recycle of this type of waste.
- Recommendations on how to manage hospital waste should be included in the plan, as Tirana generates a considerable amount of hospital waste. Even if its responsibility is

assumed by hospitals themselves, the plan should present some recommendations based on such a local perspective.

Regarding the Wastewater Treatment:

- As the main aquatic environments (Lana River and Tirana River) are extremely polluted, such a treatment process and constant interventions are urgently needed.
- Sludge treatment generated after the wastewater treatment should be included in the master plan. As we have no experiences in this area, the plan needs to include technical proposals and recommendations on the steps and measures to be taken into consideration. Legal instruments or improvements in the existing legal framework, regarding the sludge treatment, should be also discussed.

Ms. Nerejda HOXHA (Director of Transport and Mobility / MoT)

In relation to the New Regulatory Plan:

- In order to have an useful document for MoT, there's a need to be coordinated with all the data and analysis based on the new regulatory plan, in terms of the data related to transport, land use and socioeconomic framework.

As for the Road and Transport Section:

- The department of Transport and Mobility has already engaged its staffs to collaborate with JICA Team and evaluate the methodology used for this study and its application.
- The Five Rings solution needs to be examined in the master plan. Even though JICA Team has made an attempt in analyzing the two ring roads (4^{th} and 5^{th}), it is necessary to know width of the roads and rationales of the proposal that the 4^{th} Ring Road should be considered as a main or secondary road.
- Looking at the charts and making a comparison of the "do-nothing" scenario with the improvements in the 2026, we still see a lot of red in the main junctions, especially the one between Rr. Durresit and Rr. Kavajes. On this regard, it should be suggested what MoT has to do to improve performance of such junctions.
- Regarding the list of priority projects proposed in short-terms period, JICA Team should provide with cost estimates attached to such investments.
- Regarding the bus and bicycle mobility, also as a policy of MoT for a sustainable mobility, JICA Team proposed to integrate bus and bicycle mobility together in intermediate ring roads whose road capacities are limited. It should be cleared what interventions Mot shall carry out for road infrastructures to achieve this proposal. JICA Team should come out with more detailed proposals and activities for the radial roads, short-terms interventions, splitting in times, in order to have a complete mobility network.
- Based on the parking assessment/survey in the central business district (CBD) made by JICA Team, there's a proposal for underground parking facilities. However, this idea takes long time until its realization. What measures should be taken to manage the parking system in the CBD in short- and medium-term? In this regard, it's needed to have a detailed plan, including management measures for the residential parking system.
- The JICA Team's proposal to increase the parking tariff should be rationalized by an analysis. It needs to be addressed how MoT should implement such an increase.

- Regarding the proposed three tramlines, specifically the third ring one, although it is proposed to replace bus services with tram service, how achievable it can be and does this intervention affect the road capacity?
- Regarding the institutional arrangements, the proposal is for establishing a Transportation Authority for the Tirana Metropolitan Area. A few issues need to be cleared, that is, what problems exist with the existing organization system, what improvements will be possible, what value-added benefits can be expected with the new organization, and what financial implications are conceivable for the new organization.

Ms. Jorida TABAKU (Deputy Major / Tirana City Hall)

There are two (2) main concerns about interrelations with the road and transport sector by JICA Team and the New Regulatory Plan which has newly been launched:

- The first is regarding the data which are used for JICA Team, which are related with the previous regulatory plan and not with the new calculations made by MoT for the new regulatory plan. In some cases the information is lacking from the MoT side, but from now on we will make it sure that MoT and JICA Study Team should use the same concept on the time-framework and socioeconomic date. To this end, the report shall be revised and updated with new information so that the thematic plans that we want to develop are based on the new regulatory plan.
- The second issue is related to the fact of being concrete in this stage. Different proposals made in the report and different areas for the study may bring confusion for MoT on how to implement them.
- The master plan should be more practical and not to keep them on a theoretical level. Some issues are on long-term interventions, but we want to be practical with concrete measures and actions for each of the thematic plans that JICA Team will develop.

Mr. Taulant ZENELI (General Director of Planning and Service Management / MoT)

Regarding the Water Supply and Wastewater Section:

- There is a good analysis on the actual system and situation, but a deep analysis is required to identify project priorities, taking into account measures to reduce loses or non-revenue water, to rehabilitate the distribution network, to install water meters, to improve the management, and so on.
- Financial implications need to be examined so that MoT may provide feasible interventions for the UKT, including additional investments and/or practical PPP models for the improvement. An issue on how to determine effective tariffs for waste water treatment needs to be further clarified.

Regarding the Solid Waste Management (SWM)

- As for the tariff of SWM, is the actual system the best one or there are other tariff systems that we can apply? This should be disicussed.
- Regarding the 3Rs priority, although this policy should be of the first priority of MoT, this may be too costly for MoT to finance. It is a possible solution to start with waste separation at the Sharra's landfill and then to see the implementation step by step. Actually MoT is working with IFC to see the future development of Sharra's landfill, and MoT is

looking for a PPP model in the SWM sector, so JICA Team is requested to look into these policy directions.

Mr. Avni DERVISHI (Water Regulatory Entity)

- The present report and the progress are appreciated the in comparison with the previous report. The newly proposed idea on two (2) options of intervention for the wastewater treatment in the Farka's area is valued, for reasons of good topographical and geographical conditions in this area.
- Regarding the institutional framework, the idea of establishing a Transportation Authority for the Tirana Metropolitan Area is also appreciated. In this matter, it will be necessary to have such a similar authority, maybe a national one, for wastewater and other base services in Albania.
- The more detailed comments and questions will be sent to the JICA Study Team by email.

Dr. Katsuhide Nagayama (Team Leader, JICA Study Team)

Data update of the Master plans

- The data elaborated and used for the current analyses are basically identical to those presented so far by the regulatory planning technical team. However, no detailed socioeconomic framework has been disclosed yet by the technical team. We are eager to make coordination with the technical team.
- For the sake of traffic analysis, the study area is divided into about 100 TAZs (Traffic Analysis Zone). In order to calculate the transport demand, we need not only the population data, but also the present and future economic data in terms of numbers of employments by each TAZ which represents traffic attractions. Furthermore, numbers of high and higher schools and/or institutions are required by TAZ, because they are significant traffic generators, showing more or less 20 % of total traffic demand. We need more technical discussions with the technical team for this topic as well.

Tariff and Financial Analysis of SWM

- Based on a preliminary calculation, the total investment cost to realize the proposed integrated SWM project (ISWMP) as a whole will account for nearly 30 billion ALL, including engineering studies, construction of facilities, procurements of machines and equipment (M&E) and other administrative costs. The feasibility of a possible PPP model was examined, under assumptions that MoT shares 22% of the total cost for the land acquisition and basic infrastructure related to the project and the remaining cost, or 78% of the total cost. The first finding is that the economic internal rate of return (EIRR) was more than 10%, meaning a conclusion that the ISWMP is economically feasible. On the financial evaluation, it can be understood that the private sector, particularly the local sector can enjoy the 13% of the Financial Internal Rate of Return (FIRR), foreigners 7% and with an average of 5%. Although the average seems to be low, if the FIRR for the private sector of 13% is guaranteed, it will be a possible that some private investors will participate in the project as a partner. For securing the project feasibility and credibility, soft loans from ECA (Export Credits Agencies) or International Financial Agencies are expected to be rendered.
- It should be noted that this calculation was made under an assumption that the tariff is

charged at 1,200 ALL/month on household, which is almost double of the present fee. The amount of 1,200 ALL/month is less than 2% of the household income which is considered as an affordable level for SWM on the world average. Thus, JICA Team recognizes that a feasible PPP scheme could be pursuable even for the SWM sector, given rational assumptions for demarcation of responsibilities among the government, the private sector and citizens.

