



Commission of European Communities, for
and on behalf of the Government of
Albania,

Ref.: EuropeAid/124909/C/SER/AL

Implementation of the National Plan for Approximation of Environmental Legislation in Albania

Component B: Implementation Planning



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DIRECTIVE SPECIFIC IMPLEMENTATION PLAN

Urban Waste Water Treatment Directive (91/271/EEC)

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List of Abbreviations

Art.	Article
BOD5	5-day biochemical oxygen demand
BOT	Build-Operate-Transfer
CA	competent authority/ies
CF	Cohesion Fund
DCM	Decision of the Council of Ministers
DPUK	General Directorate of Water Supply and Sewerage
DSIP	Directive-specific implementation plan
EBRD	European Bank of Reconstruction and Development
ECE	Economic Commission for Europe
EEC	European Economic Community
ELPA (project)	Environmental Legislation and Planning in Albania
ERDF	European Regional Development Fund
EU	European Union
ESCCS	Environment Sector and Cross-Cutting Strategy
ftpe	full-time person equivalent
GIS	geographical information system(s)
ha	hectare
IBRD	International Bank of Reconstruction and Development
IDA	International Development Association
IPA	Instrument for Pre-Accession Assistance
IPC	industrial pollution control
IPPC	Integrated Pollution Prevention and Control
JICA	Japanese International Cooperation Agency
LIBOR	London Interbank Offered Rate
MoEFWA	Ministry of Environment, Forestry and Water Administration
MoF	Ministry of Finance
MPWTT	Ministry of Public Works, Transportation and Telecommunication
N	nitrogen
NMS-10	The 10 new member states which acceded in 2004
P	phosphorus
p.e.	population equivalent (wastewater load of 60 g BOD5 per day)
PPP	polluter pays principle
SAA	Stabilisation and Association Agreement
TA	technical assistance
UN	United Nations
USD	United States dollars
WFD	Water Framework Directive
WPL	Water Pollution Law
WWSS	Albania Water Supply and Wastewater Sector Strategy
WWTP	Wastewater treatment plant
UWWT	Urban Waste Water Treatment
UWWTD	Urban Waste Water Treatment Directive

Glossary of terms

Agglomeration

Settlement or area where the population and/or economic activities is sufficiently concentrated for urban wastewater to be collected and conducted to an urban wastewater treatment plant (WWTP) or to a final discharge point. An agglomeration may consist of one or more settlements, which for example are located in the same hydrological drainage basin so that discharge of the wastewater from the settlements in the agglomeration to one central WWTP may result in the most economic solution.

For identification of the agglomerations all urban settlements with a population \geq 1000 inhabitants are to be selected from data on population statistics. These settlements are marked on maps, and on the basis of assessing the natural drainage patterns in the areas, it is assessed whether settlements can be combined into agglomerations of more than 2000 PE, which can be served by one central WWTP. Cost-effectiveness is the predominant criterion in defining agglomerations, considering that the costs of several small WWTPs are higher than that of one larger WWTP, treating the same wastewater load, both in terms of investment as well as in operational costs.

Criteria for the selection and formation of agglomerations are:

- Settlements of more than 1000 inhabitants are identified as potential agglomeration centres
- Combination of settlements in one catchment area into an agglomeration if the distance between the settlements is less than 10 km and if it seems feasible to connect the settlements with the central WWTP by gravity or pressure wastewater transportation pipes (on the basis of an evaluation of the natural drainage situation in the agglomeration area). Criteria in this respect are:
 - Settlements are located in same natural drainage catchment area
 - Absence of physical obstacles for connecting settlements to each other or of settlements with central WWTP
 - Evidence that transportation of wastewater from settlement to central WWTP is more economical than operation of an independent WWTP for the settlement.

Eutrophication

Excessive growth of algae and other plant forms in surface water due to high concentrations of nutrients (especially nitrogen and phosphorus) producing an undesirable disturbance of the balance of organisms present in the water and to the quality of the water itself; eutrophication mainly occurs in stagnant waters such as lakes and canals with a low flow velocity. Waters that are sensitive for eutrophication are to be designated as sensitive areas in the sense of the UWWT Directive.

Population Equivalent

Population equivalent (p.e.) is used as a unit for expressing the organic biodegradable wastewater load, consisting of a mixture of wastewater sources of different sources, i.e. domestic, industrial, etc. One p.e. is defined as the organic biodegradable load having a five-day biochemical oxygen demand of 60g of oxygen per day (1 p.e. = 60 g BOD₅).

Sensitive areas

Sensitive areas are identified as:

- water bodies (freshwater bodies, estuaries and coastal waters) which are eutrophic or sensitive for becoming eutrophic
- surface water used as a drinking water source which potentially too high nitrate concentration as prescribed by Directive 75/440/EEC (50mg/l of nitrates)
- areas where further treatment than that prescribed in Article 4 is necessary in order to fulfil other Council Directives

The definition of the UWWT Directive for sensitive areas has been broadened in this report. All protected areas, i.e. natural parks, forest reserves; classified water bodies, Natura 2000 sites, and drinking water protection zones are considered to have to fulfil the requirements of sensitive areas as minimum.

Less sensitive areas

A marine water body or area can be identified as a less sensitive area if the discharge of wastewater does not adversely affect the environment. (The Adriatic Sea is not a less sensitive area.)

Sewerage system

Network of pipes and other conduits to collect wastewater from households, industries, institutions, etc., and/or run-off rain water, and to transport the wastewater to a central point of disposal, e.g. a wastewater treatment plant. Generally the wastewater flow in the sewerage system takes place by gravity, but if necessary pumps are used to lift the wastewater to a higher point to enhance further transportation. In a combined sewerage system the wastewater and the rain water are collected in the same network. In separate sewerage systems there are separate pipe networks for collection of wastewater and for rain water.

Wastewater treatment plant

In a wastewater treatment plant the wastewater or mixture of wastewater and rain water, discharged from the sewerage system, is submitted to treatment in order to produce an effluent of a specific quality as required by the locally prevailing quality standards for discharge into the receiving environment, e.g. a surface water body or the soil. Wastewater treatment, in general, takes place in the following steps:

- Screening – removal of coarse materials
- Grit removal – removal of large particles which easily settle
- Grease removal – removal of floating substance, oil and grease
- Primary sedimentation – removal of solid matter from the wastewater. The settled sludge may be treated by anaerobic digestion. (In specific WWTP types the primary sedimentation step is left out.)
- Secondary treatment – biological oxidation of organic matter in the wastewater with formation of a sludge of aerobic micro-organisms (activated sludge). (Partial) oxidation of organic nitrogen substances (nitrification) and reduction of nitrate to nitrogen gas (de-nitrification).
- Tertiary treatment – further treatment for removal of nitrogen and phosphorus compounds by means of biological or/and chemical processes.
- Secondary sedimentation – sedimentation of mixed liquor of activated sludge and wastewater with formation of sludge and effluent.
- Effluent polishing – additional treatment of effluent prior to discharge, e.g. for removal of pathogens, volatile matter and hazardous compounds.

- Sludge treatment – thickening, dewatering and drying of sludge from primary and secondary sedimentation tanks, followed by disposal in landfills or by incineration.

Introduction

This report presents the results of the legal, administrative and institutional assessment of the current state of approximation to the: *Council Directive 91/271/EEC concerning urban wastewater treatment, as amended by Commission Directive 98/15/EC*, and the overall plan to obtain full approximation in preparation to the country's accession to the EU.

The report highlights the gaps and problems/weaknesses that may hinder the effective transposition and implementation of the Directive and, therefore, identify the capacity enhancements needed to ensure its effective and efficient implementation. The report also provides the best estimates of costs and benefits that can be made at the present time.

The report outlines a preliminary plan to realise compliance with the investments requirements of the Urban Waste Water Treatment Directive. As such, the plan focuses on selected agglomerations with a potential wastewater load of more than 2000 person equivalents (p.e.), and large agro-food industries, generating wastewater loads of more than 4000 p.e., which are located outside the urban agglomerations.

The report draws on the examination of relevant available documentation and data (including information on population numbers, public water supply systems, sewerage systems, wastewater treatment plants and industries, which was collected through a questionnaire sent to the municipalities and communes), together with numerous contacts and detailed discussions held both within the Technical Assistance Team (TAT) and between TAT members and a wide range of key officials.

The report is divided in 4 main sessions.

Section 1 provides a short overview of the Directive.

Section 2 summarises the existing situation in Albania regarding approximation of this Directive, including:

- i) analysis of legal gaps;
- ii) assessment of the status of the existing wastewater collection and treatment systems and inventory of the needs for improvement and expansion;
- iii) assessment of existing public water supply systems;

- iv) inventory of settlements with more than 1000 inhabitants as a basis for identification and selection of agglomerations;
- v) inventory of industries generating biodegradable wastewater with a wastewater load ≥ 4000 p.e.

Section 3 discusses implementation mechanisms and sets out some recommendations for completion of approximation of the Directive, including:

- i) Selection of sensitive areas and less sensitive areas in accordance with the Directive, and of protected areas where special regulations for wastewater disposal prevail;
- ii) Identification and selection of agglomerations;
- iii) Outline action and investment plan for development of wastewater collection and treatment systems for the agglomerations and industries, and for modernisation of existing wastewater collection and treatment systems.

Indicative implementation costs assessment is presented in Section 4, including a cost estimates for sewerage systems and wastewater treatment plants for the proposed agglomerations.

Executive summary

Directive 91/271/EEC, as amended by Directive 98/15/EC, on urban wastewater treatment (UWWT) concerns the collection, treatment and discharge of urban wastewater and the treatment and discharge of wastewater from certain industrial sectors.

The Directive requirements may be summarised as follows:

Collecting systems: must be supplied for all agglomerations with a wastewater load of 2000 person equivalents (p.e.) or greater.

Treatment of urban wastewater: In terms of treatment standards, secondary treatment is the general rule. Advanced treatment for higher levels of removal of nitrogen and phosphorus is required in sensitive areas. The discharge of treated wastewater must be subject to prior regulations and/or specific authorisation. Treated wastewater must be re-used whenever appropriate. The disposal routes for treated wastewater must be chosen so as to minimise the adverse effects on the environment. Treatment plants must be designed or modified so that representative samples of the incoming wastewater and of the treated effluent can be obtained before discharge to receiving waters.

The competent authority or appropriate bodies are required to monitor discharges from urban wastewater treatment plants. The Directive sets out minimum sampling regimes and reference methods of measurement.

Industrial wastewater: discharges into collecting systems and UWW treatment plants must be subject to prior regulation and/or specific authorisation. Industrial wastewater must be subject to pre-treatment, if required.

Sensitive areas: a water body must be identified as a sensitive area (UWWT Directive Annex IIA) if:

- It is eutrophic or which may become eutrophic in the near future if protective action is not taken, or
- It is surface fresh water used for the abstraction of drinking water and the nitrate concentration could be higher than 50mg/l nitrates (as laid down in Directive 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water) if action is not taken, or
- It is an area where further treatment is required to fulfil obligations of other Directives.

The identification of sensitive areas must be reviewed every 4 years.

Less sensitive areas: may be defined according to criteria set out in the Directive. Discharges to less sensitive areas may require less stringent treatment, provided that primary treatment is provided as a minimum.

Legal Gap Analysis

Article 28 of the Law No. 8093, dated 21.03.1996 “On water resources” sets up the legal basis for sewage regulation.

Law No. 9115/2003 “On the Environmental Treatment of Polluted Waters is the main piece of legislation on requirements for wastewater treatment.

Article 6 of the LWR provides that the NCW proposes draft laws and by-laws “on any kind of activity in the field of water reserves” and to prepare the “legal, technical and regulatory framework for the application of this law”. (Note that this Article 6 does not say to whom the NCW proposes the by-laws).

The key provisions of the Directive that have not been transposed include: Article 3.1 obligations regarding collecting systems; Article 4.1 requirements for size of agglomerations and treatment levels; the national legislation relevant to Article 11 on industrial wastewater is rather unclear; no clear permitting requirements as set out in Article 13 for Annex III industries; Article 14 requirements regarding sludge disposal.

Approximation Plan

The overall plan to obtain full approximation consists of a legal transposition plan and an implementation plan (including enforcement):

- The **legal transposition plan** consists of drafting one DCM which will repeal and replace the existing DCM 177/2005. The rationale for this is discussed in more detail below.
- The **implementation plan** is composed of a number of actions which have been consolidated into into the following five main groups of actions: a) Institutional strengthening and capacity building; b) Preparatory work; c) Wastewater collection and treatment; d) Disposal of treated wastewater and sludge; and e) Monitoring, data handling and reporting.

A preliminary investment plan for urban wastewater collection and treatment infrastructure has been drafted. It is estimated that the plan can be executed in a period of 15 to 20 years.

This preliminary plan was developed in the following stages:

- Identification of urban agglomerations in river basin districts on the basis of population data and geographical information.
- Assessment of the needs for wastewater collection and treatment systems on the basis of information on existing facilities.
- Selection of sensitive areas and other areas with specific requirements for water resources protection.
- Preliminary design and cost estimates of wastewater collection and treatment systems for the agglomerations.

An overview of the selected agglomerations is given in the Table below.

Summary of selected agglomerations

River basin district	Number of communes	Number of agglomerations	Wastewater load (p.e.)
Semani	99	49	626,800
Drin-Shkoder-Buna	81	42	288,200
Mati	36	24	173,200
Ishmi-Erzeni	44	25	1,328,300
Shkumbini	47	28	278,700
Vjosa	67	28	286,500
Total	374	196	2,981,700

In Albania, water bodies, that are sensitive for eutrophication, have not yet been selected. Currently sufficient data is not available to designate sensitive areas as required by the UWWT Directive. For the time being it is assumed that all surface water bodies will be designated as 'sensitive areas' in the sense of the Directive until official decisions are made on this issue.

For each of the agglomerations, preliminary investment costs of wastewater collection and treatment systems have been estimated as follows:

- For agglomerations between 2,000 and 10,000 p.e. the costs have been estimated on the basis of conventional treatment.
- For the agglomerations larger than 10,000 p.e. costs have been estimated on the basis of advanced treatment with higher removal efficiency for Nitrogen and Phosphorus in order to fulfil the effluent quality requirements for discharge into sensitive areas.
- For the small agglomerations also alternative wastewater treatment methods may be considered, such as pond systems and constructed wetlands which may result in a significant reduction of construction and operational costs. The selection of such systems mainly depends on the availability of suitable land space.

Data on the 3 different categories of agglomeration size ranges are summarised in the table below:

Categories of agglomeration size ranges

Size range (p.e.)	No. of agglomerations	Total wastewater load (p.e.)	Investment costs (€)	
			WWTP	Sewerage
I. > 20000	19	2,172,000	333,120,000	564,590,000
II 5000 - 20000	59	486,800	170,311,800	244,730,200
III. 2000 - 5000	118	322,900	180,073,100	172,395,600
TOTAL	196	2,981,700	683,504,900	981,715.800

The preliminary estimated investment costs for wastewater treatment and collection systems for the agglomerations are given below.

Preliminary estimated investment costs (in Euro)

	Construction works	Contingencies	Design, supervision, commissioning	Total
WWTPs	683,504,900	68,350,490	136,700,980	888,556,370
Collection systems	981,715,800	294,514,740	196,343,160	1,472,573,700
TOTAL	1,665,220,700	362,865,230	333,044,140	2,361,130,070

Overall Resources and Costs

An estimate has been made of the costs of the various actions needed to approximate and implement the Urban Waste Water Treatment Directive.

Estimated costs of transposition: The legal drafting resources in MoEFWA will be under pressure in the coming years, even if capacity is increased. It would be wise to allow for a technical assistance project to support the Ministry in this work. It is estimated that an appropriate technical assistance project would cost about €300,000.

Estimated implementation costs: Implementing the Urban Waste Water Treatment Directive will mainly be the responsibility of the competent authority designated to implement the Directive at the national level and of the municipalities.

The estimated overall costs of implementing the Directive are shown in the table below.

Total implementation costs for UWWT Directive, by responsible agency/sector

Responsible agency/sector	Capital / one-off costs¹ (€000)	Operating / recurrent costs (€000/y)
Albanian government	1,600	-
MoEFWA	7,240	82
MPWTT	-	29
Environment Agency	-	14
Municipalities	2,377,782	49,683
Industry	37,500	1,875
Total	2,424,122	51,683

It can be seen that implementation of the Urban Waste Water Treatment Directive will be extremely costly. The total implementation costs will be a capital cost of some €2,400 million and operating costs which build up ultimately to €52 million per year. This is equivalent to about 10% of annual GDP. The costs are shown in the table against the party responsible in the first place for the activity. The overwhelming majority will be the responsibility of the municipalities. This is because on the assumptions made it will be the responsibility of the municipalities not only to operate and maintain the sanitation infrastructure, but also to carry out the requisite investment.

¹ All costs are estimated in constant 2008 prices.

This does not mean that municipalities will have to meet those costs from their own resources. Ultimately the increased municipal costs will be recovered from the users of the sanitation services in the form of higher water/sanitation charges. In the short- to medium-term, when these costs are rising steeply, municipalities can expect to obtain support in the form of grants and soft loans from the EU, IFIs and other bilateral and multilateral aid providers.

1 Requirements of EU Legislation

1.2 EU Legislation Covered

The EU legislation covered in this implementation plan is:

- *Council Directive 91/271/EEC concerning urban wastewater treatment, as amended by Commission Directive 98/15/EC.*

The Directive provides a framework for the collection, treatment and discharge of urban wastewater from centres of populations (described in the Directive as agglomerations), and the treatment and discharge of biodegradable wastewater from certain industrial sectors. The objective of this directive is to protect the environment from the adverse effects of such wastewater discharges. Member States must ensure that urban wastewater is collected and treated prior to discharge according to specific standards and deadlines. In terms of the treatment objectives, secondary (i.e. biological) treatment is the general rule, with additional nutrient removal in so-called sensitive areas (tertiary treatment); however, for certain marine areas primary treatment might be sufficient. The deadlines for implementing the Directive vary according to the size of the agglomeration and the characteristics of the receiving waters.

1.3 Direct Requirements of Legislation

The Directive imposes the following obligations on Member States:

- Identify sensitive areas (and less sensitive areas²) in relation to urban wastewater discharge, in accordance with specified criteria, and review the identification of these areas every four years (Articles 5 and 6 and Annex II). The Water Framework Directive (2000/60/EC) provides requirements as to identification of such areas, establishing river basin management plans, and reporting requirements;
- Strengthen technical and financial capacity, by establishing a technical and financial programme for the implementation of the Directive (Article 17). The Water Framework Directive (Article 9) describes how cost recovery can be applied for water services (Polluter Pays Principle);

² It is not expected that there will be any less sensitive areas in Albania

- Strengthen regulatory control of urban and industrial wastewater by providing prior regulation or specific authorization for all discharges of urban wastewater (Article 12, Annex IB), and of industrial wastewater from the agro-food sector (Article 13, Annex III), as well as for all discharges of industrial wastewater into urban collecting systems and treatment plants (Article 11, Annex IC). The Directive describes requirements for reviewing permits and authorizations, and in what situations amendments and derogations can be allowed;
- Collect urban and industrial wastewater by ensuring that systems for collection of urban wastewater are provided for all centres of populations (agglomerations) with a 2,000 p.e. or more (Article 3 and Annex IA);
- Treat urban and industrial wastewater by ensuring that treatment plants are designed, constructed, operated and maintained (or upgraded) to meet specified performance requirements (Article 10). Ensure that secondary wastewater treatment (Article 4 and Annex IB, Table 1) is provided for all centres of population (agglomerations with 2,000 p.e. or more) within deadlines set in the Directive. The level of treatment has to be more stringent for discharges into sensitive areas, which in addition to secondary treatment requires nutrient removal (nitrogen and phosphorus) and elimination of any other pollutant affecting the quality or specific use of the water (Article 5 and Annex IB, Table 2). For centres of population less than 2,000 p.e. but equipped with a collecting system, appropriate treatment has to be provided, i.e. treatment that ensures good quality of the receiving water (Article 7);
- Ensure that the disposal of sludge from urban wastewater treatment plants is subject to general rules, registration or authorisation, and impose a ban on the disposal of sludge to surface waters (Article 14);
- Ensure appropriate technical capacity (Water Framework Directive (2000/60/EC) Annexes II and V) for monitoring discharges from urban wastewater treatment plants, and monitoring waters receiving discharges of wastewater covered by the Directive (Article 15 and Annex ID). In certain situations, when the legislation is relaxed (derogation), such as permitting only primary treatment for discharges into less sensitive areas, a comprehensive study has to be undertaken to determine the effect of this on the receiving environment (Articles 6 and 8);
- Ensure that the relevant authorities publish reports to the public, every two years, on the disposal of urban wastewater and sludge in their areas (Article 16 and Water Framework Directive (2000/60/EC) Article 14). Report to the Commission on:
 - transposition of the Directive into national legislation, with texts of the main provisions of national law adopted in the field covered by the Directive (Article 19),
 - implementation (Article 17 and Commission Decision 93/481/EEC),
 - situation reports on the disposal of urban wastewater and sludge (Article 16),
 - the comprehensive study carried out where applications for a derogation for discharge to less sensitive areas (Articles 6 and 8), and

- upon request from the Commission, report on information collected through monitoring (Article 15).

1.4 Indirect Requirements / Implications

The indirect requirements and implications of the Directive are:

- The requirements of the Sampling Drinking Water Directive (79/869/EEC) giving provisions on sampling drinking water, frequency of analysis and measurement methods, for development of measurement and analysis methods, determination of sampling points and frequency of analysis regarding the geographical properties and climate conditions, has to be taken into account when implementing the Directive.
- The requirements of the Drinking Water Abstraction Directive (75/440/EEC) concerning the quality required of surface water intended for the abstraction of drinking water in the Member States and the Groundwater Directive (80/68/EEC) on the protection of groundwater against pollution caused by certain dangerous substances in order to increase surface water and groundwater water qualities and for this case to prepare a systematic plan including time table, will have to be implemented in parallel to the Directive.
- Sensitive Area Management Plans and Action Programmes will have to be considered together with the Nitrate Directive (91/676/EEC) concerning the Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources, when implementing the Directive.

1.5 Links with Other Legislation in This Sector

Links with other legislation within this sector:

- Water Framework Directive 2000/60/EC. The provisions under the UWWT Directive form an integral part of the “basic measures” of the programme of measures under Article 11 of the WFD required for each River Basin District.
- Nitrates Directive (91/676/EEC).
- Drinking Water Abstraction Directive (75/440/EEC)
- Dangerous Substances Directive (2006/11/EC) and its seven daughter directives (Article 6 was repealed with effect from 22nd of December 2000, and the remainder will be repealed with effect from 22nd of December 2013) (also a list of priority substances has been adopted as Annex X to the Water Framework Directive (2000/60/EC) by Decision 2455/2001/EC).

Links with other legislation within other sectors:

Waste Sector:

- Landfill Directive (99/31/EC);
- Waste Incineration Directive (2000/76/EC);
- Sewage Sludge Directive 86/278/EEC.

The anticipated increase in the numbers and effectiveness of UWWT plants will result in an increased amount of sewage sludge which will

require disposal either by use in agriculture or by way of final disposal by incineration or landfill, and thus adequate facilities will be required.

IPC Sector:

- Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC), which covers certain industrial installations covered by this Directive, setting more stringent objectives and using, as does the Water Framework Directive (2000/60/EC), a 'combined approach' of emission controls and water quality standards.

Horizontal Sector:

- Reporting Directive (91/692/EEC) and amendment Decision 94/741/EEC concerning questionnaires for certain waste sector directives including sewage sludge;
- Directive on Access to Environmental Information (2003/4/EC);
- Environmental Impact Assessment Directive (85/337/EEC) as amended by Directive 97/11/EC and Directive 2003/35/EC.

Nature Protection Sector

- Conservation of Wild Birds Directive (79/409/EEC) as amended;
- Habitats Directive (92/43/EEC), as amended.

These Directives aim at the protection of habitats and the flora and fauna they support, including specific provisions for the protection of wild birds. Satisfactory water quality is an essential factor in such areas.

2 Present Situation

2.1 Government Policy

The *Environment Sector and Cross-Cutting Strategy* (ESCCS), which is an integral part of the National Strategy for Development and Integration (NSDI), is considered to be the main government document that outlines the state policy in the field of environment protection.

The final purpose of the ESCCS is to fulfil a constitutional obligation towards the citizens, who are entitled to a healthy and ecological environment.

In the context of water resource management, the ESCCS identifies as the most crucial issue at present the pollution of surface waters which is arising from the discharge of untreated wastewater, and sets the primary sector's goals in respect of this issue.

The ESCCS objectives and corresponding indicators are as follows:

Table 1: ESCCS objectives, indicators and targets for wastewater sector

Area	Objective	Indicator	Target 2009 (%)	Target 2014 (%)
Urban sanitation	Improve urban sanitation	Population connected to sewerage network	75	95
Wastewater treatment	Improve treatment of wastewater	Population connected to treatment facility meeting basic UWWT Directive treatment standards	25	50
Rural sanitation	Improve urban sanitation	Population connected to sewerage network or septic systems	55	65

The objectives included in the ESCCS are:

- Efficient and sustainable water sector management systems
- Implement Priority Projects for wastewater collection and treatment
- Implement Priority Projects for wastewater management
- Reduction in point source pollution of surface water
- Reduction in diffuse source pollution of surface waters
- Improve protection of groundwater
- Improve monitoring of water.

The “Albania Water Supply and Wastewater Sector Strategy” (WWSS), elaborated with support of the World Bank in September 2003, has been adopted by the Government of Albania.

The main problem areas of the water and sanitation sector in Albania requiring reform are noted as being the following:

- Demand Management
- Legal and Institutional framework
- Financial stability of the water utilities and governmental subsidies
- Serving the poor
- Private Sector Participation
- Monitoring and Benchmarking
- Public awareness and community programme
- Investment needs
- Qualifications of the technical staff.

The WWSS sets out a medium term reform and investment program to stabilise and improve water supply and sanitation services in the aim of achieving sustainable services to EU standards in urban and rural areas.

Medium term goals are in conformity with Millennium Development Goals Target 17.1 (halving the proportion of people without sustainable access to safe drinking water), and Target 17.2 (providing access to improved sanitation).

The WWSS is currently being reviewed and updated. The revised strategy has not yet been adopted by the Council of Ministers.

2.2 Roles & Responsibilities

The following are the relevant parties and responsibilities with respect to urban wastewater sector:

Ministry of Environment, Forestry and Water Administration

MoEFWA is responsible for issuing the environmental permits as well as for monitoring and enforcement of the environment legislation. Within the Ministry the Directorate of Pollution Control is responsible for water pollution control.

Ministry of Public Works, Transport & Telecommunication

Within the MPWTT the General Directorate of Water Supply and Sewerage has several responsibilities relating to the water sector, particularly as regards water supply and sewerage. The Directorate has a special status. Its structure is approved by the Council of Ministers and while it reports to the MPWTT it is not formally part of the structure of that ministry. Its principal tasks are to:

- prepare strategies and policies for the sector and to follow up on their implementation. In this connection it is important to note the General Directorate’s role in following up the implementation of the ‘Water Supply and Wastewater Sector Strategy’ and the ‘Rural Water Supply and Sanitation Strategy’ both of which were adopted in 2003;
- plan the budget and financing of the sector in Albania – from the state budget and outside investors;

- manage and distribute subsidies from the state;
- monitoring of the operations and functioning of the Water and Sewerage Companies;
- issue guidelines for foreign investors; and
- implement foreign investment projects through its Project Implementation Unit.

The Regulatory Commission for Water Supply and Sanitation

The Water Sector Regulatory Entity (the Entity) was established in 1998 pursuant to Law No. 8102 'On the Regulatory Framework for Water Supply and Wastewater Management' of 28 March 1996. The law basically regulates the Entity's activity. The main activities of the Entity are licensing and tariff setting.

As regards licensing, the Entity licences legal or natural persons to operate in the water supply and sewerage sector. Although they are state owned most of the water companies have applied for licences. It is to be emphasized that such licences are to provide services as water supply sewerage companies and not to abstract and/or use water.

As regards tariff setting the Entity has prepared and issued a methodology on which tariff setting is based. This methodology has been issued as a regulation by the Entity which is empowered to do this by Law No. 8102. The procedure when a water company wishes to change (usually increase) its tariff is that:

- the company prepares a package of documents based on the methodology;
- the relevant local government body (municipality, commune) and the supervisory board append their opinions with regard to the proposed change;
- the application is sent to the Water Sector Regulatory Entity;
- the Entity checks the application, and assesses the reasonableness of the application and whether the water company is making progress in terms of standard performance indicators such as non-revenue water, collection rate on invoices, etc.;
- the Entity may approve the application, refuse it or suggest a modified change. It prepares a reasoned justification of its decision, against which there is no appeal.

The Entity clearly has a role to play as regards the implementation of the Urban Waste Water Directive and in particular encouraging the setting of adequate tariffs to cover at least operation and maintenance costs.

Local competences

Council of the Regions

There are 12 Regional Councils, one for each of the Regions (Qarqe). Each Regional Council is composed of elected officials representing communes and municipalities with traditional, geographical, economic links and with common interests. The Regional Councils play an increasingly important role in land use planning and it is envisaged that in the future they will also play a formal role in environmental planning.

Each Region (Qark) also has a Prefect, who is proposed by the Minister of the Interior and appointed by the Prime Minister. The Prefect acts as the link between central government and the regions and is supported by an administration. The role of the Prefect is primarily one of coordination rather than regulation.

The municipalities and communes

The Local government structures are required to fulfil joint obligations with regard to the protection of the environment and implementation of environmental law.

The principal law concerning local government is Law No. 8652 On the Organization and Functioning of Local Governments of 31 July 2000. 'Environmental protection' is described as a local government function that is 'shared' with central government. This means that to the extent that the central government requires a local government to perform a shared function or meet a national standard in the performance of such a function it must provide financial support for the requirement.

Furthermore communes and municipalities assumed responsibility for the management of water supply and wastewater collection from the beginning of 2001.

Local water supply and sewerage companies

Before the year 2000 all of the water supply and sewerage companies were state enterprises. In the year 2000 they were transformed into commercial share companies. However, while their legal status had changed their sole shareholder remained the state.

Moreover the legal transformation process is not yet completed. As part of the decentralisation policy, assets held by central government have in most cases been transferred to local government bodies which will become sole shareholders of these companies.

Although ownership of the water utilities has passed to the municipalities, the latter are not yet financially responsible for them. For the moment, operating subsidies, when necessary, are still paid by MPWTT.

The transfer process is, understandably more complex in those cases where a company serves more than one commune or municipality. The Durres water company, for example, supplies three municipalities and eight communes. In these cases the transfers will be to a 'joint power authority'.

The supervisory boards of the 'decentralised' transferred companies will be modified although it is anticipated that the MPWTT will retain one appointee so as to maintain the link with central government. As regards the future of these companies various options are now seen as opening up regarding private sector involvement such as the use of management contracts. Because many of the water companies are quite small a regional approach is envisaged with several companies being 'packaged'

together as regards management. In other words the assets will remain separate.

2.3 Current Legal Framework

Article 28 of the Law No. 8093 on 'Water Resources' sets up the legal basis for regulation of sewage. The general framework for the UWWT Directive may be found in the Law No. 9115 on the 'Environmental Treatment of Polluted Waters' (the "Water Pollution Law -WPL"); and more detail may be found in the Decree of the Council of Ministers (DCM) No. 177 on Permitted Rates of Discharges and Zoning Criteria of Receiving Water Environments.

It should also be noted that a draft Law on Water Resources has been prepared³ which provides for a more integrated approach to water management

2.4 Current Implementation Status – Legal Gap Analysis

While the Water Pollution Law transposes a number of the definitions from the Directive, a number are lacking, or only partially transposed; including 'urban waste water', 'collecting system', 'primary treatment' and 'secondary treatment'. The definition of '1 p.e.' conflicts with the Directive definition.

The obligation to provide all agglomerations of 2,000 p.e. or more with collecting systems (Article 3.1) is lacking; although the technical requirements for any collecting systems (Article 3.2) is transposed by the DCM 177/2005.

While UWW form agglomerations of between 2,000 and 10,000 p.e. must be subjected to secondary treatment before discharge to fresh-waters or to estuaries; the remaining provisions of Article 4.1 have not been transposed. The discretionary exception for high mountain regions (Article 4.2) has been correctly transposed, as has the technical requirements for UWWTPs (Article 4.3). However, the method of calculation of the p.e. load (Article 4.4) is lacking.

The legal basis for identifying sensitive areas has been transposed (Article 5.1) (although it is understood that no sensitive areas have yet been designated). The substantive provisions of the rest of Article 5 have been transposed.

The provisions of Article 6 which allow for less stringent treatment for discharges to less sensitive areas have been largely fully transposed. The provisions of Article 7, which allow for certain discharges to be subject to appropriate treatment, have been transposed.

The trans-boundary provisions of Article 9 are lacking. The performance requirements of UWWTPs (Article 10) correspond in part.

³ This draft law was prepared by the EPLA project

Although a certain permitting regime is established for industrial WW discharged to collecting systems by the Water Pollution Law, the provisions in the DCM 177/2005 are not at all clear. The requirements of the permitting regime (Article 11.2 and 11.3) are lacking. However, permits are required for discharges from UWWTPs (Article 12). The provisions of Article 13 (biodegradable industrial WW) and Article 14 (disposal of sewage sludge) are lacking. A certain monitoring system is established in the legislation, although this does not extend to sewage sludge (Article 15.3). Nor is there any legal obligation to publish situation reports every two years (Article 16).

Annex I Parts A and B are correctly transposed, while parts C and D are lacking. Annex II is correctly transposed. Annex III is not transposed.

2.5 Current Investment Status

In October 2008 a questionnaire was sent to the municipalities, communes and water/sewerage companies. The purpose of the questionnaire was to obtain data on the existing status of public water supply and wastewater collection and treatment facilities. The results of the response to the questionnaire are described in Annex II. Annex II also lists some data on ongoing investments in the water and wastewater sectors in municipalities and communes [Reform on Water Supply and Sewerage Sector].

2.5.1 Public water supply

It is relevant here to discuss the status of public water supply, as if there is no water supply system in a city, then there would not be much scope for sewerage. In making plans for municipal water supply and wastewater management, in fact, priority should be given to optimisation of the public water supply, and construction of sewerage networks should be combined with improvement of the water supply networks.

In 2001, according to official statistical data, 549,338 households were served by public water supply systems, out of a total number of 727,715 households [Census 2001], which implies a service level of 75%. Only part of the served households have in-house connection to the water supply system, in 2001 62% of the served households. In 2001 92,847 households were relying on their own water supply systems, and 85,530 households had no water supply to their dwellings [Census 2001].

Most of the public water systems are old and decrepit, with worn out infrastructure and bad operation and maintenance. Investment needs for the water and sanitation sector amount to USD 170 million per year, whereas the current investment equals USD 10-30 million per year [World Bank, July 2002]. In general the public water supply systems are not functioning satisfactorily. The continuous supply of water of a safe quality to the population is a rarity. In general the systems are characterised by:

- Poor condition of water production facilities and their maintenance
- Insufficient water transportation and distribution capacity
- High levels of unaccounted for water, e.g. due to water losses and
- risks of contamination of the water due to seepage of pollutants in to the distribution systems.

The public water supply systems are managed and operated by 56 joint stock companies for water supply and sewerage services and a number of communal water companies. Currently the organisational structure for public water supply services is being reformed.

Currently 55 Water and Sewerage Companies (PUK Sh.A.) provide public water supply and sewerage services in Albania. Data on the municipalities and communes served by the Water and Sewerage Companies are given in Annex III. The General Directorate of Water Supply and Sewerage maintains a database with a large number of data and indicators relating to the performance and financial parameters of the companies by calendar year.. The database is used to evaluate the performance of the companies and for benchmarking. It is part of the data used by the Water Sector Regulatory in deciding whether or not to approve an application for a change in tariffs, and in the negotiations between MPWTT and the companies about operating subsidies. Indicators taken from the database may also be used in service contracts made between companies and their supervisory boards, or in the contracts of the Director of water companies.

Some data for 2008 on water and sanitation coverage in Albania are presented in Table 2a. Within the service areas of the Water and Sewerage Companies live about 3.2 million people, approximately 86% of the total population of Albania.

Data in Table 2a indicate that about 2.5 million people are served by public water supply (78% of the population), and that nearly 1.5 million people are connected to sewerage systems (46% of the population).

A number of aggregated financial and other performance indicators are presented in table 2b. These data are averages for all the water companies.