3. Conclusions Made by the 3rd Steering Committee

After such constructive discussions as above, the followings were concluded as the result of the 3rd Steering Committee:

1) The Interim Report was officially accepted by the Steering Committee.
2) JICA Study Team shall further deepen the Study, taking into account the comments raised by the members of the Steering Committee as mentioned above, in closer collaboration with the counterpart team and the Tirana Territorial Planning (TTP) Team.
3) For further technical discussions in relation with the new regulatory plan, another meeting, or the 4th Steering Committee, shall be held in the end of July 2012. JICA Team should make further studies reflecting as many comments as possible by then.
4) Draft action plans as well as refined master plans will be discussed in the beginning of October 2012, and the 5th Steering Committee Meeting shall be held on that occasion.

* * * *

Appendix 1: Attendants at the 3rd Steering Committee Meeting

Date / Time: 11:00 – 13:00 hrs., 6th July, 2012
Venue: Tirana International Hotel

No.	Name	Position/Organization	Tel. No.	E-mail Address
Albanian Side				
1	Dr. Jorida TABAKU	Chairperson, Deputy Mayor / MOT	069 20 84 508	jorida.tabaku@tirana.gov.al
2	Avni DERVISHI	Water Entity / Chairman	069 20 80 306	avnidervishi@erru.al
3	Arjan JOVANI	Water Entity	068 20 36 369	arjanjovani@gmail.com
4	Pëllumb ABESHI	Dir. Policies / Min. Environ.	068 20 72 812	pellumb.abeshi@moe.gov.al
5	Fatlinda STRUGA	Nat. Age. Territorial Plan.	068 23 05 978	strugaf@yahoo.com
6	Taulant ZENELI	Gen. Dir. / MOT	067 40 06 111	taulant.zeneli@tirana.gov.al
7	Henrik HYSENBEGASI	Gen. Dir. Str. Proj./ MOT	067 40 45 752	henrik.hysenbegasi@tirana.gov.al
8	Gjergj BAKALLBASHI	Dir. Urban Planning / MOT	069 26 87 604	gjergj.bakallbashi@tirana.gov.al
9	Nerejda HOXHA	Dir. Transport / MOT	067 40 96 799	nerejda.hoxha@tirana.gov.al
10	Irida HASA	MOT	067 40 96 672	irida.hasa@tirana.gov.al
11	Ulrike BEGA	Mayor Adviser / MoT	068 40 75 552	uli.bega@tirana.gov.al
12	Aida GJIMISHKA	Mayor Adviser / MOT	069 40 73 432	aida.gjimishka@tirana.gov.al
JICA side				
13	Sokol KONOMI	JICA Tirana/Coordinator	068 20 74 475	tirana@jica.rs
14	Dr. Katsuhide NAGAYAMA	JICA Study Team/ Leader (Urban Planning)	066 65 44 849	nagayama@valueplanning.org
15	Dr. Sadayuki YAGI	JICA Study Team (Road & Transport)	066 20 18 774	yagis@jri.or.jp
16	Isao MITSUNAGA	JICA Study Team (Water)	066 65 44 894	njs_mitsunaga@yahoo.co.jp
17	Kinuyo FUKUDA	JICA Study Team (Project Evaluation)	066 66 92 418	fukudak@gyros.co.jp
18	Kreshnik BAJRAKTARI	JICA Study Team (Secretary)	066 20 18 773	kreshnikbaj@yahoo.com
19	Erjola MUKA	JICA Study Team (Environment)	066 20 18 772	erjola.muka@gmail.com
21	Ariela KUSHI	JICA Study Team (Urban Planning)	069 20 69 614	arielakushi@yahoo.it
20	Kreshnik BAJRAKTARI	JICA Study Team (Transport)	066 20 18 775	k.bajraktar@gmail.com

MINUTES OF MEETING
ON
The 4th MEETING OF STEERING COMMITTEE

FOR

COORDINATED ISSUES IN THE INTERIM REPORT

THE PROJECT
FOR
TIRANA THEMATIC URBAN PLANNING
IN
ALBANIA

Tirana, 31th July, 2012

Dr. Jorida TABAKU
Deputy Mayor
Municipality of Tirana,
Albania

Dr. Katsuhide NAGAYAMA
Team Leader
JICA Study Team

Witnessed by:

Mr. Sokol KONOMI
JICA Technical Coordinator Albania

1. Introduction

Based upon the Minutes of Meeting on the Scope of Work for the Project for Tirana Thematic Urban Planning, agreed between the Government of Albania, represented by Municipality of Tirana (MOT) and Japan International Cooperation Agency (JICA) in Tirana on 28th February 2011, JICA dispatched a Study Team, headed by Dr. Katsuhide NAGAYAMA, to Albania to commence "the Project for Tirana Thematic Urban Planning" (hereinafter referred to as "the Project") on 6th July 2011. Since then, the JICA team has been working in Tirana in accordance with the Inception Report which was officially approved.

The 4th Meeting of the Steering Committee was held at the Tirana International Hotel from 11:00 a.m. on 6th July, 2012, chaired by Mr. Henrik HYSENBEGASI, General Director, Strategic Projects and Foreign Investment, MOT, substituting for Dr. Jorida TABAKU, Deputy Mayor, MOT. Attendants are as shown in Appendix 1 attached herewith.

Main objectives of this 4th Steering Committee is to discuss three topics: 1) planning issues to be coordinated with the New Regulatory Plan; and 2) JICA Team's additional work and clarification to respond to comments on the Interim Report which were raised at the 3rd Steering Committee; and 3) newly adjusted working schedule of the JICA Study.

The 4th Steering Committee started with the chairperson's opening address, followed by opening remarks by Mr. Sokol KONOMI, JICA Technical Coordinator Albania. Then, JICA Team made four (4) sector presentations in line with the agenda as shown in Appendix 2 attached herewith, that is:

First, Dr. Katsuhide Nagayama distributed a paper titled "JICA Team's Responses and Clarifications to Comments Raised at the 3rd SC Meeting (6th July 2012)" as Appendix 3 attached herewith, which summarizes all responses by JICA Team. Then, he made a presentation of newly adjusted planning framework based on coordination with the technical team for new regulatory planning in terms of: 1) the time horizon of target years; 2) the definition of TMA (Tirana Metropolitan Area); 3) the projection of future population and its distribution patterns; and 4) land use and population densities. Those are all important aspects affecting to the JICA Study.

Secondly, Dr. Sadayuki Yagi presented technical findings and analytical results of his intensive and extensive planning work, based on the new planning framework, so as to respond to all comments raised at the 3rd Steering Committee.

Thirdly, Mr. Masaharu Takasugi made a presentation to overview the Integrated Solid Waste Management Program proposed by JICA Team, and provided insights into further coordination with other donors' activities such as those by IFC and KfW.

Fourthly, Dr. Katsuhide Nagayama presented the results of coordinated work on Water and Sewerage Systems with UKT and the new planning framework.

Finally, Ms. Kinuyo Fukuda demonstrated economic and financial implications on the implantation of selected priority projects in the roads and urban transportation, SWM and water sectors, based on her extensive economic analyses.

2. Comments

The following are noteworthy comments raised by the members of the Steering Committee, after the presentations by JICA Team.

Mr. Henrik HYSENBEGASI:

We would like to thank JICA Study Team for the hard work and for presenting to us on this 4th Steering Committee their study with the improvement done after the comment we had in the last Steering Committee. I spoke with Dr. Tabaku, the Deputy Mayor, and she feels very sorry for not joining today due to an emergency. She asked me to convey her thanks for your efforts and everything else.

Ms. Nerejda HOXHA:

- I just like to inform to the Steering Committee that we had discussions with JICA Study Team and all the issues that had been discussed in that meetings are covered in today's presentation and also in the answers that you gave to our questions.
- It is clear to everyone that we should keep this cooperation between us in order to speak the same language to have at the end a product that is used by Municipality of Tirana. So, my suggestion is to continue, even during the preparation of Draft Final Report, this common understanding in all the transport issues.

Mr. Namik SIMIXHI:

- I have no particular comments, as we have closely collaborated with Mr. Takasugi regarding all the issues that were raised at the last meeting. Current concern of MOT is the possibility of managing the activities of cleaning and deposit in the Sharra landfill, and possible collaboration with IFC for this purpose.
- Municipality of Tirana is seeking for the possibility of operation by a single operator for cleaning and deposit of urban wastes, keeping expenditures cost at a low level and controlling the cleaning fee at a minimal level. We continue holding this idea, through the cooperation with IFC for its feasibility study, in order to achieve a good administration for SWM. This is very important for Municipality of Tirana.
- Thanks to JICA Team for the collaboration and presentation made, we are increasingly hoping that all proposals will be included in Final Report, which will also be a leading material for short and mid-term policies of Municipality of Tirana in the management of cleaning and waste disposal activity. Thank you once again.

Mr. Henrik HYSENBEGASI:

- I would like to draws attention in two small points. One is the proposed population density. In the regulatory plan presented at Municipality of Tirana, lately by Mr. Kuçi, we have identified five new centers and as you see in the legend the current population densities are between 0.2 to 1. We have clarified with Mr. Kuçi that these centers are unspecified for the moment, and they will have different population densities e.g. for the Boulevard blocks, looking at the project proposal by GRIMSHAW, where shall need higher densities, as new European blocks, but those are designated to be the lowest intensity area.
- In Tirana, new buildings will be highly demanded, taking in consideration that all the

buildings build in last 20 years are not having enough infrastructure capacities with substandard. So our idea for these new central zones shall be developed with higher standards and better infrastructures services. I like to clarify this point with Mr. Kuci.

- My second point is connected to this, having in minds these densities for the second line (or North-South Line) of the tram. We have some new data for the second line. The first line (or East-West Line) was correctly presented. For the second line of the tram, including the public transport terminal, JICA Team is requested to clarify again its economic feasibility of the project, as I will provide the new data for the project.

Mr. Arjan JOVANI: (Water Regulatory Entity)

- Related with the today presentation, we saw the financial and economic analysis of the water management, and we will expect the same analysis for the wastewater management as well.
- The performance data presented by JICA Team are those in 2011. However, by the decision of Water Regulatory Entity (WRE), drinking water and wastewater fees have been amended in early 2012 which mean that they should be taken into consideration because there is an increase for households nearly 30%. So this fact should be taken into account throughout the calculations for costs of operation, maintenance or investments.
- I would like JICA Team, if is possible, to make the fee scheme till the year 2050, based on its consultancy opinions. This plan is usually done in all the projects we have seen from other donors in various cities such as Korca or Pogradec by KfW. So it would be good for us that JICA Team proposes a plan of fees increase as by their opinion.
- We like to have a meeting with JICA Team at the offices of the Entity to discuss more in details about the current problems in terms of water infrastructures such as water supply and sewerage systems.

Mr. Katsuhide NAGAYAMA:

- The economist of our team has already prepared the results on the sewerage project, but because of the time constrain, I cut its presentation. Of course, the sewerage project is one of the target projects for our financial evaluation, including the tariff issue. For further clarification of the status analysis, we would like to have another meeting with you at your office tomorrow.
- Regarding the schedule of our activities, originally we should submit Draft Final Report in September, but because of such coordination process with the Regulatory Plan, we needs to take more time and propose to postpone our schedule. We will do our best, but Draft Final Report including Master Plans and Action Plans will be submitted to you on October 2012.
- Another reason is that your Regulatory Plan is going to be submitted by September to the central approval body, so that we have to know your final report of the Regulatory Plan. Should we need another coordination, we shall take more time for that purpose.

Mr. Henrik HYSENBEGASI:

- As for re-scheduling of the JICA Study, from our side, we are referring to your projects and we want other projects and studies to be based somehow on JICA Study. On having this constrain I would like to push it to have it as soon as possible, but as it seems a necessary

arrangement of the schedule, I would like to talk to Dr. Tabaku, the Deputy Mayor..

Mr. Sokol KONOMI (as closing remarks)

- It seems that cooperation is going smooth in terms of building up a relationship for the transferring the vision of Municipality of Tirana, so I'm quite sure that all the additional comments made in the end will be reflected in Draft Final Report. I would invite both parties to strongly and closely cooperate for anything that they need to talk or which is in the benefit of the project implementation.

3. Conclusions Made by the 4th Steering Committee

After such constructive discussions as above, the followings were concluded as the result of the 4rd Steering Committee:

1) JICA Study Team shall further deepen the Study, taking into account the comments raised by the members of the Steering Committee as mentioned above.
2) JICA Study Team shall continuously keep current collaboration with the counterpart team in thematic sector planning.
3) Draft Final Report, including refined master plans and action plans for thematic sectors will be discussed in October 2012, and the 5th Steering Committee Meeting shall be held on that occasion.

* * * *

Appendix 1: Attendants at the 4rd Steering Committee Meeting

Date / Time: 11:00 – 13:00 hrs., 31th July, 2012
Venue: Tirana International Hotel

No.	Name	Position/Organization	Tel. No.	E-mail Address
Albanian Side				
1	Henrik HYSENBEGASI	Gen. Dir. Str. Proj./ MOT	067 40 45 752	henrik.hysenbegasi@tirana.gov.al
2	Ervin MINAROLLI	MPWT	067 20 30 212	ervin.minarolli@mppt.gov.al
3	Nerejda HOXHA	Dir. Transport / MOT	067 40 96 799	nerejda.hoxha@tirana.gov.al
4	Namik SIMIXHI	Dir. Waste Management/MoT	068 20 84 425	namik.simixhiu@tirana.gov.al
5	Pëllumb ABESHI	Dir. Policies / Min. Environ.	068 20 72 812	pellumb.abeshi@moe.gov.al
6	Arjan JOVANI	Water Entity	068 20 36 369	arjanjovani@gmail.com
7	Fatlinda STRUGA	MoT	068 23 05 978	strugaf@yahoo.com
8	Irida HASA	MOT	067 40 96 672	irida.hasa@tirana.gov.al
9	Aida GJIMISHKA	Mayor Adviser / MOT	069 40 73 432	aida.gjimishka@tirana.gov.al
JICA Side				
10	Sokol KONOMI	JICA Technical Coordinator Albania	068 20 74 475	tirana@jica.rs
11	Dr. Katsuhide NAGAYAMA	JICA Team Leader (Urban Planning)	066 65 44 849	nagayama@valueplanning.org
12	Masaharu TAKASUGI	Deputy Team Leader (SWM)	066 20 18 771	takasugi-m@jcom.home.ne.jp
13	Dr. Sadayuki YAGI	Road & Transport	066 20 18 774	yagis@jri.or.jp
14	Isao MITSUNAGA	Water	066 65 44 894	njs_mitsunaga@yahoo.co.jp
15	Kinuyo FUKUDA	Project Evaluation	066 66 92 418	fukudak@gyros.co.jp
16	Kreshnik BAJRAKTARI	Secretary	066 20 18 773	kreshnikbaj@yahoo.com
17	Kreshnik BAJRAKTARI	Transport Analysis	066 20 18 775	k.bajraktar@gmail.com

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Appendix 2: Agenda of the 4th Steering Commitee

Date: 11:00 ~ 13:00 hrs, 31st July, 2012
Venue: Tirana International Hotel

Main Subject: Additional Discussions on the Interim Report

AGENDA

11:00	Opening	Ms. Jorida Tabaku, Deputy Mayor, MOT Representative, the JICA Balkan Office
11:05	Additional Issues and Plans to be Clarified on the Interim Report (see the attached table)	
	A: Adjustment in Basic Planning Framework with the New Regulatory Plan	Dr. K. Nagayama (Leader of JICA Team)
	B: Road and Urban Transport	Dr. S. Yagi (Transport Planner)
	C: Solid Waste Management	Mr. M. Takasugi (SWM Engineer)
	D: Water and Sewerage Systems	Mr. I. Mitsunaga (Water Engineer) Dr. K. Nagayama (Leader)
	E: Economic and Financial Evaluation for Priority Projects (Preliminary Findings)	Ms. K. Fukuda (Economist)
	** Tea Break **	
12:00	Discussions	
12:50	Confirmation of Schedule for the Next Step	Dr. K. Nagayama (Leader of JICA Team)
	Summary and Conclusions	Ms. Jorida Tabaku, Deputy Mayor, MOT
	Closing Remarks	Representative, the JICA Balkan Office