Some salient points are:

- non-revenue water averages 72%
- percentage of connections metered = 41%
- collection rate on invoices to households = 73%
- mean water sales to households (for those connected) = 93.5 l/person/day
- mean water availability = 13 hours/day

Table 2: Data on water supply and sewerage services by Water and Sewerage Companies [Ministry of Public Works, Transportation and Telecommunication], (see also Annex III)

Water Enterprise	Population number			People served by public water supply (No.)			People connected to sewerage (No.)		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
Puke UK Sh.A	7369	4369	3000	2773	2148	625	1563	1500	63
Sarande UK Sh.A	44201	38654	5547	38791	34548	4243	34206	33088	1141
Vau Dejes U Sh.A	12438	5490	6948	3111	3111	0	0	0	0
Tropoje U Sh.A	12306	9141	3164	12302	9138	3164	0	0	0
Kruje UK Sh.A	15908	15449	459	15665	15360	305	10530	10530	0
Berat UK Sh.A	71967	64204	7763	65722	60722	5000	62058	60722	1336
Lezhe UK Sh.A	36225	34625	1600	27664	26064	1600	27664	26064	1600
Pogradec UK Sh.A	55004	39849	15155	55005	39850	15155	37755	37755	0
Korce UK Sh.A	85875	84375	1500	66500	65000	1500	62432	62432	0
Elber UK sh.p k	116500	109500	7000	116000	109500	6500	101000	101000	0
Shkoder UK Sh.A	92500	92500	0	85000	85000	0	65000	65000	0
Permet U Sh.A	11525	10875	650	11525	10875	650	0	0	0
Vlore U Sh.A	146671	136292	10379	132526	124146	8380	0	0	0
Durres UK Sh.A	357958	222703	135255	207336	142317	65019	142094	142094	0
Tirane UK Sh.A	938350	700000	238350	846700	700000	146700	647500	647500	0
Novosele U Sh.A	19030	0	19030	9002	0	9002	0	0	0
Shkoder (F) U Sh.A	43108	0	43108	8508	0	8508	0	0	0
Elbasan (F) U Sh.A	107754	16915	90839	64776	16273	48503	0	0	0
Korce (F) U Sh.A	39138	5000	34138	20110	4412	15698	0	0	0
Lushnje (F) U Sh.A	55000	0	55000	23459	0	23459	0	0	0
Gjirokaster (F) U Sh.A	4283	0	4283	4283	0	4283	0	0	0
Rubik UK Sh.A	2973	2719	254	1852	1779	74	1723	1446	277
Bilisht U Sh.A	9709	9709	0	6561	6561	0	0	0	0
Mirdite UK Sh.A	9089	8276	813	6074	5261	813	5261	5261	0
Fush Arrez UK Sh.A	5419	4503	916	1767	1767	0	1667	1667	0
Rrogozhine UK Sh.A	21626	11180	10447	11979	6065	5914	3281	2465	819
Fier UK Sh.A	127088	81750	45338	123538	81500	42038	71125	69825	1300
Librazhd UK Sh.A	19014	16276	2738	17940	15445	2495	15420	15420	0

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Fush-Kruje UK Sh.A	22900	11300	11600	9385	8375	1010	8360	8360	0
Kavaje UK Sh.A	92049	38317	53732	56989	29111	27877	20906	20906	0
Mallakaster UK Sh.A	29176	12050	17126	18787	10542	8245	10500	10500	0
Gjirokaster (Q) UK Sh.A	34162	34162	0	28468	28468	0	19151	19151	0
UK Lushnje (Q) Sh.A.	63000	55000	8000	41000	38000	3000	30000	30000	0
Libohove UK Sh.A.	4104	3720	384	3082	2780	302	563	563	0
Selenice UK Sh.A	8300	8300	0	6725	6725	0	0	0	0
Peqin UK Sh.A	11549	8939	2610	7725	6975	750	0	0	0
Peshkopi U Sh.A	30000	13000	17000	30000	13000	17000	0	0	0
Gramsh U Sh.A	21703	14812	6892	21703	14812	6892	0	0	0
Kucove UK Sh.A	46068	30198	15870	36091	27704	8388	24340	23018	1322
Burrel UK Sh.A	22260	18200	4060	22260	18200	4060	15162	15162	0
Bulqize U Sh.A	15518	9631	5887	12257	9632	2626	0	0	0
Tepelene U Sh.A	18825	16200	2625	9750	8500	1250	0	0	0
Polican U Sh.A	10200	9200	1000	10200	9200	1000	0	0	0
Erseke UK Sh.A	5900	5900	0	5900	5900	0	5850	5850	0
Has U Sh.A	5600	3600	2000	5000	3000	2000	0	0	0
Corovode U Sh.A	6103	5906	197	4133	3965	168	0	0	0
Malesi e Madhe U Sh.A	52000	12000	40000	33850	10500	23350	0	0	0
Kukes U Sh.A	40000	25000	15000	40000	25000	15000	16667	16667	0
Kurbin U Sh.A	65068	41442	23626	41416	39294	2122	0	0	0
Delvine U Sh.A	9600	9600	0	5700	5700	0	0	0	0
Divjake Sh.A U.	13227	0	13227	13227	0	13227	0	0	0
Ura-Vajgurore U Sh.A	14205	8203	6002	9195	4582	4613	0	0	0
Kraste UK Sh.A.	3968	2438	1530	2738	2438	300	2450	2450	0
Patos U Sh.A	34754	23471	11283	16705	12460	4245	0	0	0
Kamez Sh.a. UK	85831	31911	53920	32948	6658	26290	16805	6658	10170
TOTALS	3234095	2176853	1057242	2511702	1918360	593342	1461029	1443052	18026

A research and demonstration WWTP using constructed wetland and reuse technologies has also been designed and is proposed for construction at the site of the SOS Children's village in the outskirts of Greater Tirana. The installation will have a capacity of about 250 p.e., and is intended to demonstrate a low-cost ecologically friendly technology that would be suitable for isolated communities of up to 2000 - 4000 inhabitants

Table 2b: Main financial indicators for the Albanian water and sanitation 2008

Source: DPUK benchmarking database

Indicator	Units	2008
Staff /connection	Staff/1000 connections	6.1
Water supply coverage	%	77.8
Sewage network coverage	%	45.2
Water production	l/person/d	333.2
Energy consumption (kwh/m3)	kwh/m3	1.43
Total water sold	l/person/d	93.5
Water sold to families	l/person/d	74.2
Non-revenue water	%	71.9
% of connections with meter	%	41.3
% of sold water metered	%	39.9
Direct operating costs/m3 produced water	Leke/m3	13.3
Direct operating costs/m3 sold water	Leke/m3	47.3
% of labor cost/total direct operating costs	%	39.8
% energy cost/total direct operating costs	%	38.5
Average price WS	Leke/m3	40.9
Average price W	Leke/m3	36.7
Difference between cost and average price	Leke/m3	-25.5
total operating costs /m3 produced water	Leke/m3	17.5
total operating costs /m3 sold water	Leke/m3	62.2
Paid bills norm (general)	%	78.5
Paid bills norm (families)	%	72.7
Paid bills norm (private entities)	%	74.4
Paid bills norm (public entities)	%	103.4
% of the direct operating costs covered by the income	%	79.8
% of the direct operating costs covered by the paid bills	%	66.6
% of the direct operating costs covered by the subventions	%	32.3
% of the total operating costs covered by the income	%	60.4
% of the total operating costs covered by the paid bills	%	50.4
% of the total operating costs covered by the subventions	%	24.4
Continuity of supply	Hour/day	13.3

2.5.2 Sewerage and wastewater treatment

Data on urban sewerage services are given in the table above. Little information is available on the status of the sewerage systems. In some cities the systems are old and in a poor state of repair. There are also some systems that are not in use.

Most of the urban wastewater is discharged without treatment. Serious water pollution problems occur in the Ishmi River, downstream of Tirana, and in the Semani river near Fier due to pollution from oil wells. Water pollution problems in the Mati and Shkumbini rivers are mainly caused by mining operations.

Data on urban wastewater treatment plants are as follows:

Kavaje	WWTP operational
Vlore	WWTP construction completed, but not yet in operation
Pogradec	WWTP construction completed, due to start operation this year (2009)
Durres	WWTP under construction
Lezhe	WWTP construction not yet started
Sarande	WWTP construction not yet started
Korce	WWTP under construction
Shkoder	WWTP in first stage of construction
Shiroke	WWTP planned (in Shkoder Municipality)
Velipoje	WWTP planned
Tirana	WWTP planned

2.5.3 Ongoing plans for urban wastewater management

In Tirana a project on improvement of the wastewater collection and treatment facilities is ongoing. The Japanese Government finances the project through a soft loan with a value of USD 100,000,000. The project targets at provision of wastewater collection and treatment for Tirana City, Kamez and Kashar. The project entails construction of a new collector and Phase I of a wastewater treatment plant with an estimated capacity of 1,000,000 PE. The plants' effluent will be discharged into the Lana river (see Annex III).

A project financed by KfW for reconstruction of water and wastewater systems (at a value of € 130,000,000) in Kukes, Has, Kruje, Kavaje, Korçe, Elbasan, Berat, Kucove, Lushnje is ongoing.

In 2008 the investment in the water supply and sewerage sector amounted to about 5 billion lek (about € 39 million). In the period 2000-2008 the total investments in this sector amounted to nearly 50 billion lek (about € 390 million).

2.5.4 Industrial wastewater management

A database with data on industries of agricultural and food products has been made available (Regjistri i Agroindustrise). The database contains data on the industries in eight prefectures. Data are given on products, product capacities and numbers of workers. The largest industries in Tirana are: Tirana brewery (150 workers) with an estimated wastewater load of 5000 PE, KMY meat processing (173 workers) and Coca Cola soft drinks (170 workers). The Korca brewery possibly has a waste water load of 5000 p.e. on the basis of a production output of 40000 l beer per day.

An overview of the largest industries, selected on the basis of the numbers of staff as criterion for potential wastewater loads, is given in Table 3. The wastewater loads of these industries are smaller than 4000 p.e., although no sufficient data are available to estimate the wastewater loads accurately.

Table 3: Data on agro-food industries

Prefecture	Company	Products	City	Staff number
Fier	SHA Vajra Bimore	refined oil	Fier	32
	Mulliri I Arte	flour	Vajkan	20
	Basha	bread	Fier	48
Gjirokaster	Lufra	dairy	Kolonje	20
	Fresh Kompany	Softdrinks	Frashtan	41
	Alfa Glina Sh. A.	Softdrinks, water	Gline	83
	Inter Balkanik	fruitjuices	Libohove	38
	EPS-1	croissants	Gjirokaster	68
Korca	Firma Rilindja	alcohol	Korce	21
	Firma Fix	meat	Korce	20
	Birre Korca	beer	Korce	
	Atlas-1	alcohol	Maliq	20
	Joy Fllorinas	softdrinks	Ciflig	20
Shkodra	Mark Babani	fish	Lac	50
	Univers Figo	meat	Shkoder	40
	Kimca	meat	Shkoder	46
Tirana	Tirana	beer	Tirana	150
	Coca Cola	soft drinks	Tirana	170
	Ferlat	dairy	Rrogozhine	35
	Exstra Milk	dairy	Tirana	30
	Sh.A. Miell	flour	Tirana	45
	Sh.A. Bloje	flour	Tirana	65
	Derbi	soft drinks	Tirana	70
	Kenedy Alb	meat	Tirana	20
	Bardhi	meat	Tirana	30
	HAKO	meat	Tirana	35
	KMY	meat	Yzbenisht	173
	EHW	meat	Kashar	85
	Aquila Liquori	alcohol	Tirana	67
	SHA	bread	Tirana	65
Vlora	Birra Norga	beer	Vlore	75
	ALSA	meat	Vlore	27

3 Approximation Plan

3.1 Overall Plan and Milestones

With the signing on 12th of April 2006 of the Stabilisation and Association Agreement (SAA) with the European Communities and their Member States, Albania has strongly confirmed its already clearly expressed political commitment to EU membership.

The National Plan for the Implementation of the SAA 2007 - 2012, approved by the Council of Ministry on 5th July 2006, to a certain extent provides a confirmation of the dedication of all relevant institutions and civil servants to respond to the requirements of the EU integration process.

One of the main conditions for EU membership is the integration and implementation of the EU legislation, the so called approximation process, which consists of three main components: legal transposition, practical implementation, and enforcement.

The overall plan to obtain full approximation is presented in the following paragraphs. It consists of a legal transposition plan and an implementation plan (including enforcement).

The **legal transposition plan** consists of drafting one DCM which will repeal and replace the existing DCM 177/2005. The rationale for this is discussed in more detail below.

The **implementation plan** is composed of a number of actions which have been consolidated into five major groups of implementation actions (refer to the table below). A detailed description of the implementation plan is presented in paragraph 3.4.

In specifying the phasing over time of these actions, the approach taken has been to specify relative years (starting with year 0). In practice the pace at which this Directive can be transposed and implemented will depend on the availability of scarce manpower resources and budgets that have to be shared with other sectors. It will therefore only be possible to assign a firm timetable when the date of accession is known and the resource requirements of all priority directives are placed side-by-side and compared with the expected resources available.

A preliminary investment plan for urban wastewater collection and treatment infrastructure has been drafted and is presented in this report. This plan serves as a first step towards the formulation of a National Plan for Wastewater Management.

The ultimate goal of this plan is to result in compliance with the requirements of the EU Urban Waste Water Treatment Directive. The plan is to be implemented within the overall future structure for water and wastewater management in Albania. As such it is closely linked to implementation of the Water Framework Directive and other legislation related to water resources and environmental management. It is estimated that the plan can be executed in a period of 15 to 20 years.

The plan for implementing the Urban Waste Water Treatment Directive is to be developed in the following main steps:

1. Formulation and acceptance of the final plan, including strategic environmental assessment and financial-economic analysis,
2. Establishment of an organisational structure for plan implementation,
3. Plan implementation through the following main stages:
 - Feasibility studies and environmental impact assessment
 - Design and tendering
 - Construction and commissioning.

The milestones of the overall plan for full approximation are given below.

Table 4: Milestones of overall approximation plan

Overall Approximation Plan	Start (month/year)	End (month/year)
<i>Legal Transposition</i>	01/0000	06/0000
<i>Implementation and enforcement</i>	07/0000	12/0018
○ Institutional strengthening and capacity building	07/0000	12/0002
○ Preparatory work	07/0000	12/0010
○ Wastewater collection and treatment	01/0001	12/0018
○ Disposal of treated wastewater and sludge	01/0003	12/0018
○ Monitoring, data handling and reporting	01/0002	12/0004

3.2 Transposition Plan

The transposition plan takes as its starting point the draft Law on Water Resources prepared by the ELPA project. This draft law would repeal the Water Pollution Law (see section 4.3 of the Water Framework Directive DSIP for a greater discussion). The DCM No. 177/2005 on Permitted Rates of Discharges and Zoning Criteria of Receiving Water Environments would also need to be repealed and a new DCM which fully transposes the requirements of the UWWT Directive would need to be adopted. Care will need to be taken to ensure that any permitting requirements would be in

accordance with the draft new Environment Protection Law and draft Permitting Law, both of which are being prepared by the current project.

The amendment/drafting of a new Law on Water Resources is already considered as part of the transposition plan for the Water Framework Directive so is not included here.

Thus the legal transposition plan is simply to draft a new DCM which will fully transpose the UWWT Directive and which will repeal DCM 177/2005.

3.3 Implementation Plan

The main findings of the gap analysis have formed the basis for identifying and deciding on the required future implementation and enforcement actions. Those actions will enable full implementation and enforcement of this Directive and is the core of the Implementation Plan.

The actions needed to secure full implementation and enforcement of this Directive are presented below together with a short description of each of the proposed actions, responsible institution and a proposed implementation period.

Table 5: Implementation and enforcement actions

EU Requirement (Articles)	Actions	Responsible Institution	Implementation period (month/year)
Art.17	1. Establishment of Competent Authorities (CAs) at national level	Government	07/0000 – 12/0002
Annex II Articles 5 and 6 and Annex IV	2. Identification of Sensitive areas and Agglomerations	MoEFWA	07/0000 – 12/0001
-	3. Project on financial aspects of implementing UWWD	MoEFWA	07/0001 – 12/0003
-	4. Provide and train human resources in the Municipalities	Municipalities	01/0002 – 12/0016
-	5. Construction of infrastructure (wastewater networks and urban wastewater treatment plants)	Municipalities	01/0001 – 12/0018
Art . 11, Annex IC, Annex III	6. Establish treatment and effluent standards for industrial wastewater	MoEFWA / Environment Agency /River Basin Councils	01/0004 – 12/0005
Annex I.A Annex IB table 2	7. Guidance and capacity building	MoEFWA	01/0001 – 12/0002
(Sewage Sludge Directive)	8. Sewage sludge management system	Competent Authority + stakeholders	01/0003 – 12/0004
Annex II	9. Establish monitoring system, strengthen inspection	MoEFWA / River Basin Councils	01/0002 – 12/0003

Annex I	10. Assessment and improvement of the necessary laboratory capacity at national and regional level	MoEFWA / River Basin Councils / Municipalities	01/0000 – 12/0001
-	11. Establishment of consultation and reporting system	MoEFWA	01/0003 – 12/0004

These 11 main actions are disaggregated into component sub-actions and discussed in the sections below.

1 Establishment of Competent Authorities (CAs) at national level

1.1 TA on institutional arrangements

Institutional arrangements need to be carefully thought out. There must be authorities and institutional arrangements at national, regional and local levels for the implementation and enforcement of the directive. These include organisations not only for policy-making, but also for developing programmes for the construction of UWWT infrastructure, providing finance for construction; and monitoring the progress during construction of infrastructure.

The TA project will work closely with all stakeholders to:

- assign responsibilities in detail between MoEFWA, other interested ministries (including MPWTT, MoF), municipalities, river basin councils;
- recommend procedures, workflows, changes in distribution of responsibilities among relevant institutions as well as the relations between the key stakeholders in the sector;
- elaborate financing plan: sources of funds for operation, service contracts etc.;
- issue recommendations for approval by the Albanian government.

1.2 Establish/assign competent authorities

Establish competent authorities, using either existing structures or creating new ones, and establish administrative arrangements to ensure that the directive is implemented effectively within River Basin Districts.

1.3 Employ additional personnel in competent authorities

At the national level

- MoEFWA: 3 persons, including 1 database/GIS expert
- MPWTT: 1 person

1.4 Training of the personnel of the Competent Authority (& other key institutions, e.g. river basin councils, municipalities, as appropriate

Training might include, for example:

- economics
- advanced WWT techniques
- monitoring

- public participation
- GIS
- planning process
- wetlands and extensive WWT processes

1.5 Procurement of hardware and software for competent authorities

This is additional to normal workstation equipment (included in employment), e.g. large-format colour printers, plotters, database and GIS software, hydrological/river basin models, project management software etc

1.6 Creation of an integrated wastewater and GIS database

A comprehensive database has to be established for the purposes of compliance control, data management, and presenting data for decision-making. The database will include information on:

- agglomerations
- UWW collection systems
- UWWT plants
- responsible entity
- sensitive areas & river basin data
- monitoring data
- laboratories and quality control data
- database to be geo-referenced (where appropriate) and input in GIS.
- link with water resources database as planned for the WFD

2 Identification of Sensitive areas and Agglomerations

Identification of sensitive areas has not been carried out. The MoEFWA must decide whether to identify individual sensitive areas or to apply the more stringent tertiary treatment criteria to the whole territory. Information may be obtained by carrying out studies, and/or using currently available data. Agglomerations, as defined in the Directive, have also to be identified and officially proclaimed by the Government. Assignment of agglomerations is also important for the elaboration of Water Master Plan and for the River Basin Management Plans.

2.1 TA on identification of sensitive areas, agglomerations

It is envisaged that these important preparatory activities will be supported by a TA project the first time, which would:

- help decide whether to identify individual sensitive areas or to apply the more stringent tertiary treatment criteria to the whole territory
- if the former, develop and issue precise definition and criteria for sensitive areas; In particular, this should specify the scientific criteria used to determine the eutrophic state of watercourses and water resources;
- identify sensitive areas and their catchment limits;

- within sensitive areas, determine which of the parameters for more stringent treatment stipulated in Annex I.B have to apply in the particular situation;
- draft a regulation for re-assessment of sensitive areas and of criteria;
- develop a plan for follow-up surveys;
- identify (a) agglomerations > 15,000 p.e., (b) 10,000-15,000 p.e. (c) 2000-10,000 p.e.

Within sensitive areas, a determination must be made which of the parameters for more stringent treatment (Annex I.B) have to apply (in this context, generally phosphorus is the limiting factor for freshwater). In this respect, there will be close overlap with the Nitrates Directive (91/676/EC).

It is assumed that no derogations would be sought for less sensitive areas, since the Adriatic Sea is not regarded as a less sensitive area. All discharges from agglomerations greater than 10,000 p.e. within the whole of the sensitive area will have to be provided with more stringent wastewater treatment.

Sensitive areas must be re-assessed every 4 years.

3 Project on financial aspects of implementing UWW

The purpose of this project will be twofold: to remove financial obstacles to the creation of an infrastructure of compliant urban wastewater treatment plants, and to provide a basis for recovering costs from water users / sewage producers. It will comprise the following components:

- Develop standard methodology for calculation of the wastewater collection and treatment tariffs which ensures, at least in the medium term, recovery of all costs from users/polluters, including cost of capital and maintenance. Draft secondary legislation to give mandatory status to this methodology. Method should include guidelines on collection mechanisms. Propose an approach for dealing with the affordability issue;
- Improve methods of coordinating donor funding, and ensuring it is channelled into appropriate projects;
- Identify constraints on borrowing by local authorities: prohibition or stringent criteria, unwillingness of central government to provide sovereign guarantee, lack of a market in local authority bonds, poor financial practices and lack of financial capacity in municipalities, lack of legislation on associations of municipalities. Formulate, in association with all stakeholders of action plan to tackle these constraints.
- Provide municipalities with information on different funding mechanisms to finance the necessary construction and upgrading: IPA, other grant funding, other IFIs, partnerships with private sector (concessions, BOT etc.)
- Establish criteria for prioritisation of projects
- Devise incentives/monitoring system/sanctions to ensure that local government will proceed with establishment of sanitation facilities
- Draft standard terms of reference for bankable feasibility study for sanitation project.
- Develop procedures, hold training sessions, draft and distribute manuals on tendering and contracting.

3.1 Technical assistance

A technical assistance project is desirable to support the above activities.

3.2 Establish project pipeline

MPWTT or another institution to maintain bankable project pipeline in order to access funds from IPA and other sources, including assignment of priorities. Discussions with EU, IFIs, support to municipalities

4 Provide and train human resources in the Municipalities

New staff will be needed in the municipalities to call for and evaluate tenders, deal with lending institutions, central government, private enterprises, arrange billing, etc.

4.1 Employ new staff in municipalities. 196 fte's, corresponding to 1 for each of the agglomerations

The recruitment will be spread over quite a number of years, in step with the investment in and installation of new infrastructure .

4.2 TA project to develop and pilot training materials on pioneer municipalities

- Develop and produce training materials for municipal officials
- Training of municipal officials: tariffs, tendering, PPP, municipal finance, other subjects as in 1.4. Use feedback to improve materials. The officials involved will be from the first municipalities to upgrade their waste water infrastructure.
- Train the trainers. A nucleus of suitable local people will be integrated into the training team, and will take over the training activity after the end of the TA project.

4.3 Train officials of other municipalities, according to necessary timing

Using local trainers, trained as part of 4.2.

5 Construction of infrastructure (wastewater networks and urban wastewater treatment plants)

The MoEFWA, in co-operation with the Ministry of Public Works has to establish an implementation programme for the construction of sewerage networks and wastewater treatment plants.

5.1 Establish an implementation programme for the UWWTD

This is required in accordance with Article 17. The implementation programme must be revised every two years once Albania is a member of the EU. This DSIP could serve as the basis for the first implementation programme. Infrastructure construction is planned in stages, giving priority to the agglomerations over 20,000 p.e. (for more information see 3.4).

5.2 Stage 1: agglomerations > 20,000 p.e. (there are 19 such agglomerations)

- Feasibility studies/financing applications
- Design of collection systems and WWTPs; an important aspect of the design will be appraising the existing infrastructure and assessing where improvements are required
- Construction of collection systems
- Design and construction of WWTPs

5.3 Stage 2: agglomerations 5,000 - 20,000 p.e. (there are 59 such agglomerations)

- Feasibility studies/financing applications
- Design of collection systems and WWTPs
- Construction of collection systems
- Design and construction of WWTPs

5.4 Stage 3: agglomerations 2,000 – 5,000 p.e. (there are 118 such agglomerations)

- Feasibility studies/financing applications
- Design of collection systems and WWTPs
- Construction of collection systems
- Design and construction of WWTPs

6 Establish treatment and effluent standards, prior authorisation regime, for industrial wastewater

6.1 TA project to establish standard treatment and effluent standards, prior authorisation regime, for industrial wastewater

There are two aspects here:

1. the Article 11 requirement that the discharge of industrial wastewater into collecting systems and urban waste water treatment plants is subject to prior regulations and/or specific authorisations, designed to ensure compliance with the Annex I.C criteria, and
2. the Article 13 requirement that biodegradable industrial wastewater for Annex III sectors from plants > 4000 p.e. which does not enter urban waste water treatment plants but is discharged directly is subject to prior regulations and/or specific authorisations.

In the first place the project will need to make an inventory of the relevant discharges. The project will need to determine whether standards should be national or local, and are applied as regulations or conditions in individual permits. The standards must be appropriate to the particular industries concerned and will involve consultation with the industry sectors. The standards for discharges of the first type above will depend in part on what the proposed disposal route for sewage sludge is (see last criterion of Annex I.C). If sludges are to be used in agriculture then more stringent standards may be necessary to ensure that the sludge meets the necessary quality standards (as per Sewage Sludge Directive 86/278/EEC). Necessary legislation would be drafted and/or the necessary provisions for permitting will be made, including drafting of model conditions.

6.2 Recruit extra personnel for prior authorisation regime (if appropriate)

If a prior authorisation regime is to be introduced then additional personnel will be needed to process applications and prepare the conditions to apply.

6.3 Implement Article 11 discharge standards

The affected establishments will have to take any technical or organisational measures needed to comply with the standards.

6.4 Implement Article 13 discharge standards

The affected establishments will have to take any technical or organisational measures needed to comply with the standards.

7 Guidance and capacity building

7.1 TA for elaboration and dissemination of guidance documents

A number of guidance documents need to be prepared and distributed to policy-makers, operators other interested parties, covering for example the following topics:

- precise definition of sensitive areas to be used (elaboration of Annex II);
- design, construction and maintenance of sewerage networks, based at least on the provisions of the directive. Such guidance should also address the issue of limiting pollution from overflows in combined sewage systems. Comparable technical guidance documents from other countries, prepared by national or regional authorities, technical associations or others, might be useful in this context.
- design, construction and maintenance of waste water treatment plants; comparable technical guidance documents from other countries, prepared by national or regional authorities, technical associations or others, might be useful in this context. Where appropriate, guidance documents should be prepared with suitable alternatives to collecting systems, ensuring at least the same level of environmental protection.

Compliance could be a condition for authorisation or continuing authorisation of the WWTP;

- how the concept of “appropriate treatment” can be operationalised in practical situations; such treatment has to ensure the necessary good quality of the receiving water.

8 Sewage sludge management system

8.1 TA on environmentally and technically sound reuse or disposal of sewage sludge

The study would consider what the options are for the environmentally and technically sound reuse or disposal of sewage sludge, identify the actions which need to be taken to put these options into effect and make recommendations as to the best choice, adopt criteria and prepare guidelines. Options may include:

- use as a fertiliser/soil improver in agriculture;
- incineration in a cement kiln (but this may mean that the cement kiln has to comply with the Waste Incineration Directive (2000/76/EC);
- use as a cover materials in landfills;
- disposing in a landfill, subject to the Directive on Landfill of Waste (99/31/EC).

The project may also need to draft legislation, including for example a ban on any disposal of sewage sludge to surface waters.

9 Establish monitoring system, strengthen inspection

The MoEFWA must establish a monitoring and inspection program for compliance assessment of discharges from urban wastewater treatment plants and for assessing the amounts and composition of sludge. This monitoring has to be part of the comprehensive monitoring as prescribed with the Water Framework Directive (2000/60/EC). The capacity of the monitoring institutions has to be improved and the number of monitoring points and the number of samples taken to be increased.

These requirements arise under Article 15, which provides for CAs to monitor:

- discharges from urban waste water treatment plants to verify compliance with the discharge standards in the Directive;
- amounts and composition of sludges disposed of to surface waters;
- waters subject to discharges from urban waste water treatment plants and direct discharges as described in Article 13 in cases where it can be expected that the receiving environment will be significantly affected;

9.1 Additional inspection – recruit personnel

Additional inspectors will therefore be required. It is assumed that one additional full-time person equivalent would be required.

9.2 Establish operating budget

A budget will be needed to cover necessary expenses: inspectors' travel, costs of chemical analysis, etc.

9.3 Monitor sludges

Inspections of WWTPs will be necessary to ensure that sludges are being appropriately treated (e.g. dewatered) and disposed of in accordance with the installation's authorisation.

9.4 Monitor waters where significant impacts possible

This will in fact form part of the water quality monitoring programme as envisaged under the Water Framework Directive.

10 Assessment and improvement of the necessary laboratory capacity on national and regional level

The MoEFWA must ensure adequate laboratory capacities either within the administration or through outsourcing to accredited and licensed commercial laboratories under contract. Accreditation schemes for all laboratories are a means of constantly ensuring such quality control. The laboratories must use the methods specified in Annex I of the Directive and be subject to regular quality control. The Government must ensure quality control with the laboratories involved through review undertaken by qualified staff knowledgeable in this area. Sampling and analysis methods have to comply with the Directive. It is assumed that the activities identified in the DSIP for the Water Framework Directive in this connection will be sufficient to ensure adequate laboratory capacity for this Directive also.

11 Reporting and consultation

11.1 Reports to the public and to the Commission

The relevant authorities are required to publish reports to the public every two years on the disposal of urban wastewater and sludge in their areas (Art. 16). They also have a number of reporting obligations to the Commission (see last bullet point of 1.3). This will be a responsibility of the competent authorities, but it is assumed that external support may be needed (local consultancy, mapping, printing).

11.2 Consultation

The Government must also ensure adequate cooperation and exchange of information with other Member States in cases where discharges of wastewater have a trans-boundary effect on water quality of shared waters.

The eleven identified implementation actions can be compiled into the following five main groups of actions:

1. Institutional strengthening and capacity building;
2. Preparatory work;
3. Wastewater collection and treatment;
4. Disposal of treated wastewater and sludge;
5. Monitoring, data handling and reporting.

3.4 Preliminary investment plan for wastewater infrastructure

The Urban Waste Water Treatment Directive is one of the most cost-heavy elements of the environmental acquis, and will involve a major programme of investment in wastewater infrastructure over the next 15 to 20 years. In this section a preliminary plan is developed based on the information available at present. This Plan can gradually be refined as the preparatory research and data-gathering, feasibility studies, etc., as described above, are conducted.

This preliminary plan was developed in the following stages:

- Identification of urban agglomerations in river basin districts on the basis of population data and geographical information.
- Assessment of the needs for wastewater collection and treatment systems on the basis of information on existing facilities.
- Selection of sensitive areas and other areas with specific requirements for water resources protection.
- Preliminary design and cost estimates of wastewater collection and treatment systems for the agglomerations.

3.4.1 Selection of agglomerations

Agglomerations have been selected on the basis of the following assumptions:

1. Definition of river basin districts
2. Procedures for identification of agglomerations

1. River basin districts

The territory of Albania covers 6 river basin districts, respectively:

- Semani river basin district
- Drin-Shkoder-Buna river basin district
- Mati river basin district
- Ishmi and Erzeni river basin district
- Shkumbini river basin district
- Vjosa river basin district

Some parts of Albania do not belong to these river basins since they drain directly into the sea. For water management purposes it is recommended that such parts are incorporated into the river basin districts. In this respect it

is proposed that the coastal and lakeshore districts are incorporated into the river basin districts, as follows:

- Malesi e Madhe and Shkodra districts are incorporated into the Drin river basin district.
- Lezha and Kurbin districts are incorporated into the Mati river basin district.
- Durres and Kavaje districts are incorporated into the Ishmi and Erzeni river basin district.
- Lushnja, Fier, Pogradec, Devoll and Korçë districts are incorporated into the Semani river basin district.
- Vlora, Saranda and Delvine districts are incorporated into the Vjosa river basin district.

2. Identification of agglomerations

Eligible agglomerations have been identified, mainly on the basis of a) population data from the Census 2001 Report⁴, b) actual data that were provided by some of the municipalities and communes, and topographic information.

The preliminary selection of the agglomerations has been made on the following basis:

- All settlements with a population of 2,000 inhabitants or more require wastewater collection and treatment systems. At this stage it is presumed that in general a municipality or a commune can be served by one central wastewater treatment plant, to which the individual settlements are connected through pipelines.
- In communes without settlements of more than 2,000 inhabitants it may be possible that close-lying urbanised settlements are combined into agglomerations with more than 2,000 inhabitants. Such agglomerations also require wastewater collection and treatment systems according to the UWWT Directive. For this reason all communes with a settlement of over 1,000 inhabitants also have been identified as potentially eligible under the UWWT Directive. *More detailed studies are required for final selection of such agglomerations.*
- In the selection of the agglomerations, municipalities and communes may be combined into one agglomeration where it seems feasible to treat all wastewater from the agglomeration in one centralised wastewater treatment plant. In principle centralised wastewater treatment may be feasible technical solution under the condition that:
 - the distance of the settlements to the central WWTP is less than 10 km,
 - the settlements and the WWTP are located in the same drainage area,
 - the topography is suitable for connection of the settlements to the WWTP.

The selection of the agglomerations was also made on the basis of topographical data. The population numbers of the agglomeration have been

⁴ The Census 2001 Report provides data on the population of all municipalities and communes, and of the settlements that are part of the communes.

estimated on the basis of the Census 2001 Report and on actual population data, where available. The estimated waste loads (as number of person equivalents) are equivalent to the population number. For the larger agglomerations (> 25,000 inhabitants) the estimated waste load was calculated as the sum of the population number and 20% of the population number, accounting for industrial and institutional wastewater loads.

An overview of the selected agglomerations is given in the Table below. More detailed data on the agglomerations are given in Annex V

Table 6: Summary of selected agglomerations

River basin district	Number of communes	Number of agglomerations	Wastewater load (p.e.)
Semani	99	49	626,800
Drin-Shkoder-Buna	81	42	288,200
Mati	36	24	173,200
Ishmi-Erzeni	44	25	1,328,300
Shkumbini	47	28	278,700
Vjosa	67	28	286,500
Total	374	196	2,981,700

3.4.2 Selection of sensitive and protected areas

Sensitive areas are defined as areas which are sensitive for eutrophic conditions or which could become eutrophic. These are in general stagnant water bodies, such as lakes, and slowly flowing rivers and streams, which already show often high concentrations of Nitrogen and/or Phosphorus. Areas that are characterised by a high infiltration rate (e.g. karsts areas) should also be considered as sensitive, since the entering of wastewater into such areas may result in high N and P concentrations in the groundwater. All water bodies used for bathing, fishing, shellfish farming and nature protection are also categorised as sensitive.

In Albania, water bodies, that are sensitive for eutrophication, have not yet been selected. Currently sufficient data is not available to designate sensitive areas as required by the UWWT Directive. For the time being it is assumed that all surface water bodies will be designated as 'sensitive areas' in the sense of the Directive until official decisions are made on this issue.

Nor has a classification of water bodies with respect to setting specific water quality targets for different water bodies, through the attribution of a water quality class to all surface water bodies, yet been established. Such a water quality classification would also result in restrictions on the discharge of wastewater into water bodies which need to be protected in order to achieve the water quality targets.

Other protected areas to which restrictions on wastewater discharge may apply include drinking water abstraction zones and nature reserves. Some data on existing protected areas are given in the table below:

Table 7: Protected areas

Type	Number	Area (ha)
Strictly protected area	4	14,500
National park	12	25,890
Monument of nature	300	4,360
Managed area	26	42,960
Protected landscape	5	59,200
protected resource	4	18,245
Total		164,110

3.4.3 Preliminary design and costs estimates of wastewater collection and treatment systems

For each of the agglomerations, preliminary investment costs of wastewater collection and treatment systems have been estimated.

For agglomerations between 2,000 and 10,000 p.e. the costs have been estimated on the basis of secondary treatment.

For the agglomerations larger than 10,000 p.e. costs have been estimated on the basis of advanced treatment with higher removal efficiency for Nitrogen and Phosphorus in order to fulfil the effluent quality requirements for discharge into sensitive areas.

For the small agglomerations also alternative wastewater treatment methods may be considered, such as pond systems and constructed wetlands which may result in a significant reduction of construction and operational costs. The selection of such systems mainly depends on the availability of suitable land space.

Assumptions made in costing

In making such a costing certain assumptions have to be made. Some of the general assumptions are discussed here. More detailed assumptions for the estimates of the investment costs and the costs of operation and maintenance are presented in Annex VI.

The total estimated costs for wastewater treatment and collection systems are also included in Appendix VI.

The cost estimates for wastewater collection systems include contingencies of 30% due to the uncertainties in the cost estimates. All cost estimates exclude the costs of land required for the systems.

All cost estimates have been made under the assumption that completely new sewerage systems and wastewater treatment plants have to be constructed for all agglomerations, although the cost estimates have been reduced somewhat if part of the agglomeration has been provided with sewerage, if data are available.

Execution of plans for construction of wastewater collection and treatment systems should be considered as integrated parts of plans for improvement

of the urban infrastructure and environment. In this context highest priority may be given to improvement of the public water supply systems up to the required standards.

The wastewater management plan may be implemented in 3 phases over a period of 15 to 20 years. The largest agglomerations, with an estimated waste load > 20,000 p.e. should be handled during Phase I.

In the Phases II and III the agglomerations with a waste load of 5,000 – 20,000 p.e. and with a waste load of 2,000 – 5,000 p.e. should be dealt with respectively.

Data on the 3 different categories of agglomeration size ranges are summarised in the table below (for further info please see Annex VI).

Categories of agglomeration size ranges

Size range (p.e.)	No. of agglomerations	Total wastewater load (p.e.)	Investment costs (€)	
			WWTP	Sewerage
I. > 20000	19	2,172,000	333,120,000	564,590,000
II 5000 - 20000	59	486,800	170,311,800	244,730,200
III. 2000 - 5000	118	322,900	180,073,100	172,395,600
TOTAL	196	2,981,700	683,504,900	981,715.800

Tirana, being the largest agglomeration with 1,000,000 p.e., has the highest priority for project execution, since the mitigation of this waste load entails the highest cost-effectiveness, and it would result in a large improvement of the water quality of the Lana river, and the Ishmi and Erzeni rivers downstream of Tirana. Other large priority agglomerations are: Durres, Vlore, Fier, Elbasan and Shkoder.

The first step in preparing a detailed plan for construction of the wastewater collection and treatment works in the agglomerations is the execution of a feasibility study for each of the agglomeration, possibly in conjunction with an environmental impact assessment (EIA) study if required.

The feasibility study and the EIA study should result in a decisive analysis and description of the characteristics of the agglomeration, with respect to: population numbers, settlements incorporated in it, population not connected to central sewerage, wastewater loads, location of sensitive and protected areas, preliminary design of sewerage system and WWTP with cost estimates, WWTP location, effluent recipient characteristics, wastewater management for areas not connected to the sewerage system, proposed sludge disposal system.

Alternative solutions should be developed and assessed during the feasibility studies. Furthermore the feasibility study should provide a description of the existing organisation for water supply and wastewater management in the agglomeration and the needs for institutional strengthening and training. Financial and economic analysis and preparation of a financing plan, as well for investments as operation and maintenance, should also be part of these feasibility studies.

After approval of the feasibility study report (and the EIA report) a detailed project report for execution of the plan needs to be prepared. This report describes: detailed design of the works and cost calculations, tender documents and planning for execution.

Phasing of measures and investment

The Directive is one of the more cost-heavy directives to implement because compliance will require considerable renovation and extension of the existing sanitation and wastewater infrastructure and the construction of new sewage collection and transport systems and wastewater treatment plants. The necessary actions will be phased over time, partly because these actions have to follow a logical sequence which takes time to accomplish, but mainly because the costs of implementation are high and capital-intensive, and will only be affordable if spread over a number of years. It has been assumed for the purpose of this directive-specific implementation plan that the overall plan for construction and upgrading of wastewater collection and treatment systems in the agglomerations will be phased over 3 stages over a period of 15 or 20 years as follows:

- During stage I (year 1 to year 12) the largest systems (WWTP > 20,000 p.e.) are constructed. Stage I involves 19 agglomerations.
- During stage II the systems for the agglomerations with WWTP sizes of 5,000 – 20,000 p.e. are constructed (year 8 to year 15). Stage II concerns 59 agglomerations.
- During stage III (year 12 to year 18) the systems for the agglomerations with a WWTP size < 5,000 p.e. are constructed. Stage III concerns 118 agglomerations.
-

The actual timing will be reconsidered when an overall strategy is being assembled, having regard to the overall resource implications and requirements, and the priorities of the government with regard to the different directives.

The estimated investment costs for wastewater treatment and collection systems for the agglomerations are given below. More detailed data on the cost estimates and the underlying assumptions are provided in Annex VI.

Table 9: Total estimated investment costs (in Euro)

	Construction works	Contingencies	Design, supervision, commissioning	Total
WWTPs	683,504,900	68,350,490	136,700,980	888,556,370
Collection systems	981,715,800	294,514,740	196,343,160	1,472,573,700
TOTAL	1,665,220,700	362,865,230	333,044,140	2,361,130,070

4 Overall Resources and Costs

4.1.1 Introduction

An estimate has been made of the costs of the various actions needed to approximate and implement the Urban Waste Water Treatment Directive. The results of this costing are set out below. The approach taken in the costing is summarised in section 3.5.2 and some overall assumptions made are described in section 3.5.3.