Issues to be clarified at the 4th Steering Committee

Sector	Issues	Directions of Discussions
A: Adjustment in Basic Planning Framework with the New Regulatory Plan	1 Area Definition of TMA 2 Time-framework (Planning Target Yeas) 3 Population Framework 4 Spatial Distribution Pattern 5 Economic Indicators	• Methodologies on planning framework to be adjusted and coordinated with the new regulatory plan.
B: Road and Urban Transport	1 Revised Traffic Demand Forecast 2 Evaluation on Five (5) Rings Structure 3 Public Transport Network (Trams + Buses) 4 Parking Measures 5 Organizational Proposal 6 Priority Programs/Projects	• Additional analytical findings on the Five Rings Structure, based on the new regulatory plan, and clarification of the transport proposals and comments raised at the 3rd S/C.
C: Solid Waste Management	1 Revised Demand Analysis 2 Regional Approach to Integrated SWM 3 Construction and Industrial Wastes 4 Priority and Phasing 5 PPP Model	• Verification of future waste generation amount based on revised population projections, and clarification of comments raised at the 3rd S/C.
D: Water & Sewerage Systems	1 Overall Improvement Program of Water Supply System 2 Introduction of Mini-hydro Project and its Feasibility	• Clarification of proposals and comments raised at the 3rd S/C.
E: Economic and Financial Evaluation Analysis for Priority Projects	1 Definition of "Appropriateness of Tariff" 2 Integrated SWM Project 3 Water Supply Improvement Project 4 Sewerage System Project	• Discussions on financial sustainability for public services, taking into account "people's affordability".

Appendix 3:

July 31, 2012

JICA Team's Responses and Clarifications to Comments Raised at the 3rd SC Meeting (6th July 2012)

1. Road and Urban Transport Sector

Comments & Questions	JICA Team's Response
Directorate of Transport and Mobility	
1. General Comments	
• The Consultant should review/compare the new data as per Urban Regulatory Plan and update their analysis and forecast in order to have at the end an useful document for Tirana Municipality.	• The latest data and plans have been included in the Study. The target year has also been updated from 2026 to 2027.
• Tirana Municipality should discuss the option of an extension to the Consultant's contract based on their assessment on the amount of time needed for such update.	• The study schedule will be extended for about two months with a consent of the JICA Headquarters.
• Referring to the second objective the transfer relevant skills to Albanian counterpart personnel in the course of the Study in order to pursue steady implementation of the plans to be developed under the Study Directorate of Transport and Mobility has already engaged member of the staff to work closely with the Consultant on the transport planning principles and the application of the modeling software.	• We hope the transportation counterpart staff continuously attend the training session we prepare.
2. Road Development Corridor	
• The Consultant have not reflected in their analysis the Ring Road Network ,5 Rings, proposed in the Plan while they describe in details three major ring corridors. • Consultant mention the five ring roads only when analysis the two alternatives for the positioning of Ring Road No 5, south or north of the river not in the rest of the document.	• The five ring roads have been fully analyzed and discussed including all the options that the MoT is interested in. The result of discussion will be updated in the forthcoming Draft Final Report.
• ANTP 2, in Annex 3.3 is proposing Tirana Bypass that will link the main highway from Durres with the new Tirana Elbasan road section. Have the Consultant consider this option that will make possible that the heavy traffic directing to the East be diverted from Tirana Ring system? How can it impact the freight distribution in Tirana?	• Since Tirana Bypass is planned outside the study area, we cannot test it in our future demand forecast. It may be studied as part of further ANTP. However, the study team predicts that the impact of the freight distribution will be limited to the Outer Ring Road because of the truck ban expansion that we propose.
• The Consultant have proposed that primary and secondary roads should be placed at intervals of 400	• In the road development plan, the study team has tried to follow this guideline so that the entire Tirana

to 700 m in Center Business District while for residential areas they should be placed at intervals of 700 to 900m...how does these intervals fit with theUrban Plan?	metropolitan area would be efficiently and rationally served by roads as well as public transport.
• Table 11.4.1 provides Minimum Road Width per each road category. Can the Consultant provide more details or we should understand that all the road under certain categories should have this minimum width? Are these road widths achievable with respect to expropriation etc?	• More details of each project will be clarified in a project profile as part of the forthcoming Draft Final Report.
• Table 11.4.3 List of Road Development Projects. Consultant provides a list of road development in the road network in short, medium and long term. Can the Consultant provide a financial impact of such investment? or a more detailed analysis providing the current width and the proposed road width?	• As part of the action plan, the investment programs of the projects will be studied and included in the forthcoming Draft Final Report.
3. Transport Demand Forecast	
• The Consultant is recommending undertaking a more comprehensive person trip surveys would be necessary to model a daily travel demand for Tirana. How much are the data provided realistic and useful for Tirana Municipality? • Non-home-based trips are not modeled what is their impact on the total trips and what is their impact on the forecast?	• Due to the limitation of the scope of the previous Person Trip Survey in 2008, our demand forecast was not for daily traffic but it was limited to the morning peak hours (6:00-9:00 a.m.). As a result, the forecast was limited mainly to the commuting trips (i.e., from home to work or to school), and non-home based trips such as business trips which normally take a considerable share were not included in the forecast. A full-scale Person Trip Surveys is essential for actual transportation planning of a city, and should be regularly conducted at intervals of five to ten years, especially in a city that is developing and expanding in scale.
• Socioeconomic attributes are important for Origin Destination Matrices, Urban regulatory plan with 6 poles how much will affect their analysis?	• New socioeconomic attributes have been considered for the sub-center developments and have been reflected in the transportation demand forecast as well. The results and discussions will be reflected in the forthcoming Draft Final Report.
• Can the Consultant provide a traffic assignment for each investment period, so it will be immediately clear from the chart the impact of the recommended road improvements?	• The study team will do the best to include the traffic assignment results in the forthcoming Draft Final Report.
• Have mode share percentages changed from Tirana Sustainable Strategy? How is the trend towards PT or car oriented?	• As for the current mode share, since this study and Tirana Sustainable Strategy have the common survey data, the mode shares are essentially the same. • For future, we have a scenario of with/without a parking pricing system. In 2012, the total trips to/from the CBD account for approximately 38,000 vehicles per morning peak. In 2026, without any parking pricing, the total trips to/from the CBD will be approximately 102,000 vehicles per morning peak, which is equivalent to an increase of about 2.7 times