4.1.2 Method of cost estimation and sources of cost data

The starting point for costing implementation was the list of interventions contained in Table 5.

The resource requirements of each action were estimated by the project experts. These resources comprised:

- design, construction and operation of waste water collection and treatment infrastructure: the method of estimating costs was described in section 3.4.
- other technical and engineering measures
- human resources (the resources are generally assumed to be new resources which will be required on an ongoing basis), together with the normal resources needed to allow them to do their jobs (office space, desk, computer, stationery, administrative support, etc.),
- training,
- travel,
- production of necessary documents,
- technical assistance projects/ experts (The resource allocated for technical assistance projects were based on estimates, drawing on experience, of the necessary technical assistance (TA) project inputs in terms of international and national consultants and other resources),
- instruments for taking samples,
- laboratory analyses.

An estimate was made of the costs of these resources by the project experts. The unit costs used to estimate the costs of resources were based, where possible, on local data, but where local data were not available costs

applying in other countries in South-East Europe were used. For the detail of how these estimates were made, see Annex VI. The results of this costing are summarised below. The approach taken in the costing and some overall assumptions made are described in the following sections.

All costs are estimated in constant 2008 prices.

4.1.3 Assumptions made

In making such a costing certain assumptions have to be made. Some of the general assumptions are discussed here. More detailed action-specific assumptions are presented when the particular action is discussed.

Date of Albania's accession to the EU

An assumption has to be made in this regard because:

- (a) in principle Albania has to be in compliance with the EU by its date of accession (although in practice it will be able to negotiate a deferment for some of its more onerous obligations).
- (b) the financing status of Albania will change when it accedes to the EU. It will cease to be eligible for the EU Instrument for Pre-Accession Assistance IPA and for assistance by most bilateral donors, but on the other hand it will become eligible for funds under the cohesion and social funds.

The date of accession is assumed to be 31 December 2015.

Competent authorities

The competencies for implementing the UWWT Directive have not yet been formally assigned yet. In assigning the costs to institutions, it has been assumed that:

- the MoEFWA will have the ultimate responsibility for ensuring that the Directive is implemented, for coordination and for all environmental aspects of the Directive;
- the MPWTT will be responsible for coordinating infrastructure investment, and for drawing up and updating the implementation programme for the infrastructural investment, and possibly for maintaining the project pipeline;
- the municipalities, however will at least ultimately be responsible for implementing these investments, although at present this is a MPWTT function. This is a logical consequence of the decentralisation process, and would align the responsibility for investment with the responsibility for provision of sanitation services, which lies with the municipalities..

Sensitive areas

At present, formal criteria have not yet been elaborated for designation of sensitive areas, nor have the necessary data been collected. It is not known what proportion of Albania will have to be regarded as sensitive in the sense of the Directive. As mentioned in section 3.4.2, it is assumed for the purpose of the costing that all surface water bodies will be designated as 'sensitive

areas'. This has only a small impact on capital costs, but it does result in higher operating costs (particularly energy use).

Phasing of measures and investment

The Urban Waste Water Treatment Directive is one of the most costly directives of the environmental acquis. We have already seen the high costs involved in constructing and renovating the infrastructure (tables 8 and 9) and discussed the need to spread this investment effort over a period of years – 18 years was proposed in section 3.4, with the rider that it would be necessary to defer or extend the timetable if necessary for cost/financing reasons.

However it should be appreciated that delaying the start date or extending the timetable would mean that an accession date in 2015 would probably no longer be feasible. This is because in the accession negotiations the European Commission is unlikely to agree a transition period longer than 12 years. That means that if Albania were to join the EU in 2015 it would have to demonstrate full implementation of the UWWT Directive by 2027. This is relative year 0018 if implementation starts in 2010, making it relative year 0000.

4.1.4 Estimated costs of transposition

The legal drafting resources in MoEFWA will be under pressure in the coming years, even if capacity is increased. It would be wise to allow for a technical assistance project to support the Ministry in this work. The task which needs to be accomplished is described in section 3.2. It is estimated that an appropriate technical assistance project would cost about €300,000.

4.1.5 Estimated implementation costs

Implementing the Urban Waste Water Treatment Directive will mainly be the responsibility of the competent authority designated to implement the Directive at the national level (not yet formally designated, but assumed to be MoEFWA) and of the municipalities (possibly in some cases arranged into associations to increase their financial strength and to reflect the fact that it is often economically advantageous to group communities for the provision of sewage services). The River Basin Councils may have a role in some implementation activities, for example the setting of treatment and effluent standards, monitoring and inspection.

The estimated overall costs of implementing the Directive are shown in the table below.

Table 10: Total implementation costs for UWWT Directive, by responsible agency/sector

Responsible agency/sector	Capital / one-off costs ⁵ (€000)	Operating / recurrent costs (€000/y)
Albanian government	1,600	-
MoEFWA	7,240	82
MPWTT	-	29
Environment Agency	-	14
Municipalities	2,377,782	49,683
Industry	37,500	1,875
Total	2,424,122	51,683

It can be seen that implementation of the Urban Waste Water Treatment Directive will be extremely costly. The total implementation costs will be a capital cost of some €2,400 million and operating costs which build up ultimately to €52 million per year. This is equivalent to about 10% of annual GDP. The costs are shown in the table against the party responsible in the first place for the activity. The overwhelming majority will be the responsibility of the municipalities. This is because on the assumptions made it will be the responsibility of the municipalities not only to operate and maintain the sanitation infrastructure, but also to carry out the requisite investment.

This does not mean that municipalities will have to meet those costs from their own resources. Ultimately the increased municipal costs will be recovered from the users of the sanitation services in the form of higher water/sanitation charges. In the short- to medium-term, when these costs are rising steeply, municipalities can expect to obtain support in the form of grants and soft loans from the EU, IFIs and other bilateral and multilateral aid providers (see 4.2).

The above costs break down as follows:

⁵ All costs are estimated in constant 2008 prices.

Table 11: Implementation costs broken down by agency/sector and action type

Agency/sector // Action type	Capital / one-off costs ⁶ (€000)	Operating / recurrent costs (€000/y)	Remarks
Albanian government			
Technical assistance	1,600	-	A project to support government with start-up of implementation: designation of competent authorities, establish procedures
MoEFWA (incl. Inspectorate)			
Additional personnel		58	3 persons in MoEFWA, 1 in Inspectorate. . Includes social costs and employment related costs: office space, heating, normal equipment, reporting, overheads.
Equipment	10		Database and GIS hardware and software
Technical assistance	7,200		A TA project will provide support to the competent authorities in the main activities (National Plan for Wastewater Management)
Training	30		Note that this is not all the training included, the TA projects all include major training elements
Monitoring and analysis		20	
Reporting		5	Support for reporting requirements (Albanian public Commission) - co
MPWTT			It is assumed that as a result of the decentralisation process, MPWTT will no longer be responsible for construction of infrastructure. It will have a monitoring and advisory role, and will be responsible for the maintaining and promoting the implementation programme
Additional personnel		29	2 persons: includes social costs and employment related costs: office space, heating, normal equipment, reporting, overheads
Environment Agency / River Basin Councils			
Additional personnel		14	1 additional person, to look after prior authorisation/ permitting for industrial discharges to sewers and discharges by smaller companies to surface waters
Municipalities			
Additional personnel		2,822	196 additional personnel (1 person for each of the agglomerations)
Feasibility studies, EIA, finance applications	16,652		
Design, construction and operation of municipal infrastructure	2,361,130	46,860	

⁶ All costs are estimated in constant 2008 prices.

Industry			
Pretreatment of wastewater discharged to sewers	7,500	375	Based on standards or prior authorisation. This excludes companies subject to IPPC.
Treatment of wastewater discharged to surface waters	30,000	1,500	Based on standards or prior authorisation. This excludes companies subject to IPPC.
Total	2,424,122	51,683	

Or, in terms of type of expenditure only:

Table 12: Implementation costs broken down by action type

Action type	Capital / one-off costs ⁷ (€000)	Operating / recurrent costs (€000/y)
Feasibility studies and financing applications	16,652	
Design, construction and operation of municipal infrastructure:		
Stage 1;	1,279,941	31,954
Stage 2;	588,501	8,559
Stage 3;	492,688	6,347
Total	2,361,130	46,860
Industrial wastewater treatment and pre-treatment	37,500	1,875
Additional personnel		2,923
Technical assistance and training	8,830	
Miscellaneous equipment	10	
Monitoring and analysis		20
Reporting		5
Total	2,424,122	51,683

It can be seen that the costs are dominated by those of designing, building and operating the new infrastructure. These account for 97% of the capital/one-off costs and 91% of the operating/recurrent costs. Feasibility studies and financing applications

Over 200 new persons (or person-equivalents) will be needed to implement the UWWT Directive, the overwhelming majority of whom at local level, reflecting the government's decentralisation policy, and the increased role which local authorities will play in water sanitation services. This figure does not include persons involved in operating or maintaining the new infrastructure. Their salary-related costs form part of the operating costs of the facilities, included in the above figures.

Total technical assistance will amount to nearly €9 million, excluding the feasibility studies.

The profile of costs over time, i.e. by year in which they were sustained, is given in the following table.

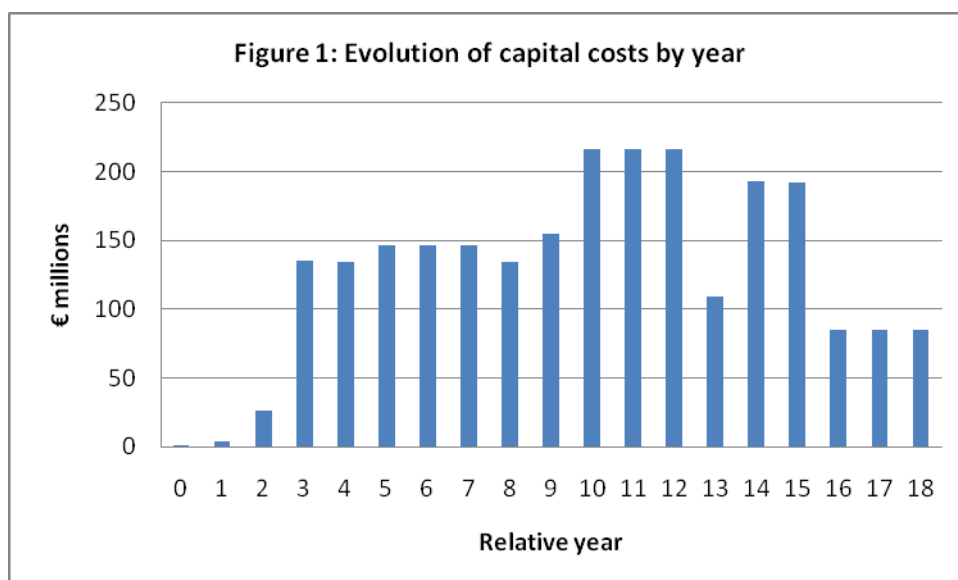
⁷ All costs are estimated in constant 2008 prices.

Table 13: Implementation costs by relative year

Relative year	Capital / one-off costs ⁸ (€million)	Operating / recurrent costs (€million/year)
0	1	0
1	4	1
2	26	1
3	135	4
4	135	7
5	147	11
6	146	15
7	146	19
8	135	22
9	154	26
10	216	31
11	216	35
12	216	40
13	109	42
14	193	45
15	192	48
16	84	49
17	84	50
18	84	52

The recurrent costs continue to increase steadily until the Directive is fully implemented.

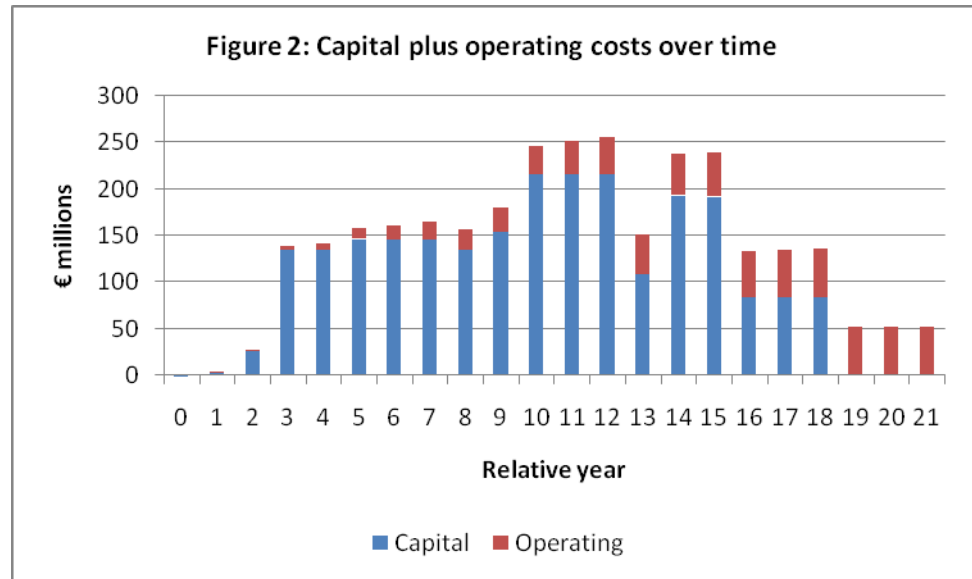
The development of capital costs over time is shown in the chart below.



Capital costs reach a maximum in years 10 to 12. In each of these three years, capital expenditure exceeds €200 million.

The following chart shows the development of total cash flow out, i.e. the sum of capital and recurrent costs, over time.

⁸ All costs are estimated in constant 2008 prices.



It can be seen that costs are initially dominated by capital costs, but that recurrent costs gradually assume an increasing share. When implementation is complete in year 18, the capital component disappears (remember that the figures do not include replacement investments) and the annual costs stop rising and stabilise.

4.2 Financing Strategy

4.2.1 Introduction

The purpose of this section is to look at how the costs identified in the previous section can be financed.

The starting point in allocating the costs of the Urban Waste Water Treatment Directive in the future is the polluter pays principle. This principle together with the principle of full cost recovery from the users of the system is enshrined in EU water law (for example see Article 9 of the Water Framework Law). Apart from being a legal requirement, however, this is a precondition for the long-term financial viability and sustainability of the water and sanitation sector, and will also provide an increasing incentive for waste producers to reduce their water consumption.

The polluter pays principle (PPP) means that the wastewater producers should pay the full cost of collecting and treating that wastewater. However while striving to apply this clear principle, the following practical points need to be borne in mind:

- Implementing the Directive involves high costs as seen above, and will therefore mean considerable increases in charges to water users.

Questions of affordability and of orderliness in price increases therefore arise;

- major items of capital expenditure are involved; these will need to be financed, even if the cost of that finance is ultimately met by waste producers;
- the question arises how much of the cost of the public administration of wastewater management should be paid for from public funds and how much by the polluter. This will be an issue addressed by Action no. 3 (see Table 5).

4.2.2 Sources of funding - General

The main possible sources of funding are:

- wastewater producers (measures they take themselves);
- charges paid by wastewater producers to wastewater managers;
- charges or taxes on new products intended to defray the eventual disposal costs;
- state or municipal budgets;
- environmental fund
- grants from the European Union pre-accession instrument IPA;
- grants from the European Regional Development Fund (ERDF) - Post-accession
- grants from other international donors;
- loans from international funding institutions;
- loans from bilateral financing institutions;
- loans from commercial banks;
- bonds issued by central or local government authorities;
- private capital (through PPP arrangements).

We consider these various sources below.

Waste producers (measures they take themselves)

For example wastewater producers in small remote communities not connected to the public sewerage system will bear the costs of the septic tanks or other measures taken to deal with their wastewater.

Charges paid by wastewater producers to wastewater managers

These will mainly be charges for wastewater collection and treatment. Wastewater producers are already paying such charges to the local utilities, but these charges are likely to rise to reflect the costs of complying with EU legislation, and more people will pay them in future as the coverage rate of the sewerage systems rise.

State or municipal budgets

At present there is no funding from municipal budgets, even though almost all the utility companies are now owned by the municipalities. This situation is unlikely to change in the future. The utility companies are making efforts to make themselves financially self-sufficient, and until this happens they are unlikely to take financial responsibility for the utilities.

The state budget, on the other hand, is currently making two types of contribution to the sector:

1. They pay a subsidy to water companies which do not cover their costs (i.e. the majority of the companies), equal to their deficit. The total operating subsidy paid in 2008 was approximately 1.4 billion (1400 million) lek (about €11 million) (Data from DPUK Benchmark database). This of course covers both water supply and sanitation.
2. They pay an amount on capital account as a contribution to the costs of renovation of existing, or the construction of new, infrastructure. The amount paid in 2008 was approximately 7.5 billion lek (about €60 million). This covers both water supply and sanitation.

It seems reasonable to assume that the deficit will reduce by 10% per year (non-compounding, i.e. linear), over the coming 10 years, that the government will increase its total spend in the water sector by 3% per year, and that the savings on the operating subsidy will be diverted into the investment account

Finally it seems reasonable to assume that 50% of the total government contribution going into the water and sanitation sector will finance specifically wastewater projects. In the past it has been lower, reflecting the higher priority which water supply rightly has over wastewater treatment. However we assume that this percentage will increase as indicated to reflect the need to make progress in implementing the UWWT Directive.

The contribution towards meeting future investment costs from the state budget on the basis of these assumptions is given in the following table.

Table 14: Estimate of funding which might be available from the state budget in coming years for investment in wastewater infrastructure (in €millions)

Year	Total funds from state budget	Operating subsidy	Investment projects water and sanitation	Investment projects sanitation only
2008	71.0	11.0	60.0	30.0
2009	73.1	9.9	63.2	31.6
2010	75.3	8.8	66.5	33.3
2011	77.6	7.7	69.9	34.9
2012	79.9	6.6	73.3	36.7
2013	82.3	5.5	76.8	38.4
2014	84.8	4.4	80.4	40.2
2015	87.3	3.3	84.0	42.0
2016	89.9	2.2	87.7	43.9
2017	92.6	1.1	91.5	45.8
2018	95.4	0.0	95.4	47.7
2019	98.3	0.0	98.3	49.1
2020	101.2	0.0	101.2	50.6
2021	104.3	0.0	104.3	52.1
2022	107.4	0.0	107.4	53.7
2023	110.6	0.0	110.6	55.3
2024	113.9	0.0	113.9	57.0
2025	117.4	0.0	117.4	58.7

However ultimately the state should be able to stop contributing to the cost of capital in the water sector, as ultimately the sector should be self-sufficient, and able to either build up a reserve for future investment or obtain finance on the commercial circuit.

Environment fund

An environment fund is a fund made up of the proceeds of specified taxes or charges. These taxes or charges might, for example be levied on the production or import of specific products which create large and problematic waste streams. This could in principle be used to finance, for example, sanitation infrastructure. These kinds of Funds have proved quite useful in other Eastern European Countries.

There is no specific environment fund at present in Albania. The Ministry of Finance has been resistant to the idea of an environmental fund, arguing that it distorts the allocation of resources.

Instrument for Pre-accession Assistance (IPA)

The IPA was introduced in January 2007, and replaced various earlier EU programmes and financial instruments for candidate countries and potential candidate countries, such as PHARE, ISPA, SAPARD and CARDS.

The IPA is made up of five different components:

- I. Assistance for transition and institution building;
- II. Cross-border cooperation (with EU Member States and other countries eligible for IPA);
- III. Regional development (transport, environment and economic development);
- IV. Human resources (strengthening human capital and combating exclusion);
- V. Rural development.

Component I falls under the responsibility of the Commission's Directorate-General for Enlargement, which is also responsible for the overall co-ordination of pre-accession assistance. It involves institution building measures and associated investment, as well as transition and stabilisation measures where necessary. It is delivered through annual national and multi-beneficiary programmes.

Component II supports cross-border cooperation at borders between candidate/potential candidate countries and between them and the EU countries. DG Enlargement and the Commission's Directorate-General for Regional Development are jointly responsible for the implementation of component II. A joint application with the neighbouring country is required. 'Potential candidate countries' such as Albania are only entitled to components I and II above.

The EU makes multi-year indicative allocations according to the IPA Multi-annual Financial Framework MAFF. The figures for Albania are as follows:

Table 15: Indicative IPA allocations to Albania

Year	Component I (€ million)	Component II (€ million)	Total (€ million)

2007	54.3	6.7	61.0
2008	61.1	9.6	70.7
2009	70.9	10.3	81.2
2010	82.7	10.5	92.3
2011	?	?	98.7

The sums available in the future are likely to go on climbing slowly in real terms after 2011 until the date of accession. When Albania becomes a full candidate country there will also be an increase in the indicative allocations. These amounts cover aid in all sectors, not just the environmental or waste sector. Projects are classified as political, economic and membership obligations. The division between these groups in the allocations for 2007 to 2009 was 30-35%, 20-25% and 40-50% respectively. Assistance in implementing the Urban Waste Water Directive would be classified as a membership obligation.

But it should be noted that the 2007 allocation is currently awaiting final EU approval, approval for the 2008 allocation is somewhat further off, and the allocation for 2009 is currently still being programmed. New projects will not be eligible before IPA 2010, which will not begin disbursement before 2011. Starting with the 2008 IPA allocation, Albania is expected to provide co-funding – from 10% for TA projects up to 25% for investment projects. However in the former case this co-funding may be ‘in kind’ rather than necessarily as a monetary contribution. Since this may include the salaries of participating public service counterparts, and since such participation is in any case desirable indeed necessary in a TA project, Albanian co-funding costs are assumed to be nil.

Grants from the European Regional Development Fund ERDF and CF

When Albania actually joins the EU it will be able to apply for funding under the Regional Development and Cohesion Funds. It is not known at present how much would be available, but on the basis of the experience of the 2004 accession countries and of Romania and Bulgaria, amounts substantially exceeding pre-accession funding are likely to be available to help bring Albania’s infrastructure up to EU standards. For example, for NMS-10 funding went up from 0.75% GDP pre-accession to 3.5% (2004-2006) and 3.9% 2007-2013. Some Albanian co-funding would be required, but provision has already been made for such co-funding.

Other bilateral and multilateral aid

According to the database of aid projects maintained by the foreign donor coordination unit within the Council of Ministers, donors other than the EU committed to some €2600 million in aid during the years 2000 to 2008. This reached a peak of about €470 million in 2005, and has gradually declined thereafter. Of this total, some €280 million was specifically for water sector projects (mainly water supply and sanitation), of which €100 million in grants and €180 million in loans, and a further €86 million (allocated over the last 4 years, of which of which €65 million in grants) was for other projects in the environmental sector. The main donor governments and institutions during this period were the EU, Germany, Italy, Austria, Netherlands. The government should try to ensure that as much foreign aid as possible is directed towards assisting Albania to meet its accession obligations.

Loans from international funding institutions (IFIs)

The international funding institutions are development banks such as the World Bank, the European Bank for Reconstruction and Development (EBRD) and the European Investment Bank (EIB) which offer loans at a relatively low rate of interest for investments (amongst others) intended to establish or improve environmental facilities or infrastructure.

The World Bank issued a Country Assistance Strategy in January 2006 (covering the period 2006 to 2009), in which it recognises the importance of the Stabilisation and Association Process to Albania, and specifically mentions improved access to safe rural water supply and sanitation as forming part of one of the two pillars on which the programme is focused. Albania has now graduated fully to IBRD membership, and so no longer qualifies for concessionary funding under the IDA. In recent years the Bank has been involved in a number of major water supply and sanitation projects, and has also advised the government on various issues related to the reform and decentralisation of the water sector. The Bank is very much interested in investment in the water sector, A new country assistance strategy is due later in the year. There is no specific limit on the funds which would be available from the Bank's position, it is more a matter of projects meeting the Bank's criteria and Albania's own borrowing limits. Loans would typically carry an interest rate of LIBOR + 0.25 to 0.5%

The EBRD is the largest single investor in Central and Eastern Europe. Unlike the World Bank, the EBRD lends to both public and private clients. However corporate entities are expected to have clearly defined objectives, management and decision-making structure, and to be operated along commercial lines. It would prefer to lend to a local borrower (municipality, utility company) than to central government for municipal infrastructure. On the other hand at the present time the Bank would only regard a loan for infrastructure at the level of Tirana as meeting its bankability criteria. A sovereign guarantee would not necessarily be needed. The EBRD tends to lend at rather higher interest rates than the World Bank (for example LIBOR + 2 to 4%).

An important actor in Albania is KfW (Kreditanstalt für Wiederaufbau). KfW is a development bank owned by the German government and the Länder, and is very active in the water sector in Albania. To date the German government has committed €140 million for projects in the water and sanitation sector in Albania, and there are ongoing projects financed by KfW in 9 towns, as well as a project on rural water supply. The Bank has been active in advising the Albanian government on the reform of the water sector. Finance can be made available in consultation with the German government and the Albanian Ministry of Finance on attractive terms. There is no specific limit in place on the German side on the amount of lending, so proposals would be judged on their specific merits.

Institutions usually prefer not to lend amounts less than a certain threshold.. These constraints tend to limit the scope for IFI participation in financing capital investments to projects of a fairly substantial size. In addition, significant resources and time are usually needed to develop and negotiate an IFI loan.

Loans from commercial banks

Local authorities may be able to obtain loans from commercial banks, but the terms are likely to be much less favourable than from international and bilateral funding institutions. Not only is the interest rate likely to be much higher, but the term of the loan would probably be shorter and there would probably not be a grace period.

Bonds issued by local government authorities

The process of decentralisation is not yet complete and local authorities in Albania are probably not at a stage where they can envisage issuing bonds as a means of raising finance. This is because of their small size, the lack of an independent audit of their accounts, low quality of financial data, the need for obtaining a credit rating from organisations such as Standard & Poor, Moody's, etc.

Private capital (through PPP arrangements).

At a later stage during the period under consideration it may be possible to attract private capital for some environmental infrastructure projects. At one end of the spectrum, municipalities could effect a service contract with a private company to operate water supply and/or sewage facility/ies for a specified period in return for a fee. On a more sophisticated level, private contractors could operate, for example a wastewater treatment plant for an agglomeration as a concession or under a BOT (build - operate - transfer) contract. This avoids the financing problem for government, since it is the private company which raises the necessary finance, and in principle the fee can be recovered from the charges raised to the waste producers. Such constructions will require a number of developments before they can be envisaged in Albania, including reform of accounting in the utilities and communal enterprises, clear evidence that the state is willing to enforce standards, that municipalities are willing to allow full costs to be charged to water users and that the latter will be able to pay them, and the emergence of credible and willing operators of the new facilities.

Miscellaneous other revenues

The water and sanitation sector generates a number of other revenues, e.g. income from fees for authorisations issued under Articles 11 or 13 of the UWWT Directive, and fines raised for breaches of regulations or standards. As far as the former are concerned, it is entirely reasonable, and within the spirit of the polluter pays principle, that the fees are set at a level which recovers the costs of operating the permitting system. With regard to fines, their destination will depend on the way that sanctions are written into the law. It may not be legally possible to recycle such revenues into the sector.

4.2.3 Funding of costs

We now consider how the various components of capital and operating expenditure might be funded in future years. We have seen that the total estimated capital cost of implementing the UWWD in Albania is €2.4 billion. This is some €670 per inhabitant. Financing this expenditure will be a very substantial challenge. It will be important for Albania to mobilise as much as possible of the finance in the form of grant aid.

The costs which are the responsibility of central government, local government and industry are considered separately.

Costs for which central government is responsible

A distinction needs to be made between ongoing, recurrent costs and the one-off costs associated with implementing the Directive.

The former relate mainly to salaries and personnel-related costs and the operating costs of new systems, and these will in principle have to be met from the state budget.

The one-off costs relate to technical assistance, training, small items of equipment and the acquisition of computing hardware and software. The authorities should seek to get this expenditure funded by grant aid from the IPA or other international donors.

On this basis we have:

Table16: Sources of funding for costs for which central government is responsible

Agency/ies	Amount (€000s)	Type	Source of funding
Albanian government, MoEFWA, MPWTT, Environment Agency*	8840	one-off costs of TA and training	IPA (components I and IV), other bilateral or multilateral donors
	126 (p.a.)	recurrent costs, mainly salaries, but also monitoring, reporting	State budget

*Or river basin councils, depending on where the responsibilities lie for prior authorisation of industrial discharges

Costs for which the municipalities/water utilities will be responsible

These are the costs of investing in and operating the water supply and sanitation system, and supervising it. Although this is at present ultimately the responsibility of MPWTT, these responsibilities will pass to the municipalities in due course as part of the decentralisation of government and reform of the water sector.

There is no technical assistance or training included under this heading because the costs of the initial training of the municipalities related to their new responsibilities was treated as a central government responsibility, and included in the previous table.

As far as costs of the sanitation infrastructure are concerned. There are two questions in relation to these items, i.e. how can the capital be financed? and who will pay for the operating costs and the cost of servicing the finance? These questions are dealt with in Table below.

Additional salaries and salary-related costs amount to €6.3 million p.a. These could be charged to the general municipal budgets, but EU legislation appears to encourage these costs also to be recovered from charges levied on water consumers.

As in the case of central government expenditure, the costs of providing technical assistance and training to municipalities should be funded from the appropriate IPA components and by funding from other donor agencies.

As far as costs of the sanitation infrastructure are concerned. There are two questions in relation to these items, i.e. how can the capital be financed? and who will pay for the operating costs and the cost of servicing the finance? These questions are dealt with in the Table below

Additional salaries and salary-related costs amount to €6.3 million p.a. These could be charged to the general municipal budgets, but EU legislation appears to encourage these costs also to be recovered from charges levied on water consumers.

Table 17: Sources of funding for expenditures for which municipalities are responsible

Item (from table 8)	Amount (€000s)	Capital financed by:	Ultimately paid for by:
Feasibility studies/financing applications	16,652	IPA (components I and IV) or other bilateral or multilateral donors	EU or other donor
Capital costs of sanitation infrastructure	2,361,130	State budget as indicated in table 14, initially. However Remainder in the following order of decreasing preference: <ul style="list-style-type: none"> • IPA or other grant funding (pre-accession) or Regional Development / Cohesion funds (post-)accession • loan World Bank or other IFI • commercial bank Consideration should also be given to attracting capital from the private sector, for example through B.O.T. or similar	Water users / waste water generators
Operating costs of sanitation infrastructure	46,860 (p.a.)	N.a.	Water users / waste water generators through water and sanitation charges (subsidies from state budget to be phased out as possible)

Salaries of extra municipal personnel	2,822 (p.a.)	N.a.	Water users / waste water generators through water and sanitation charges OR general municipal budgets
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The main challenge will of course be raising the capital for the sanitation infrastructure. This will be particularly so in the pre-accession years, before larger grant funding under the post-accession instruments becomes available.

If for the sake of argument it is assumed that Albania accedes in 2015, then the financing balance for the pre-accession period (up to 2015 inclusive) is estimated in the following table:

Assumption on timing	Capital required to accession date (€million)	Finance available from:	
Relative year 0 = 2010	552	already committed	106
		state budget	226
		IPA	59
		other donors	30
		funding gap	<u>131</u>
		total	552
Relative year 0 = 2011	420	already committed	106
		state budget	192
		IPA	50
		other donors	25
		funding gap	<u>47</u>
		total	420

The costs up to the assumed accession date of 2015 depend when implementation actually starts. Two situations are considered above, namely relative year 0 = 2010 (i.e. implementation starts in 2010) or relative year 0 = 2011 (i.e. implementation starts in 2011).

Already committed refers to projects which have already started or are firmly planned and where the financial commitment has already been made (e.g. Durres, Saranda, Vlora, Tirana).

The state budget figure is arrived at by using the figures from table 14 for the relevant years.

The IPA figure is just an estimate assuming that 10% of the entire IPA budget is awarded to sanitation projects.

The item 'other donors' refers to bilateral donors (other than the EU), and assumes that €5 million per year will be received from this source up to the date of accession.

On these assumptions, the funding gap, to be bridged by loans from IFIs or similar, would be €131 million (implementation starts 2010) or €47 million (implementation starts 2011). On this basis a start date in 2011 seems more appropriate.

Costs for which industry will be responsible

The relevant industry is estimated to sustain capital costs of about 38 million and operating costs of nearly 2 million per year as a result of the requirement to pre-treat or treat its wastewater. It is assumed that industry will be given a three-year period to comply with the new requirements once they have been introduced. It may be possible to pass these costs on to customers/consumers. The extent to which these establishments are able to pass on their increased costs in the prices of their products will depend on the extent to which they are price-makers or price-takers. Assuming that most competitors will by then also be located in member states (or states preparing for membership), and will therefore be subject to similar requirements, there should be no loss of competitive advantage overall.

4.3 Benefits

In short it can be stated that the implementation of the Directive will result in a significant reduction of the quantity of pollutants that are currently discharged into inland surface waters, coastal waters, wetlands, groundwater aquifers and the soil. Wastewater discharges include biodegradable organics, hazardous organic substances, heavy metals and nutrients.

The benefits associated with implementation of Directive 91/271/EEC (as amended by Directive 98/15/EC) are:

- The pollution from the discharge of wastewater into water bodies will be minimized, which will improve health (reduction of waterborne diseases) giving a positive effect on the national economy;
- The aquatic environment will be better protected against pollution from hazardous substances and will get closer to its original state, providing better living conditions for aquatic life as well as for terrestrial animals and birds;
- The surface water bodies will facilitate better leisure opportunities for the public, which will enhance the tourist sector, thereby generating additional workplaces and income, and benefiting the national economy;
- Reduced costs for the treatment of drinking water abstracted from surface waters.

Other indirect benefits are:

- The Directive will complement and further complete other key pieces of water-related legislation. In particular, the Water Framework Directive (2000/60/EC), the Nitrates (Directive 91/676/EEC) dealing with pollution from agriculture, the body of rules governing the authorisation and use of pesticides and biocides (for example, the Biocides Directive (98/8/EC)), as well as the IPPC Directive (96/61/EC) on integrated pollution prevention and control).

- The Competent Authority gains the institutional, administrative and technical capacity to regulate and control activities, facilities, and undertakings involved with the collection, treatment and discharge of urban and industrial wastewater throughout the country at national, regional and local level,
- The Competent Authority gains correct and sufficient resources to collect detailed information on all aspects of wastewater management, and is able to provide this information to all required persons and organisations,
- Collaboration and cooperation at inter-Ministerial level, and between national, regional and municipal authorities, industry and the public, are carried out within wastewater management in a practical, sustainable and cost-effective manner.

4.4 Key Issues and Uncertainties

There are four key interrelated bottlenecks related to the realisation of the Directive. These will all have to be resolved if the Directive is to be satisfactorily implemented:

- Availability of capital
- Financially sustainability of wastewater treatment sector
- Decentralisation and reform of the water sector
- Capacity in Municipalities

As will be seen below, these four areas are interrelated.

Availability of capital

Realisation of this Directive will be very costly, requiring nearly € 2,400 million in capital expenditure, in the face of competing demands from both other environmental sectors and from the rest of the economy.

As was seen in the analysis at the end of section 3.6, the period up to the date of accession will be particularly difficult, despite the extended implementation period, since the financial resources available from the EC will be relatively limited at that time, and will have to be shared between a large number of competing projects.

There is also a danger that the IFIs and commercial banks may be discouraged from lending by the transitional state in which decentralisation finds itself at present (for example water utilities owned by the municipalities but not yet financially controlled by them). It will also be more difficult, at least initially, for the municipalities to meet the lending criteria of lenders, thereby temporarily compounding the problem.

It will be imperative that Albania uses those resources which are potentially at its disposal efficiently. This means that the skills must be acquired to prepare sound and acceptable projects and funding applications.

Assuming that experience of past accession rounds, e.g. NMS-10 in 2004 is a guide to the future, Albania will have greater access to funding after it joins the EU.

Financial sustainability

Financial sustainability means that the water utilities are able to be confident that they have a secure revenue sufficient to operate and maintain the existing sanitation network and to make the necessary financial provision for future investment. Not only financial sustainability but also European law requires that the revenues generated by the sector from water users and sewage producers is sufficient to cover these costs. A recent analysis by DPUK indicated that only 2 of the water utilities meet all their costs and 10 meet their direct costs only. And of course these costs will rise considerably with the implementation of the Directive. Potential lenders will also be looking for financial sustainability as a condition for extending loans.

The rate at which full billing of costs can be implemented is of course constrained by the issue of affordability. Tariffs cannot rise so fast that they become unaffordable for a substantial number of households. And for those low-income households for which affordability is an issue, it should not be the water utility which makes the social provision. An often used affordability criterion is that to be affordable, water charges should not exceed 5% of income. Innovative water charging systems may help with this problem. For example the tariff structure could be based on a first tranche of water per month (sufficient for basic needs) which is supplied at no cost and a higher rate thereafter⁹.

Progress is being made towards allowing the companies to achieve sustainability. These include giving municipalities to set tariffs themselves, benchmarking and placing pressure on them to develop five-year business plans, the main objective of which is to reduce or eliminate their need for operating subsidies. However the pressure to achieve this needs to be sustained.

Decentralisation and reform of the water sector

Decentralisation and water sector reform are currently in a transitional phase. Progress is slower than was originally envisaged. It is important that the process should not be allowed to stagnate, for the reasons mentioned elsewhere

Capacity in Municipalities

In future Municipalities and water utilities will have a new relationship with the water utilities. The former will have to accept ultimate financial responsibility for water, including investment. They will also have to control the water utilities in a manner currently done by DPUK. This means they will have to acquire new skills, depending exactly on the nature of the relationship involved. Considerable capacity-building will be required to ensure that Municipalities are properly able to discharge their new functions.

⁹ Such a concept was examined by the World Bank in its project *Municipal Water and Wastewater Project*, shortly due to finish.

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Annex I: Table of Concordance

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 1	[Objective]					
Art. 2	Definitions: 1. urban waste water (UWW)	Law No. 9115/2003 “On the Environmental Treatment of Polluted Waters” Article 3/1 See also Chapter VII of LWR on Discharges and Sewage Networks and the Protection of Water Quality See also draft LWR	Corresponds in part (similar meaning although they differ in content)	Does not include run-off rain water		Need to consider where and how Law 9115 fits in with LWR and draft LWR
	2. domestic waste water	Law No. 9115/2003 “On the Environmental Treatment of Polluted Waters” Article 3/2	Corresponds (similar meaning although they differ in content)			The “...etc.” should be avoided in legal drafting (when possible) as it can leave room for interpretation
	3. industrial waste water	Law No. 9115/2003 “On the Environmental Treatment of Polluted Waters” Article 3/3	Corresponds (similar meaning although they differ in content)			

¹⁰ If draft legislation, please specify the status of the draft legislation.