	as the current level. On the other hand, with a parking pricing system (with pricing of 500 Lek per trip), the total trips to/from the CBD will be reduced to some 38,000 vehicles per morning peak, which will lead to the same situation as the current level.
4. Bus and Bicycle Lanes	
• Map 11.5.3 shows the proposed development of the bus lanes on the radial road, what about the ring roads?	• Dedicated bus lane development is mainly for the line-haul type bus lines connecting the city center to the suburbs through the ring roads.
• The Consultant shall provide details on how to realize such bus lanes, by reducing the existing road capacity or through widening of the existing roads? Cost?	• The study team has tried to keep the road capacity at least as the existing level. Bus lanes will be provided on the current on-street parking space by clearing the parking vehicles.
• Comparison figures of the existing bus and bike lanes, in km, and the proposed one from the Consultant.	• Staged implementation plans along with cost and targeted sections will be discussed and included in the forthcoming Draft Final Report.
• Same applies for bicycles lanes? What is the Consultant recommendation on the best approach that Tirana Municipality should follow on realizing these dedicated lanes (separate bus from bikes or shared lanes)?	• Some bicycle lanes are proposed on the sidewalk. Staged implementation plans and targeted sections will be included in the forthcoming Draft Final Report as well as in the project profile.
5. Parking System Development	
• The Consultant have carried out Parking Survey for CBD and is recommending 10 underground parking, for one of which is already awarded the concession contract, Sheshi Italia. Total parking capacity? Until the construction of such underground parking what should be the parking strategy for Tirana Municipality, all roads in the CBD with paid parking or only a selection?	• Total additional parking capacity in the 11 parking facilities proposed in the study is about 6,800 vehicles, which is about the double of the total on-street parking cars that are to be removed. As a rule, on-street parking cars need to be cleared away from all primary roads and some secondary roads in the CBD.
• What about the rest of Tirana city, what should be the apprach, meaning how much we should extend the parking scheme in the town? Will Park&Ride provide an alternative?	• Here are some additional measures for the parking problems that could also be applied to outside the CBD: (metered) on-street parking on nearby local streets, utilization/sharing of backyard parking space, (metered) on-street parking allowed only in the daytime off-peak.
• Any recommendation on the level of tariffs to be applied?	• The tariff that is assumed in the study is 100 Lek/hour, as is currently applied in some private parking facilities. If the parking regulation is properly enforced, the parking pricing system proposed in the study is expected to be effective.
6. Public Transport Development Plan	
• The Consultant is recommending to replace Unaza line with the tram line. Why is such replacement recommended? What will be its impact in term of road infrastructure and financial bill?	• As one of the bus lines with the largest number of passengers, Unaza tramline is recommended for integrated effect with other north-south and east-west tramlines, thereby resulting in formulation of a more comprehensive network.

• The Consultant is recommending reviewing the standards of the commune buses and the whole organization of the bus network in the framework of Tirana Metropolitan area. Can the Consultant provide an action plan on how to achieve it? There are changes needed in the law needed for such recommendation?	• Organizational and Institutional Arrangements that is recommended in the study will help to realize the bus route restructuring for the Tirana metropolitan area. Some kind of legislation may be needed.
7. Organizational and Institutional Arrangements	
• The Consultant is proposing establishment of a Transportation Authority, to extend further to Metropolitan Tirana Transportation Authority in medium to long term. While for short term is recommending establishment of Tirana Transportation Planning Commission. • What are the problems with the current organization of the transport in Tirana and what are the expected improvements in the management of transport in Tirana?	• Typical problem is for reorganizing the city and bus line structure for the Tirana metropolitan area. An integrated fare system among different public transportation modes shall be soon discussed. Thus, a number of transport issues shall be solved, based on consensus with stakeholders. To this end, an organization with both regulatory and executing functions is recommended to be established, as seen in many cities in Europe. Further discussions on organizational and institutional arrangements will be included in the forthcoming Draft Final Report.

2. Solid Waste Management

Comments & Questions	JICA Team's Clarifications & Replies
Directorate of Environmental Policy, MOEFAW	
1. The Master Plan should be integrated with the National Plan and Regional Plan	• The SWM Master Plan comply with the SWM strategy, National Plan, Regional Plan and the Law on Integrated SWM although some of the target levels are achieved a little late due to the financial constraints but the target level is higher when achieved.
2. SWM of Tirana should take it consideration of regional approach	• The final disposal facilities will receive waste at least from the neighboring communes currently haul waste to the Sharra disposal site as long as the communes haul residual waste according to the requirements of the Law.
3. Assessment for future disposal site should be carried out for the candidate sites even in the outer area of MOT administration area.	• Siting study was conducted with four sites including Sharra expansion. All the four alternative sites locate outer area of MOT administration boundary.
4, The Master Plan need to take into consideration of the national target level on recycling	• Yes . As replied in the 1st comment, the Master Plan comply with the relevant superannuated plans.
5, Waste management should consider not only household waste but also consider construction and demolition waste	• The SWM Mater Plan include domestic waste, commercial, business, institutional waste and non-hazardous industrial waste including construction & demolition waste. • But the methods for how to manage construction and demolition waste, hazardous waste, and special wastes should be handled by the national level rules and regulations.
6. Recommendations on how to manage hospital waste	• The SWM Master Plan is formulated for municipal waste. Hospital waste or other special wastes are not included for the wastes under the responsibility of LGU. The national level scheme for hospital

	waste should be prepared by the initiative of Ministry of Health.
General Directorate of Planning and Service Management, MOT	
1. Is the current SWM tariff & system is reasonable or any other tariff & system to set in?	• We do not know the base of calculation of current waste fee and the waste tariff, for example the very frequently increasing waste fee for the current household set at 5,000 Lek per year, • Setting a fair tariff to several groups of beneficiaries shall be started with the surveys for waste discharge amount, the nos. of beneficiaries, household and establishments of different groups. • And, the service cost shall be shouldered based on the percentage of waste amount discharged by each group beneficiary. • Outline of the procedures for setting a fair waste tariff will be included in the Final Report.
2. 3R activities are too costly for the moment to MOT.	• 3R activities are carried out by the waste generators by the guidance of MOT. So, the 3R activities start with raising awareness of the people in the pilot study areas for cooperation to the MOT scheme. • MOT shall spend some money for public relation for raising awareness, education programs and pilot study in the typical types of town areas.
3. Is it possible to start waste separation at Sharra?	• Yes, MOT can start the secondary sorting at the open space of Sharra tentatively but shift to sorting the recyclable materials in the material recovery facilities (MRF) to be constructed in the future. • We proposed to start a 3 bin-system at the pilot study area and expand the activities to the neighboring area and expand to the entire collection area in MOT.
4. MOT is working with the IFC for searching the possibilities of PPP model in SWM sector	• Basically agree to search the possibilities of privatization of SWM services including PPP with a monitoring and evaluation of the activities by MOT. • Our recommendation for the PPP model is dividing into 3 packages, the first package is waste collection service, the second package is intermediate treatment and the third package is final disposal. • It might have some possibility to integrate all these 3 packages into one package if a strong company in technical and financial aspects appears in future.

3. Water Supply System

Comment from WRE	JICA Team's Clarifications & Replies
1. Consultant should provide some recommendations regarding the arrangement of the water distribution tanks. And the manner of consultant's plan for the arrangement of the water distribution tanks should be added in order to cover some of the problematic areas.	• UKT has already recognized the problems regarding the shortage of storage volume of the water distribution tanks in the western area, and UKT has launched the construction work to expand the storage volume of water distribution tanks. Furthermore, JICA Team will examine the water demand in each distribution blocks and required storage volume of water distribution tank in each distribution block.
2. UKT has to update the water supply master plan 2000 to include new water distribution	• Fully agree.