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
	4. agglomeration	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/5	Corresponds (similar meaning although they differ in content)			
	5. collecting system	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/6	Corresponds in part (the law refers also to industrial water)			
	6. 1 PE (population equivalent)	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/7	Conflict(the law is more detailed than the definition of the dir.)			Need to amend Art 3/7 to bring it into line with Dir defn – by including other parameters other than BOD the defn gets confusing and incorrect
	7. primary treatment	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/8	Corresponds in part(the law is more restrictive than the definition of the dir. Law set a limit of 60%- Dir. Set a limit of 50%)			Defn only refers to physical treatment – Dir also refers to and/or chemical treatment
	8. secondary treatment	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/9	Corresponds in part(to be checked the adoption of table 1 of annex 1)	Defn does not make reference to any stds of denitrification and dephosphoration		Need to include reference to standards (Annex I table 1 of Dir)

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
	9. appropriate treatment	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/10	Corresponds (the directive state "to meet the relevant quality objectives – and the law state "will not corrupt the quality of receiving water" there is a difference in terms)			
	10. sludge	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/11	Corresponds			
	11. eutrophication	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/12	Corresponds			
	12. estuary	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/13	Corresponds			
	13. coastal water	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 3/14	Corresponds			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 3.1	Collecting systems for UWW are required for: - Agglom'ns >15,000 PE		lacking			
Art. 3.1	- Agglom'ns btw. 2000 & 15,000 PE		lacking			
Art. 3.1	- Agglom'ns >10,000 PE discharging UWW into receiving waters defined as "sensitive areas" under Art. 5		lacking			
	Where establishment of a collecting system brings no environmental benefit or involves excessive cost, individual or other appropriate systems achieving same level of environmental protection shall be used.		lacking			
Art. 3.2	Collecting systems shall satisfy the requirements of Annex I.A for design construction & maintenance.	DCM 177/2005, Chapter III/2	Corresponds			
Art. 4.1	UWW entering collecting systems must be subject to secondary or equivalent treatment before discharge as follows: - all discharges from agglom'ns >15,000 PE		lacking			
Art. 4.1	- all discharges from agglom'ns btw. 10,000 & 15,000 PE		lacking			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 4.1	- for discharges to fresh waters & estuaries from agglom'ns btw. 2000 & 10,000 PE.	DCM 177/2005, Chapter IV/7	Corresponds in part			
Art. 4.2	[UWW discharges to waters in regions > 1500 m above sea level may be subjected to treatment less stringent than required by Art. 4.1, if detailed studies indicate such discharges do not adversely affect the environment.]	DCM 177/2005, Chapter III/5	Corresponds in part (because 4.1 is in part)			
Art. 4.3	Discharges from UWW treatment plants described in Art. 4.1 & 4.2 must meet requirements of Annex I.B.	DCM 177/2005, Chapter IV/4	Corresponds in part (because 4.1 is in part)			
Art. 4.4	PE load is calculated on basis of maximum average weekly load entering treatment plant during year, excluding unusual situations (e.g. heavy rain).		lacking			
Art. 5.1	MS must identify sensitive areas in accordance with Annex II criteria.	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 14, DCM 177/2005 Annex 5	Corresponds			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 5.2	UWW entering collecting systems from agglom'ns >10,000 PE must be subject to more stringent treatment than described in Art. 4 in case of discharges to sensitive areas.	DCM 177/2005 Chapter IV/3	Corresponds in part			
Art. 5.3	Discharges from UWW treatment plants described in Art. 5.2 must meet relevant requirements of Annex I.B.	DCM 177/2005 Chapter IV/4	Corresponds			
Art. 5.4	[Alternatively, requirements for individual plants set out in Art. 5.2 & 5.3 need not apply in sensitive areas if the minimum percentage of reduction of the overall load entering all UWW treatment plants in that area is at least 75% for total phosphorus & at least 75% for total nitrogen.]	DCM 177/2005 Chapter IV/5	Corresponds			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 5.5	Art. 5.2, 5.3 & 5.4 apply to discharges from UWW treatment plants which are situated in the relevant catchment areas of sensitive areas & which contribute to the pollution of these areas. If the catchment area is situated wholly or partly in another MS, Art. 9 applies.		Lacking			
Art. 5.6	Identification of sensitive areas must be reviewed at intervals of no more than four years.	DCM 177/2005 Chapter IV/2 Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 14,1 (repeated)	Corresponds			
Art. 5.7	Areas identified as sensitive (Art. 5.6) must comply with the requirements within seven years after identification.	DCM 177/2005 Chapter IV/2	Corresponds in part (DCM provision is more restrictive)			
Art. 5.8	[Sensitive areas do not have to be identified if the MS implements the treatment established under Art. 5.2, 5.3 & 5.4 over all its territory.]			no need to be transposed		Information provision

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 6.1	[MS may identify less sensitive areas ¹¹ in accordance with Annex II criteria.] ¹²			no need to be transposed		Information provision
Art. 6.2	[UWW discharges into less sensitive areas from: agglom'ns btw 10,000 & 150,000 PE to coastal waters; & agglom'ns btw 2000 & 10,000 PE to estuaries may be subjected to treatment less stringent than Art. 4 providing that: - such discharges receive at least primary treatment (Art. 2.7) in conformity with the control procedures laid down in Annex I.D. - comprehensive studies indicate that such discharges will not adversely affect the environment. MS must provide the Comm'n with relevant information concerning the studies.]	DCM 177/2005 Chapter IV/6	Corresponds in part (DCM has not transposed Annex ID)			

¹¹ Note that according to the Commission, the Adriatic Sea cannot be considered as a 'less sensitive area'

¹² Art. 6.1 is optional. If a country makes use of this option, requirements in Art. 6.2, 6.4 and 6.5 become mandatory.

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 6.4	[MS must review the identification of less sensitive areas at intervals of not more than four years.]	DCM 177/2005 Chapter IV/2 Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 14,1 (repeated in both acts)	Corresponds			
Art. 6.5	[Areas no longer identified as less sensitive must meet the requirements of Art. 4 & 5 as appropriate within seven years.]	DCM 177/2005 Chapter IV/2	Corresponds in part (DCM provision is more restrictive)			
Art. 7	UWW entering collecting systems shall before discharge be subject to appropriate treatment as defined in Art. 2.9 in the following cases: - for discharges to fresh-water & estuaries from agglom'ns < 2000 PE,	DCM 177/2005 Chapter IV/7/a	Corresponds			
Art. 7	- for discharges to coastal waters from agglom'ns < 10,000 PE	DCM 177/2005 Chapter IV/7/b	Corresponds			
Art. 8.1	[MS may in exceptional cases due to technical problems & for geographically defined population groups submit a request to the Comm'n for extension of time periods for complying with Art. 4.]			no need to be transposed		Information provision

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 8.2 & 8.3 & 8.4	[The request must set out technical difficulties experienced & propose an action plan with appropriate timetable for implementation. The timetable is to be submitted as part of the Art. 17 implementation programme.] [Comm'n will examine the request]			no need to be transposed		Information provision
Art. 8.5	[In exceptional circumstances, if more advanced treatment is shown not to provide any environmental benefits, discharges into less sensitive areas from agglom'ns > 150,000 PE may be subject to same treatment as discharges from the agglom'ns btw 10,000 & 150,000 PE described in Art. 6.] [In such cases, MS must submit documentation to the Comm'n beforehand.]		Lacking			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 9	[If a MS is affected by discharges from another MS, the other MS & the Comm'n may be notified of the relevant facts.] [The MS together with the Comm'n must identify the discharges & the measures to be taken at source in order to comply with this Dir.]			no need to be transposed		Information provision
Art. 10	MS must ensure that UWW treatment plants built to comply with Articles 4-7 are designed, constructed, operated & maintained to ensure sufficient performance under normal conditions. Seasonal variations must be taken into account in design of plants.	Law No. 9115/2003 "Concerning The Environmental Treatment Of Polluted Waters", Art. 6/1/c	Corresponding in part (articles 4-7 corresponds in part)			
Art. 11.1	Discharge of industrial WW into collecting systems & UWW treatment systems is subject to prior regulations &/or permits by the competent authority.	DCM 177/2005 Chapter II/5	Not sure what the DCM means Possible Conflict			
Art. 11.2 & 11.3	Such regulations &/or permits must meet requirements of Annex I.C. They shall be reviewed & if necessary adapted regularly.		lacking			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 12.1	Treated WW must be reused whenever appropriate. Disposal routes shall minimize adverse effects on environment.		Lacking			
Art. 12.2	Competent authority must ensure that disposal of WW from UWW treatment plants is subject to prior regulations &/or permits.	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 18	Corresponds			
Art. 12.3	Prior regulations &/or permits for discharges from UWW treatment plants within agglom'ns of 2000 to 10,000 PE for discharges to fresh waters & estuaries, & agglom'ns ≥ 10,000 PE for all discharges shall contain conditions to satisfy relevant requirements of Annex I.B.	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 18 DCM 177/2005, Annex 4/B	Corresponds in part (the requirement is not specific to the case)			
Art. 12.4	Regulations &/or permits must be regularly reviewed & if necessary adapted.	Law No. 9115/2003 "On the Environmental Treatment of Polluted Waters" Article 18				
Art. 13.1	Biodegradable industrial WW representing ≥ 4000 PE from plants in industrial sectors listed in Annex III discharged directly to receiving waters must meet requirements laid down in prior regulation &/or specific permits.		Lacking			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 13.2	Competent authority must set requirements for discharge of WW appropriate to the nature of each industry concerned.	DCM 177/2005, Annex III	Corresponds			
Art. 14.1	Sludge from WW treatment must be reused whenever appropriate. Disposal routes shall minimize adverse effects on environment.		Lacking			
Art. 14.2	Competent authority shall ensure that disposal of sludge from UWW treatment plants is subject to general rules or authorization or registration.		Lacking			
Art. 14.3	MS must ensure phase-out of disposal of sludge to surface waters by dumping from ships, discharge from pipelines, etc.			no need to be transposed		Information provision
Art. 14.4	Until disposal of sewage sludge to surface waters is eliminated, the total amount of toxic, persistent or bioaccumulable materials in such sludge must be licensed for disposal & progressively reduced.		Lacking			

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 15.1	CAs must monitor: - discharges from UWW treatment plants to verify compliance with Annex I.B requirements in accordance with control procedures laid down in Annex I.D. - amount & composition of sludge disposed to surface water.	DCM 177/2005, Chapter V/6 Annex 4/B + Tables 1 and 2	Corresponds (the chapter is more detailed)			
Art. 15.2	CAs must monitor waters subject to discharges from UWW treatment plants & direct discharges from Art. 13 industries in cases where receiving environment can be significantly affected.	DCM 177/2005, Chapter II/6 Annex III	Corresponds			
Art. 15.3	For discharges subject to Art. 6 & for disposal of sludge to surface waters, MS must monitor & carry out studies in order to verify that the discharge does not adversely affect the environment.		Lacking			
Art. 15.4	Information collected in accordance with Art. 15.1 & 15.2 must be retained by the MS [& made available to the Comm'n within six months or on request.]			no need to be transposed		Information provision

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 16	The CAs must publish situation reports every two years on the disposal of UWW & sludge within their area. [The reports must be forwarded to the Comm'n.]		Lacking			
Art. 17.1	MS must establish an implementation programme for this Directive.			no need to be transposed		Information provision
Art. 17.2	[MS must inform the Comm'n about the implementation programme.]			no need to be transposed		Information provision
Art. 17.3 & 17.4 & 17.5	[MS must provide Comm'n with update of information on the implementation programme by 30 June every two years. Methods & formats will be adopted for reporting on the implementation programme (Note: Comm'n Decision 93/481)] [Comm'n to review & assess reports]			no need to be transposed		Information provision
Art 18	[Committee]					
Art. 19.1	MS shall bring into force the laws, regulations & administration procedures to comply with the Dir. [& notify the Comm'n.]			no need to be transposed		Information provision

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/corresponds in part/is lacking/is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Art. 19.2	Measures adopted by MS shall contain or be accompanied by a reference to the Directive.			Can be done even in the Albanian Legislation		
Art. 19.3	[MS must communicate the main national provisions adopted in this field to the Comm'n.]			no need to be transposed		Information provision
Annex I	Requirements for urban waste water for:	DCM 177/2005 - Annex IV A	Corresponds			
	A. Collecting system					
	B. Discharge from UWW treatment plants to receiving waters	DCM 177/2005 - Annex IV B	Corresponds			
	C. Industrial waste water		Lacking			
	D. Reference methods for monitoring & evaluation of results Table 1: Requirements for discharges from UWW treatment plants subject to Art. 4 & 5. Table 2 ¹³ : Requirements for discharges from UWW treatment plants to sensitive areas subject to eutrophication as identified in Annex II.A (a). Table 3: Indication for maximum permitted number of samples which fail to conform.					

¹³ As amended by Directive 98/15/EC

Article	EU Obligation	National legislation (including draft legislation) (give text of relevant law or regulation & no. of article) ¹⁰	Corresponds/ corresponds in part/ is lacking/ is in conflict	Identification of changes needed in Albanian law	Responsible institution(s)	Recommendation for transposition
Annex II	Criteria for identification of (a) sensitive & (b) less sensitive areas.	DCM 177/2005 – Annex v	Corresponds			
Annex III	Industrial sectors subject to Art. 13.		Lacking			

Annex II: Questionnaire results summary

Number of Prefectures `Qark`: 12 (Regional Environmental Agencies)
 Number of Districts: 36
 Number of Municipalities (M): 65
 Number of Communes (C): 308
 XX: ongoing investment in water supply and sewerage sectors

Name	M/C	Popula- tion no.	Water supply (%)	Sewerage (%)	Wastewater tre
1. Berat prefecture					
Berat district (2M, 10C)					
Berat	M	51440	100		XX
Lumas	C	6200	71		
Roshnik	C	4120	69		
Velabisht	C	11474	9		XX
Kucove district (1M, 2C)					
Kucove	M	24500	95		
Kozare	C	8029	100	yes	
Skrapar district (2M, 8C)					
Bogove		2440	100		
Cepan		2000	90		XX
Gjebes		1815	80		
2. Diber prefecture					
Diber district (1M, 14C)					
Pershkopi	M	19600	100		XX
Arras	C	5180	33		
Kastriot	C	7600	80		XX
Tomin	C	9500	80	partial	primary treat
Zal Dardha	C	2506	33		
Mat district (2M, 10C)					
Burrel	M	24500	26		XX
Klos	M	10504	42		XX
Baz	C	3420	30		
Komsi	C	6100			XX
Lis	C	5100	85		XX
Ulez	C	21500	30	100	
Bulqize district (1M, 7C)					
Martanesh	C	2639	49		
3. Durres prefecture					
Durres district (4M, 6C)					
Shijak	M	12720	100		XX
Gjepalaj	C	7000	40		
Katund i Ri	C	16700	100		XX
Kruje district (2M, 4C)					
Kruje	M	15952	99		XX
4. Elbasan prefecture					
Elbasan district (3M, 20C)					
Gostine	C	12640	75		XX
Mollas	C	7452	30		XX
Shirgjan	C	9460	75		XX
Peqin district (1M, 5C)					
Peqin	M	9100	95		XX
Karine	C	1901	50		
Gjocaj	C	6000	35		XX
Pajove	C	8600	85	30	XX
Gramsh district 1M, 9C					
Gramsh	M	14448	100		
Kodovjat	C	3328	75		
Lenie	C	1503			

Skenderbegas	C	2500	100		
Librazhd district 2M, 9C					
Lunik	C	4000	40		
Orenje	C	5300	30		
Qender Librazhd	C	11107	3		
Qukes	C	10601	38		XX
Rrajce	C	10250	57		XX
Stravaj	C	3075	60		
Stebleve	C	1800	30		
5. Fier prefecture					
Fier district 3M, 14C					
Patos	M	32000	90		
Roskovec	M	8601	75		XX
Kuman	C	7800	70		XX
Kurjan	C	4800			
Portez	C	11197	10		
Qender Fier	C	8330	100		
Strum	C	7810	90		XX
Topoje	C	4000	96		XX
Lushnje district 2M, 14C					
Lushnje	M	60000	70		XX
Divjake	M	13310	66		XX
Dushk	C	11117	60		XX
Golem	C	8500	80		XX
Grabian	C	6700	35	100	
Gradisht	C	10850	60		XX
Hysgkokaj	C	3600	100		XX
Terbut	C	15222	15	100	
Mallakaster district 1M, 8C					
Ballsh	M		100		XX
Hekal	C	4735	80		XX
6. Gjirokaster prefecture					
Gjirokaster district 2M, 11C					
Gjirokaster	M	37000	98		XX
Libohove	M	2800	100	yes	
Dropuli i Poshtem	C	9464	100		XX
Odrie	C	850	100		XX
Picar	C	1800	80		XX
Antigon	C	1850	100		XX
Tepelene district 2M, 8C					
Memaliaj	M	5100	100		
Buz	C	1730	0 private		
Kurvelesh	C	1100	100		
Lopes	C	1200	100		
Qeserat	C	2600	0		
Permet district 2M, 7C					
Carcove	C	1600	60		XX
Dishnice	C	3350	30		XX
7. Korca prefecture					
Korca district 2M, 14 C					
Korce	M	55000	98	100	2 stage under con
Maliq	M	8100			
Libonik	C	11500	70		
Pirg	C	9952	83		
Pojan	C	15000	100		XX
Qender Bulgarec	C	11000	80		XX
Vithkuq	C	2700	90		
Voskop	C	6176			
Vreshtas	C	10500	85	50	XX
Kolonje district 2M, 6C					
Leskovik	M	2200	100		XX
Erseke	M	6700	100		XX

Mollas	C	4075	100		XX
Novosele	C	750	50		
Qender Erseke	C	5709	100		
Devoll district 1M, 4C					
Bilisht	M	9932	75		
Proger	C	5280	90		
Pogradec district 1M, 7C					
Pogradec	M	42000	100		under constru
Bucimas	C	18000			XX
Dardhas	C	3536	30		XX
Udenisht	C	7220	55		XX
Trebinje	C	3600	20		
8. Kukes prefecture					
Kukes district 1M, 14C					
Kukes	M	2800	100		XX
Bicaj	C	7300	100		XX
Shtiqen	C	4200	90		XX
Has district 1M, 3C					
Krume	M	7705	50		XX
Fajze	C	4201			XX
Gjinaj	C	1547			XX
Tropoje district 1M, 7C					
Bajram Curri	M	8318	100		XX
9. Lezhe prefecture					
Lezhe district 1M, 8C					
Lezhe	M	30000	80%	90%	under constru
Balldre	C	10750	30		XX
Binisht	C	6100	40		XX
Dajc	C	6800	90		XX
Zejmen	C	8800	60		XX
Mirdite district 2M, 5C					
Rreshen	M	8200			XX
Kurbini district 2M, 2C					
Lac	M	30041	100		XX
Milot	C	13021	54		XX
10. Shkodra prefecture					
Shkoder district 2M, 14C					
Bushat	C	19000	26		XX
Berdice	C	9205	40		XX
Dajc	C	8693	20		
Gur i Zi	C	12000			XX
Postirbe	C	11400	65		
Velipoje	C	8683	96		XX
Puke district 2M, 8C					
Puke	M	5600	95	90	XX
Fushe Arrez	M	5300	70		XX
Gjegjan	C	5011	60		XX
Rrape	C	2491	32		
Malesi e Madhe district 1M, 5C					
Koplik	M	11028	30	30	XX primary tre
Kastrat	C	9000	40		XX
Shkrel	C	6288	70		XX
11. Tirane prefecture					
Tirana district 3M, 16C					
Tirana	M	613551			design sta
Kamez	M	90000	33		XX
Berxull	C	10000	40	30	XX
Dajt	C	12065	70	20	XX
Paskuqan	C	42000	30		XX
Krrabe	CT	3080	80		XX
Kavaje district 2M, 2T, 8C					
Rrogozhine	MT		72		XX

Gose	C	8160	100		XX
Luzi Vogel	C	7500	80		XX
Sinaballaj	C	1980	20		XX
12. Vlora prefecture					
Vlore district 4M, 9C					
Vlore	M	129661	95	100 not in use	under constr
Selenice	M	5200	100		
Shushice	C	9080	100		
Sarande district 2M, 7C					
Ksamil	C	7500	70		XX
Delvine district 1M, 3C					
Vergo	C	2050	78		

Annex III: Ongoing plans and investments in water supply and wastewater management

Nationwide investments

In 2008 the investment in the water supply and sewerage sector amounted to about 7.5 billion lek. In the period 2000-2008 the total investments in this sector equalled nearly 50 billion lek. Below an overview of places with ongoing investments in municipalities and communes is given. (Sh.A.UK = Water and Sewerage Company).