areas and the plan shall be approved by the MOT and DPUK, Ministry of Public Works.	
3. The issue of wells that are located in the southern and western (wells near the Alimentary Kombinat and wells near the Pools) should be treated in more detail and give recommendations on their future. These wells for our opinion should be issued out of work because they're a risk for the people	• There is a possibility of water contamination of the wells in the western area caused of ammonia nitrogen, etc. due to no sewerage systems. JICA Team suggests countermeasures against serious groundwater contamination through urgent development of sewer system in those areas.
4. Consultants should also provide an overall evaluation of the costs that are needed for the implementation of the recommendations for improving the water supply system. In this case it may also be provided with an investment program until 2026 based on the priorities determined by the Consultant.	• The cost estimation is on-going and the investment cost up to 2027 shall be estimated by JICA Team, and discussed in Draft Final Report.
5. It is quite interesting and the Consultant's proposal is right for an energy saving plan which is included in the installation work of the pipeline with a length of 11.5 km and 900 mm diameter from the Bovilla Dam to the Plant. This proposal should be detailed by UKT or its shareholders. Consultant should provide an overall evaluation of the cost of the works on this proposal so that the beneficiaries of the plan predict the implementation of this plan in accordance with the priorities given.	• The mini-hydro power generation plan with 200 KW will cost approximately 262 million Euro. Should a solar system with 500 KW be attached together with the mini-hydro plant, a total of 700 KW will be able to be generated at the site. This will provide a remarkable cost saving for the treatment plant operation. It is sure hat the project will be financially feasible.
6. Consultant, the context of improving the situation, should include in his recommendations also a plan for the process of installing water meters that are currently up by 60%. Completion of this process will reduce the amount of water losses and water level without income.	• In order to upgrade an accounted water ratio, the installation of water meters are being carried out as the major project of UKT to install 10,000 to 20,000 water meters annually. It is expected that the project will continue for next 3 to 4 years to complete installation of the water meters for most of the consumers.
7. Accuracy of some data about the coverage of the service area , total cost and operation with the existing rates. According to the WRE, coverage of the service area for the year 2011 for drinking water was 95% (not 91% as shown in the report) as the coverage of operating costs for drinking water was 120% with the total cost 83 %.	• According to the actual performance data of UKT for the year 2011, the coverage of water service area is 91.7% as shown in the report and the coverage ratio of operating costs by revenue accounts for 110%. This is a good news to make UKT's water business financially sustainable.
8. Review the priorities given in the presentation of the Consultant, as we think that they have to be focused on the flow control and management of drinking water and its quality (including the installation of water meters) and capacity building management.	• JICA Sudy Team considers that the development of operation and maintenance are required in parallel with the development of water distribution network and the associated facilities to some level. The development of operation and maintenance system should include introduction of a pipeline GIS, auto-water quality monitoring system, etc. Furthermore, the capacity development of the staff will be required for the betterment of operation and maintenance of the facilities/systems.

	These will be further discussed in Draft Final Report.

4. Sewerage System Development

Comment from WRE	JICA Team's Clarifications & Replies
a1. Consultant should provide an overall evaluation of the stage-wise investment costs so that UKT and MOT can make a more detailed plan for the review of the sewerage system development plan.	• JICA Team respects the project cost evaluation of Kashar Sewer District Phase I, Phase II and Berxulle Sewer District conducted by JICA in 2007. The detail cost estimation and financial analysis shall be carried out in the course of a feasibility study of the proposed project. • The cost evaluation for the Farka Sewerage District (including Sauk area) shall be made in Draft Final Report.
a2.UKT has not developed the sewerage project to meet with the sewage revenue. They should prepare investment/business plan to rehabilitate and upgrade the sewerage system.	• After completion of the on-going JICA Loan project, O&M cost of the sewerage system will be covered by the revenue from the sewage fee. UKT should prepare the investment plan and financial analysis after taking-over the sewerage facilities from DPUK.
b. It is realistic to convey sewage from Sauk to the Farka commune sewerage system of which sewage treatment plant is constructed in nearby the river bank of the Erzen river.	• JICA Team agrees that the final configuration of the sewerage system is to convey sewage from Sauk to the Farka commune sewage treatment plant. However, in order to take an immediate measures to cope with current water contamination, the sewage of Sauk shall be tentatively pumped up and transferred to the Kashar Sewer District, assuming the priority order like: ①Sauk Area、②Kamza Munic. and ③Farka Commune. • Should the development of sewerage system of Farka Commune be given higher priority than that of the Kamza Commune, the Farka Sewer District shall be developed after Kashar Sewer District.
c. Review of the rainfall intensity equation shall be completed.	• JICA Team could not carry out such an examination, because the past rainfall pattern data was not available from the Meteorological Agency. The method of calculation of rainfall intensity will be discussed in Draft Final Report so that UKT can conduct a review of the rainfall intensity equation in future.
d. Pervious pavement work shall be the matter to be considered and decide by MOT and UKT.	• Fully agree.
e. Drainage system shall be operated and maintained by UKT to reduce financial burden of the Municipality. Actually, 80% of sewerage system in MOT consists of the combined sewer system, which intercepts sewage at the	• This comment is in line with JICA Team's ideas..

outflows and convey to the sewage treatment plant.	

Thanks for valuable comments, all of which are taken into account for preparing the forthcoming Draft Final Report.
Dr. Nagayama, Team Leader,

MINUTES OF MEETING
ON
The 5th MEETING OF STEERING COMMITTEE

FOR

COORDINATED ISSUES IN THE ~~INTERIM~~ DRAFT FINAL REPORT

THE PROJECT
FOR
TIRANA THEMATIC URBAN PLANNING
IN
ALBANIA

Tirana, 5th October, 2012

Dr. Jorida TABAKU
Deputy Mayor
Municipality of Tirana,
Albania

for Dr. Katsuhide NAGAYAMA
Team Leader
JICA Study Team

P.P Henrik Hysaloges

Witnessed by:

Mr. Sokol KONOMI
JICA Technical Coordinator Albania

1. Introduction

Based upon the Minutes of Meeting on the Scope of Work for the Project for Tirana Thematic Urban Planning, agreed between the Government of Albania, represented by Municipality of Tirana (MOT) and Japan International Cooperation Agency (JICA) in Tirana on 28th February 2011, JICA dispatched a Study Team, headed by Dr. Katsuhide NAGAYAMA, to Albania to commence "the Project for Tirana Thematic Urban Planning" (hereinafter referred to as "the Project") on 6th July 2011. Since then, the JICA team has been working in Tirana in accordance with the Inception Report which was officially approved.

The 5th Meeting of the Steering Committee was held at the Tirana International Hotel from 11:00 a.m. on 5th October, 2012, chaired by Mr. Henrik HYSENBEGASI, General Director, Strategic Projects and Foreign Investment, MOT, substituting for Dr. Jorida TABAKU, Deputy Mayor, MOT. Attendants are as shown in Appendix 1 attached herewith.

Main objectives of this 5th Steering Committee is to discuss three topics: 1) technical findings and recommendations on priority projects and/or programs which are identified in the master plan (the Interim Report), 2) proposed action plans for priority projects in Draft Final Report; and 3) working schedule of the JICA Study.

The 5th Steering Committee started with the chairperson's opening address, followed by opening remarks by Mr. Ken Yamada, Resident Representative of the JICA Balkan Office. Then, JICA Team made four (4) sector presentations in line with the agenda as shown in Appendix 2 attached herewith, that is:

First, Dr. Katsuhide Nagayama made a presentation of outlines of action plans derived from the proposed master plan.

Secondly, Dr. Sadayuki Yagi presented proposed action plans for priority projects in the Road and Urban Transport sector.

Thirdly, Mr. Masaharu Takasugi made a presentation to overview proposed action plans for priority projects in the Solid Waste Management sector.

Finally, Dr. Katsuhide Nagayama presented action plans for priority projects in the Water and Sewerage Systems.

2. Comments

The following are noteworthy comments raised by the members of the Steering Committee, after the presentations by JICA Team.

Ms. Nereida HOXHA:

- Documents/papers for discussions should be delivered before today's meeting, even though we had a meeting before this meeting with Dr. Yagi and some of the discussions were reflected even in the presentation.
- Another request to JICA Team is to run the model again to analyze a new road network after detailing the Urban Regulatory Plan and public consultation of the plan which will end on 19th October, 2012.

- After Stakeholder Meetings at Mini-Municipalities , we have to finalize all matters come in one together, and have this model run again to see with the new alignment. This further analysis will be the base for the decision to approve the Plan.

JICA (Mr. Sokol KONOMI):

- The time from Draft Final Report to Final Report is considered for all of the feedback, so the Draft Final Report needs to be carefully studied by MOT to achieve a consolidated Final Report.
- Since JICA Study Team proposes most of the details of the city based on its analytical capacity and expertise, those will provide a good choice for the future of the city.

Ms. Ulrike BEGA (Adviser of the Mayor):

- From the city planning point of view, JICA team's effort is highly appreciated to extend the parking strategy a little bit further. As JICA Team investigated nearly all the street profiles in the city and identified a lot of places for possible parking opportunities, it would be at least as a proposal very helpful for formulate parking strategies.
- About the outer ring road, there is a slightly different move on the northern ring road which we will have to inform you later. I found the cost very low you assumed. We have different studies from other projects much more expensive, so it is good to understand how JICA Team derived this cost. And, JICA Team needs to explain the reason why the eastern part of the outer ring road is excluded from the scope.

JICA Team (Dr. Sadayku YAGI):

- The eastern section of the outer ring road is not evaluated for to be a priority project because of its low traffic volume. So, we put it in the medium term development instead of the short term.

Ms. Ulrike BEGA:

- Regarding the Solid Waste Management, the study is proposing an extension of Sharra. This can only be on the medium term. What propositions are underlined to deal with this matter in the long term?
- It seems doubtful that a little bit about 10% of wastes come from the outer communes, mainly Kamza, Paskuqan and Kashar. Waste from the administrative area of Tirana where 300,000 people live cannot be excluded.
- It is still an open question, regarding the extension of Sharra, how long it will last and also, of course combined with all the measurements of minimizing the waste and volume. It will be very helpful if there is a strategic proposal from your side included in your report.
- The next question is on the priority project of the awareness plan on the Tirana River. A multi-administrative awareness plan for solid waste management is one of our most urgent problems to resolve because the administrative border is right on the Tirana River. It is an open landfill. The awareness campaign should be extended along the River as a whole.

JICA Team (Mr. Masaharu TAKASUGI):

- The Sharra's expansion is considered, viewing the situation up to the year 2027, and we can expect about 2 million cubic meters in the site. Even if the Municipality of Tirana dumps 1.4 million cubic meters, we still have a capacity of 600 thousand cubic meters left for the waste from the surrounding communes.

- Basically the responsibility for waste management is assumed by the communes and municipalities. Municipality of Tirana may not receive any waste from the outside of the city bounders, but at present those surrounding communes, 3 communes dispose the waste, so we cannot reject those present situation for the future plan. That is why we still have some room to receive waste. One of the priority projects includes some cleanup of the illegal dumpsite, and most of the illegal dumpsite is observed along the Tirana River. Cleanup of the illegal dumpsite is proposed to carry out from 2013 through 2016. But, at same time if we are not providing any collection service in that cleanup area, people will discharge again. So, we also expand the collection area to place waste container bins all around those spot of the illegal dumpsite.

Ms. Ulrike BEGA:

- On the water supply diagrams, is it possible to include all the reservoirs into the system? Paskuqan reservoir and Farka Lake were not connected. I'm just concerned about connection between for instance Farka, shoots of the reservoir at Parku Liqenit and for Paskuqan. There is no real solution at the moment but should be clear how they are supplied.

JICA Team (Mr. Masaharu TAKASUGI):

- We are handling only south area of UKT. But UKT is dividing the distribution reservoirs to the Paskuqan area separate from the distribution to the Municipality of Tirana. But anyhow our plan is to improve inside of Tirana in the service area of UKT.
- Water sources are Bovilla, groundwater and some springs. We cannot separate these sources: the Bovilla dam to Municipality, groundwater to Farka or Paskuqan. But, in order to make the water distribution system very effectively, we have to divide those distribution areas for Farka, for Paskuqan and for Municipality of Tirana.

JICA Team (Dr. Katsuhide NAGAYAMA):

- The concept of "Metropolitan Area" is a wise discussion. We have to discuss more on the cross local government administration development in terms of transportation, water, and sewerage. Sewerage plant is covering all the area not only the Tirana Municipality. Also this water supply system needs to look at the metropolitan area wide. The solid waste, based on the current regulatory framework, each local government unit should take care of its own garbage. In that sense, we are looking for mainly Tirana area, but actually we are thinking of waste coming from the neighbor surrounding communes. More coordination between those local governments, not only limited in the Tirana city but also to Paskuqan, Kashar. Those communes must be involved in the discussion.

Mr. Avni DERVISHI:

- This draft final report is appreciated because there is a lot of technical and economical information.
- Two (2) suggestions or comments for concerns of how to consider are raised, namely, when you analyze or give the project for solid waste management, you take some data from the national strategy of that sector but you did not follow this national strategy recommendation in part of institutional reform. If you have read this national strategy they are asking to build a new independent agency, regulatory agency, for solid waste which is going to deal with the tariff methodology, tariff application with license and everything. So, my recommendation is to follow the national strategy.

- Also in the water sector you have to follow the national strategy because you made a detailed project for water demand, for reservoirs, for transmission line, for distribution system but in the national strategy all this is covered in the business plan for utilities. JICA team has to think about the new business plan for utility. In this business plan you have to foresee even the tariff increase for 5 years or 20 years.

JICA Team (Mr. Masaharu TAKASUGI):

- The national plan and national strategy on the solid waste management are already approved by the Government. In December of last year, the Integrated Solid Waste Management Law has passed in the Parliament. And early this year the Albanian National Strategy and National Solid Waste Management Plan have also been approved by the Government. We have reviewed all the national directions and follow them as the official guideline. However, as it does not state exactly time framework for achievement of some targets, we present the target years for some items in our proposal.

Mr. Henrik HYSENBEGASI:

- I would suggest including in the priority projects the river rehabilitation project which is going in parallel with the northern boulevard. The project is being planned right now. The Tirana River rehabilitation project will be in reality according to the social-economic development. The Tirana River will be a second, spacious and green corridor for the city and it is the first priority for the Municipality of Tirana to develop, clean-up, rehabilitate and construct the ring road on the vicinity to encapsulate this river. I would suggest the river project to be included with the new boulevard project in the priorities. This is the first project.
- The second project which has also a socioeconomic impact on the city would be Industrial Business Park (IBP) on the east side of Tirana, as on the northern side we have the Tirana-Durrës corridor with a lot of industrial areas and we have Kombinat on the western side, I would suggest on the eastern part the IBP. This is also a project proposal which we have applied to get finance from IPA Adriatic Funding, so this will become reality soon to create new jobs and as a PPP project with the Municipality, the same as the terminal.
- I would like to suggest these two such as the Tirana River rehabilitation project and the Industrial Park on the eastern part of Tirana at the "Autotraktori" Factory to be include in association with the tram project and the terminal project.

Ms. Ulrike BEGA:

- It is a matter of what you consider a river bank. So, we had this discussion with the Mayor on how to proceed with combination of the river and ring road. That's why once the discussion is solid I would like to give you the data. But one of the main discussion points is how do we ensure for the future that this river stays clean once we have cleaned it up. So, in order not to make any mistake in that direction we have to run with the parallel mechanism, 1) cleaning up, 2) promoting the awareness campaign of making sure that people who are living along the river banks don't use it as a landfill again; and 3) the maintenance issue which we can certainly solve by putting an management group on the river bank. That's why I ask to include the awareness campaign as one of priority projects

Mr. Henrik HYSENBEGASI:

- From the Municipality side, if we think about the top of the priority projects, the river comes first, which has been touched by the Mayor. I think this is the only opportunity

which the Municipality of Tirana has to create another corridor of development, with the new boulevard and the Tirana River projects. Fortunately, the north of Tirana, including the river has very low density and if we act right now we can do it otherwise it would be too late. So, the strategy shall be to rehabilitate the river, not only cleaning but rehabilitation of river and encapsulation of this corridor by a ring road from the north or by both sides ring road. So, I would like to see on the midterm's strategy the river rehabilitation project as well. I will be happy if you include it.

Mr. Gjergj BAKELLBASHI:

- It was a good presentation, and I think it contains a lot of details that will come and very useful as we go into the detailing phase of the master plan. Overall, I think how your proposal will be carried out into the implementation phase is a very important question. Obviously the list is too long, but just to mention a few issues on each topic may come in handy for the final report.
- On the transport issue for example, one of the issues is the location of the freight station. The logistic parks are one of the priorities of the master plan, so use of the rail trams is very important. For the flexibility of the tram routes, as you have suggested, we may need a few other options. One option is the one that goes from the boulevard next to the convention hall and then after Elbasani road.
- A car free inner ring road, it is a challenge, because it was tried to be implemented and it proved not successful. Because everyone desires it, we want a clean air inner ring road, it is a very useful area, but we cannot achieve it. As for the issue of the outer ring road, you suggested the north solution however our idea is to encapsulate it and running it in the both river sides. One of the discussions in the Technical Group for the regulatory plan is to have a by-pass north of Paskuqan. So, how the two get coordinated is very important.
- On the waste issue, how this becomes reality at the city level is a big issue. I think that the 3R strategy will require a different approach on the requirements that the Municipality has.
- On the water plan, an ambition of the Mayor is to have a lot of green areas that need to be watered. I think it will be good to think of the grey water system into the details and how that becomes reality.. Because, now we are using clean water to water green areas and it will become a heavy demand on the Bovilla. And finally, the quality of the drinking water should be improved, as it is not drinkable everywhere. Tirana is remembered to have very good drinking water quality, so we need to push for it again and to come down to details. These are all for you to keep in mind for the Final Report.

JICA Team (Mr. Katsuhide NAGAYAMA):

- Thank you very much for your comments and I would like to touch the schedule of finalizing process. We will take into account all your comments that you raised today and maybe in the end of October we will prepare the Draft Final Report and send it to you and we will need your official comments on the Draft by the end of November then having your comments we would like to get in process of finalization. According to the contract with the JICA side we have to submit the Final Report by the next January. Our report should be adjusted with your plan so that your regulatory plan is looking at the same way as our proposed plan. To this end, as we need your inputs. Thank you very much.

Mr. Henrik HYSENBEGASI:

- Just to summarize the Steering Committee and close the session. I would like to congratulate JICA Team. There is a lot of useful information; there are a lot of new visions and a lot of information which has been also revised time to time. We see a lot of improvement with the reports and everything else. I think the final report will be a very good job. We want to refer to your studies because we trust your study. Thank you very much and I would like to thank also JICA Balkan Office Representative for his participation in today's meeting and I hope to see you with the Final Report by the end of the year.

Mr. Ken YAMADA (Resident Representative JICA Balkan Office) (as closing remarks):

- Thank you very much. I would like to say, on behalf of JICA Balkan Office, congratulations to all attending here today for the successful completion of the 5th Steering Committee meeting for Tirana Thematic Urban Planning project. I am very pleased to join today's active discussions for the action plan and priority projects. I wish that Municipality will initiate the development of the metropolitan area based on this report which JICA Study Team will elaborate until the end of this year. Thank you very much for your attention. Please, have a good day.

3. Conclusions Made by the 5th Steering Committee

After such constructive discussions as above, the followings were concluded as the result of the 5rd Steering Committee:

1) JICA Study Team shall take into account the comments raised by the members of the Steering Committee as mentioned above for further studies.

2) JICA Study Team shall continuously keep current collaboration with the counterpart team in thematic sector planning.

3) Draft Final Report, including refined master plans and action plans for thematic sectors will be submitted to the members of the Steering Committee by the end of October 2012 and official comments on the draft will be taken until the end of November 2012.

4) After clarification, correction and finalization based on the comments, Final Report will be submitted to the Steering Committee by January 2013 through a diplomatic channel.

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Appendix 1: Attendants at the 5rd Steering Committee Meeting

Date / Time: 11:00 – 13:00 hrs., 5th October, 2012
Venue: Tirana International Hotel

No.	Name	Position/Organization	Tel. No.	E-mail Address	Signature
Albanian Side					
1	Renato BARBULLUSHI	Dir. Control Territory Develop. / MoT	067 40 96 726	renato.barbullushi@tirana.gov.al	
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4	Avni DERVISHI	Water Regulatory Entity	069 20 80 306	avni.dervishi@erru.al	
5	Fatlinda STRUGA	MoT	068 23 05 978	strugaf@yahoo.com	
6	Aida GJIMISHKA	Mayor Adviser / MOT	069 40 73 432	aida.gjimishka@tirana.gov.al	
7	Irida HASA	MOT	067 40 96 672	irida.hasa@tirana.gov.al	
8	Ulrike BEGA	Mayor Adviser / MOT		uli.bega@tirana.gov.al	
9	Henrik HYSENBEGASI	Gen. Dir. Str. Proj./ MOT	067 40 45 752	henrik.hysenbegasi@tirana.gov.al	
10	Gjergj BAKELLBASHI	Dir. Urban Planning / MoT	067 40 96 671	gjergj.bakellbashi@tirana.gov.al	
JICA Side					
11	Ken YAMADA	Res. Rep. JICA Balkan Office	381112200751	yamada.ken@jica.go.jp	
12	Sokol KONOMI	Technical Coordinator JICA Albania	068 20 74 475	tirana@jica.rs	
13	Dr. Katsuhide NAGAYAMA	JICA Study Team/ Leader (Urban Planning)	066 65 44 849	nagayama@valueplanning.org	
14	Masaharu TAKASUGI	JICA Study Team/ Deputy Team Leader (SWM)	066 20 18 771	takasugi-m@jcom.home.ne.jp	
15	Dr. Sadayuki YAGI	JICA Study Team (Road & Transport)	066 20 18 774	yagis@jri.or.jp	
16	Shio KUWABARA	JICA Study Team (Coordinator)	066 20 18 770	kuwabara@valueplanning.org	
17	Kreshnik BAJRAKTARI	JICA Study Team, (Secretary)	066 20 18 773	kreshnikbaj@yahoo.com	
18	Kreshnik BAJRAKTARI	JICA Study Team, (Transport)	066 20 18 775	k.bajraktar@gmail.com	

Appendix 2: Agenda of the 5th Steering Committee

Date: 11:00 ~ 13:00 hrs, 5th October, 2012
Venue: Tirana International Hotel

Main Subject: Action Plans for Priority Projects (the Draft Final Report)

AGENDA

11:00	Opening	Ms. Jorida Tabaku, Deputy Mayor, MOT Mr. Ken Yamada, Resident Representative, JICA Balkan Office
11:05	Proposed Action Plans for Priority Projects in Draft Final Report	
	A: Outlines of Action Plans Derived From Master Plan	Dr. K. Nagayama (Leader of JICA Team)
	B: Road and Urban Transport	Dr. S. Yagi (Transport Planner)
	C: Solid Waste Management	Mr. M. Takasugi (Deputy Leader, SWM Engineer)
	D: Water and Sewerage Systems	Dr. K. Nagayama (Leader of JICA Team)

** Tea Break **

12:00	Discussions	
12:40	Schedule for the Next Step	Dr. K. Nagayama (Leader of JICA Team)
	Summary and Conclusions	Ms. Jorida Tabaku, Deputy Mayor, MOT
	Closing Remarks	Mr. Ken Yamada, Resident Representative, the JICA Balkan Office

*** Lunch ***

Study Team Members

	Name	Expertise
1	Katsuhide NAGAYAMA, Ph.D.	(Team Leader) Urban Planning
2	Masaharu TAKASUGI	Solid Waste Management & Planning
3	Sadayuki YAGI, Ph.D.	Road and Transport Planning
4	Kunihiko OZAWA	Land Use and Urban Service Facilities Planning
5	Isao MITSUNAGA	Water Supply System Planning
6	Satoshi OMOTO	Sewerage and Drainage Systems Planning
7	Sampei NAKANISHI	Environmental Considerations & SEA
8	Kenji YAMADA, Ph.D.	Organizational, Institutional and Legal systems
9	Kinuyo FUKUDA	Public Investment and Project Evaluation
10	Atsushi TOYAMA	Engineering design and cost estimate (Water-related Services and Facilities) in Japan
11	Enton PUNAVIJA	Engineering design and cost estimate (Road and Transport Facilities) in Albania
12	Shio KUWABARA	(Coordinator) Gender and Poverty Issues