Berat

Sh.A. UK Berat	Municipality of Berat; Commune of Vertop, Otlak, Velabisht
Sh.A. U Skrapar	Municipality of Corovode; Commune of Qender, Gjerbes, Kotom, Cepan, Vendresh, Bogove, Zhep.
Not included in water company	Commune: Velabisht

Diber

Sh.A. UK Peshkopi	Municipality of Peshkopi; Communes of: Kala e Dodes, Sllove, Fushe Cidhen, Luzi, Kastriot, Qender Tomin, Melan, Selishte, Muhur, Ostren, Maqellare.
SH.A U Bulqizë	Municipality of Bulqizë; Communes of Shupenze, Zerqan.
SH.A U Mat	Municipality of Burrel, Communes of: Macukull, Gurre, Lis, Suc, Derjan, Klos, Komsi.
Not included in water company	Komuna: Melan, Selishte, Muhur, Ostren, Macukull, Gurre, Zerqan, Suc, Derjan, Klos, Komsi

Durres

Sh.A. UK Durrës	Municipalities of: Durrës, Shijak, Sukth, Manez; Commune: Thumane, Ishem, Xhafzotaj, Rrashbull, Katund i Ri, Bubq, Preze, Fushe-Kuqe, Maminas, Gjepalaj
Sh.A. UK Kruje	Local government units: Municipality of Kruje, Commune of Cudhi.
Sh.A. UK Fushe Kruje	Municipality of Fushe Kruje.

Elbasan

Sh.A. UK Elbasan(Q)	Municipality of: Elbasan, Commune of Bradashesh (partly).
Sh.A. U Elbasan (F)	Municipalities of : Cerrik, Belsh; Communes of : Grekan, Gostime, Shales, Kajan, Rase, Fierze, Paper, Gjergjan, Mollas, Bradashesh, Gracen, Gjinar, Zavaline, Labinot Fushe, Labinot Mal, Shirgjan, Shushice, Pajove, Gjinar, Rajce.
Sh. A. U Peqin	Municipality of Peqin; Communes of Sheze and Gjocaj.
Sh.A. UK Librazhd	Municipality of Librazhd.
Not included in water company	Komuna: Pajove, Gjinar, Rajce, Gjocaj, Qukes

Fier

Sh.A. UK Fier	Municipalities of: Fier, Roskovec, Divjake; Commune: Topoje, Seman, Dermenas, Levan, Frakull, Kuman, Cakran, Strume, Golem.
Sh.A.UK Mallakastër	Municipality of Ballsh; Communes of : Qender Dukas, Aranitas, Hekal, Kute, Fratar, Selite

Sh.A. UK Lushnjë (Q)	Municipality of Lushnje.
Sh.A. U Lushnjë (F)	Commune of: Karbunare, Kolonja, Libofsh, Dushk, Fier Shegan, Allkaj, Bubulline, Krutje, Poshnje, Gradisht, Remas, Hysgjokaj.
Not included in water company	Commune: Cakran, Strume, Golem, Selite, Hysgjokaj

Gjirokaster

Sh.A. Gjirokastër(Region)	Municipality of Gjirokastër: Communes of Lunxheri and Dropulli i Sipërm.
Sh.A. U Gjirokastër(Rural part)	Commune of Lunxhëri (partly), Qender Libohove, Lazarat, Cepo, Antigone, Odrie, Picar, Zagori, Dropull i Sipërm, Dropull i Poshtëm, Deshnice.
Sh.A. UK Tepelene	Municipality of Tepelene.
Sh.A. UK Përmet	Municipality of Permet, Këlcyrë; Commune: Petran, Piskove, Carcove.
Not included in water company	Commune: Dropulli i siperm, Dishnice, Pogon, Piskove, Carshove, bashkia Kelcyre

Korçë

Sh.A. UK Korçë (Region)	Municipality of Korçë
Sh.A. U Korça (Rural part)	Municipality of Maliq; Communes of: Drenove, Voskop, Qendër Bulgarec, Pojan, Proger, Vreshtas, Libonik, Voskopojë, Hociisht
Sh.A. U Bilisht	Municipality of Bilisht.
Sh.A. UK Pogradec	Municipality of Pogradec, Commune of Buçimas.
Sh.A. UK Erseke	Municipality of Erseke.
Not included in water company	Commune: Voskopoje, Hociisht, Qender Bilisht, Cerrave, Dardhas, Hudenisht, Mollas, Mollaj, bashkia Leskovik

Kukes

Sh.A. UK Kukës	Municipality of Kukes; Communes of Shtiçen, Bicaj, Kolsh, Shishtavec.
Sh.A. U Has	Municipality of Krumë; Communes of: Fajza, Gjinaj.
Sh.A. U Tropojë	Municipality of Bajram Curri; Communes of : Margegaj, Tropojë, Bujan, Llugaj, Fierze, Bytyc.
Not included in water company	Komuna Kolsh, Shishtavec

Lezhe

Sh.A. UK Lezhe	Municipality of Lezhe; Communes of: Shëngjin, Balldren, Shën Koll, Blinisht, Zejmen, Kolsh, Dajç, Kallmet.
Sh.A. UK Kurbin	Municipalities of: Laç, Mamurras, Milot.
Sh.A. UK Mirdite	Municipality of Rreshen; Communes of Selite and Orosh.
Not included in water company	Commune: Shenkoll, Blinisht, Zejmen, Kolsh, Dajç, Kallmet

Shkoder

Sh.A. UK Shkoder(Region)	Municipality of Shkodër.
Sh.A. U Shkodër (Rural part)	Commune of Bërdicë, Velipojë, Hajmel, Gur i Zi, Ana e Malit, Shale, Rrethina, Riollit, Bushat, Barbullush.
Sh.A. UK M. Madhe	Municipality of Koplík; Communes of: Shkrel, Qendër Koplík, Kastrat, Kelmend, Grumeira, Shiroke.

Sh.A. UK Puke	Municipality of Puke; Communes of: Rrape, Qafe Mali, Gjegjan, Blerim, Qelez, Fierze, Qerret, Iballe.
Sh.A. U F. Arrëz	Municipality of Fushe Arez.
Not included in water company	Commune: Rioll, Bushat, Barbullush, Shiroke

Tirane

Sh.A. UK Tirane	Municipalities of Tirane, Kamez, Vore; Communes of Berzhite, Shengjergj, Preze, Petrelë, Dajt, Baldushk, Paskuqan, Zall Herr, Kashar, Farke, Krrabë, Bërxull, Vaqarr, Pezë, Ndroq.
Sh.A. UK Kavajë	Municipality of Kavajë; Communes of: Synej, Golem, Helmes, Lekaj, Luz I Vogël, Kryevish
Sh.A. UK Rrogozhine	Municipality of Rrogozhine; Communes of Gose and Sinaballaj.
Not included in water company	Commune: Peze, Ndroq

Vlore

Sh.A. U Vlore	Municipalities of Vlore and Himare; Communes of: Shushice, Armen, Qender, Kote, Vllahine, Brataj.
Sh.A. UK Sarande	Municipality of Sarande; Communes of: Dhiver, Aliko, Mesopotam, Finiq, Ksamil, Livadhja
Water Supply System of Novosele	Commune of Novosele.
Not included in water company	Commune: Kote, Vllahine, Brataj, Ksamil, Livadhja

Master plan for waste water collection and treatment in Greater Tirana [JICA Report]

The plan envisages the completion of 2 WWTPs by 2022:

- Kashar WWTP for 830,320 persons (service area = 6090 ha), effluent discharge into nearby river
- Bërxulle WWTP for 169,680 persons (service area = 3030 ha), effluent discharge into Tirana river

It is planned to improve the existing sewer systems, to construct additional sewer pipes with a length of 183 km. and to construct 2 pumping stations:

- Kashar PS with a capacity of 213,500 m³/d
- Kamza PS with a capacity of 50,700 m³/d

Wastewater treatment process in both plants: screening, grit removal, primary sedimentation, trickling filter, secondary sedimentation, chlorination

Sludge treatment process in both plants: thickener, anaerobic digestion, gas holder, dewatering by belt filter press and sludge drying beds

The plan is executed in 3 stages:

Item	Stage 1 (2013)	Stage 2	Stage 3 (2022)
Service population	342,500 (in Lana river basin section)	830,320	169,680
Sewer construction (km)	29.4	79.6	74
Trunk sewer construction (km)	4.4	10.4	5.9
Pumping station		Kashar PS	Kamza PS

construction			
WWTP construction	Kashar WWTP	Kashar WWTP	Berxulle WWTP
	Secondary treatment + sludge treatment	Extension of Stage 1	Secondary treatment + sludge treatment
Capacity (max. daily flow)	95900 m3/d	161500 m3/d extension	52600 m3/d
Costs in million Lek			
1. Construction costs:			
Trunk sewer	1673	2187	480
Sewers	376	1644	1400
Kashar PS		549	
Kashar WWTP	3818	4918	
Kamza PS			345
Berxulle WWTP			2367
TOTAL (1)	5867	9298	4592
2. Other costs:			
Land acquisition	3068	1550	
Administrative expenses	293	465	230
Engineering	587	930	459
Physical contingencies	587	930	459
Capacity building	147	144	36
TOTAL (2)	4682	4019	1184
TOTAL PROJECT COSTS	10549	13317	5776
O&M costs (Million Lek/yr)	104	270	367

The overall total project costs amount to 29,642 million Lek (€1 = 129.463 Lek, on 1 November 2005).

ANNEX IV: Proposed agglomerations

The following tables list the selected agglomerations, which are presumed to be eligible for installation of wastewater collection and treatment systems in accordance with the requirements of the Urban Waste Water Treatment Directive. The selection of these agglomerations took place on the basis of the following assumptions:

1. River basin districts

The territory of Albania covers 6 river basin districts, respectively:

1. Semani river basin district
2. Drin-Shkoder-Buna river basin district
3. Mati river basin district
4. Ishmi and Erzeni river basin district
5. Shkumbini river basin district
6. Vjosa river basin district

Some parts of Albania do not belong to these river basins since they drain directly into the sea or into lakes. For water management purposes it is recommended that such parts are incorporated into the river basin districts. In this respect it is proposed that the coastal and lakeshore districts are incorporated into the river basin districts, as follows:

- Malesi e Madhe and Shkodra districts are incorporated into the Drin river basin district.
- Lezha and Kurbin districts are incorporated into the Mati river basin district.
- Durres and Kavaje districts are incorporated into the Ishmi and Erzeni river basin district.
- Lushnja, Fier, Pogradec, Devoll and Korçe districts are incorporated into the Semani river basin district.
- Vlora, Saranda and Delvine districts are incorporated into the Vjosa river basin district.

2. Identification of agglomerations

Eligible agglomerations have been identified, mainly, on the basis of population data from the Census 2001 Report and actual data that were provided by some municipalities and communes. The Census 2001 Report provides data on the population of all municipalities and communes, and of the settlements that are part of the communes.

In the description of the agglomerations also data from the Ministry of Public Works, Transportation and Telecommunication (General Directorate of Water Supply and Waste Water) on the 55 Water Enterprises have been included. These data mainly concern recent population data and data on water supply and sewerage services levels.

The preliminary selection of the agglomerations has been made on the following basis:

- All settlements with a population of 2000 or more require waste water collection and treatment systems. At this stage it is presumed that in general a municipality or a commune can be served by one central waste water treatment plant, to which the individual settlements are connected through pipelines.
- In communes without settlements of more than 2000 inhabitants it may be possible that nearby urbanised settlements are combined into agglomerations with more than 2000 inhabitants. Such agglomerations also require waste water collection and treatment systems according to the UWWT Directive. For this reason all communes with a settlement of over 1000 inhabitants also have been

identified as potentially eligible under the UWWT Directive. More detailed studies are required for final selection of such agglomerations.

- In selection of the agglomerations municipalities and communes may be combined into one agglomeration, where it seems feasible to treat all waste water from the agglomeration in one central waste water treatment plant. Centralised waste water treatment may be feasible if:
 - the distance of the settlement to the central WWTP is relatively short,
 - the settlement and the WWTP are located in the same drainage area,
 - the topography is suitable for connection of the settlement to the WWTP.

The selection of the agglomerations was also made on the basis of topographical data. The population numbers of the agglomeration have been estimated on the basis of the Census 2001 Report and on actual population data, if available. The estimated waste loads (as number of person equivalents) are equivalent to the population number. For the larger agglomerations (> 25000 inhabitants) the estimated waste load was calculated as the sum of the population number and 20% of the population number, accounting for industrial and institutional waste water loads.

The following tables describe the preliminarily selected agglomerations in the six river basin districts. The tables list all settlements with a population number of 1000 or more. The names of the municipalities and communes are printed in bold, as well as their total population number. The tables also show data that were obtained through a survey that was carried out as part of the project. For the municipalities and communes the total population figure is given, including all settlements in the municipality or commune. For the settlements the population number of the particular settlement is given.

Semani River Basin District

Agglomeration/ Settlements	District	Population		Water supply (No. or %)	Wastewater management		
		Census 2001	Actual		Sewerage	WWTP	Ongoing vestme x
1. Berat Berat Uznove	Berat	44040 40072 3968	71967 64204	65721 60721	62057 60721		x
2. Kutalli Kutalli Drenovice Rerez-Kumarak Samatice Gorican-Clirim Poshnje Poshnje Banaj	Berat Berat	11755 1479 2682 1170 1656 1317 8649 1933 1088					
3. Lumas Lumas	Berat	6196 1369	6200	71%			
4. Otlak Otlak Dyshnik Lapardha Lapardha e Siperme Morave	Berat	12288 685 1826 2304 1975 2503					
5. Velabisht Velabisht Blice Duhanas Veterik Starove	Berat	10981 1530 1391 1479 1013 1489	11474	9%			x
6. Vertop Vertop Mbrakull	Berat	7402 369 1480					
7. Cukalat Cukalat Allambrez Donofroze	Berat	4057 701 1137 1014					
8. Kuçove Kocove Ure Vajgurore Ure Vajgurore Pashalli Kozare Kozare Gege Havaleas Perondi Perondi Goraj Majgjata Rreth Tapi Tapi Polovine	Kuçove Berat Kuçove Kuçove	18038 18038 9181 5500 1227 6609 612 1419 1745 10691 2257 1297 1817 1479 1999 1329	46067 30197 14205 8203 8029	36091 27703 9195 4582 100%	24339 23017 0 0 part		
9. Corovode Corovode	Skrapar	6755 6634	6102 5905	4133 3965	0 0		
10. Polican Polican	Skrapar	6623 6623	10200 9200	10200 9200	0 0		
11. Grekan Grekan Deshiran	Elbasan	4363 1089 1979					
12. Kajan Kajan	Elbasan	5912 1092					
13. Mollas Dasar Linas Selite	Elbasan	7529 1307 1269 1455	7452	30%			x
14. Kurjan Ngjeqar	Fier	5201 1531	4800				
15. Libofshe Mollas Ndermenas Rreth-Libofshe Vanaj	Fier	8333 1335 1006 1500 1104					
16. Fier	Fier	56164	127087	123537	71125		

Fier		56164	81750	81500	69825		
Patos	Fier	21812	34754	16705	0		
Patos		14518	23470	12459	0		
Dukas		3229					
Lengas		1068					
Dermenas	Fier	10048					
Dermenas		1538					
Baltez		1001					
Darzeze e Re		1171					
Pojan		1228					
Radostine		1555					
Mbrostar	Fier	8521					
Mbrostar-Ura		2542					
Kallm I Madh		1360					
Kallm I Vogel		1069					
Petove		1630					
Vajkan		1030					
Portez	Fier	8711	11197	10%			
Portez		2511					
Kraps		1952					
Patos Fshat		1555					
Zharrez	Fier	6754					
Zharrez		1810					
Qender Fier	Fier	8659	8330	100%			
Clirim		2012					
Zhupan		1685					
17. Roskovec	Fier	5939	8600	75%			x
Roskovec		5484					
Strum	Fier	7923	7810	90%			x
Strum		2427					
Arapaj		1120					
Suk I Poshtem		1621					
Suk I Siperme		1431					
Velmisht		1324					
Kuman	Fier	7319	7800	70%			x
Kuman		1847					
Luar		1514					
Marinez		2085					
Vidhisht		1873					
18. Topoje	Fier	5494	4000				
Topoje		1160					
19. Lushnje	Lushnje	37860	63000	41000	30000		x
Lushnje	2 water cos.	32572	55000	38000	30000		
Karburnare e Poshtem		3879					
Saver		1409					
Golem	Lushnje	6191		80%			x
Golem I Madh		1052					
Plug		2676					
20. Divjake	Lushnje	10916	13327	13327	0		x
Divjake		5764	0	0	0		
Mize		1391					
21. Allkaj	Lushnje	5492					
Allkaj		574					
Toshkez		1397					
22. Bubullime	Lushnje	6515					
Bubullime		1764					
Imsht		1482					
23. Dushk	Lushnje	9111	11117	60%			x
Dishk I Madh		2048					
Dushk Peqin		1843					
Gramsh		1775					
24. Fier Shegan	Lushnje	8327					
Fier Shegan		1047					
Barbullinje		1334					
25. Grabian	Lushnje	4862	6700	35%	100%		
Grabian		3809					
26. Gradishte	Lushnje	8939	10850	60%			
Gradishte		1077					
Kemishtaj		1185					
Mertish		1493					
Spolte		1050					
27. Hysgjokaj	Lushnje	3142	3600				
Hysgjokaj		1419					
28. Karburnare	Lushnje	5356					
Karburnare e Siperme		1186					

29. Kolonje Kolonje	Lushnje	7099 2160					
30. Krutje Krutje e Poshtme Krutje e Siperme Ngurrez e Madhe	Lushnje	9000 1440 1483 1285					
31. Remas Remas Kryekuq	Lushnje	5712 695 1151					
32. Ballsh Ballsh Aranitas Aranitas Panahor Q. Mallakaster Drenove Visoke	Mallakaster Mallakaster Mallakaster	9154 9154 4530 1428 1295 8776 1578 1160	29175 12041	100% 18786 10541	? 10499 10499		x
33. Korce Korce Qender Bulgarec Bulgarec Barc Belorta Dishnice Drenove Drenove Mborje	Korce (2 water cos.) Korce Korce	55017 55017 10322 1795 1066 1036 1375 5743 851 1887	125013 89375 11000	86610 69412 80%	62432 62432	2 stage under construc	x
34. Maliq Maliq Libonik Libonik Drithas Vashtemi Vlocisht	Korce Korce	5655 3894 11212 2028 2555 2064 1975	8100 11500	70%			
35. Liqenas Liqenas	Korce	4152 1030					
36. Mollaj Mollaj Kamenice	Korce	3863 1495 1294					
37. Pirg Pirg Sovjan	Korce	8639 1984 2020	9952	83%			
38. Pojan Pojan Zvezde	Korce	13737 3612 1847	15000	100%			x
39. Voskop Voskop	Korce	4840 1588					
40. Vreshtas Vreshtas Podgorie Sheqeras	Korce	8578 1676 3724 2010	10500	85%			x
41. Leskovik Leskovik	Kolonje	2848 1991	2200	100%			x
42. Erseke Erseke	Kolonje	5499 5499	5900 5900	5900 5900	5850 5850		x
43. Bilisht Bilisht Bitincke Tren	Devoll	14177 6729 2087 1305	9708 9708	6560 6560	0 0		
44. Miras Miras Menkulas	Devoll	9367 2041 1059					
45. Hocsisht Hocist Baban	Devoll	5869 1394 1405					
46. Proger Proger Cangonj Vranisht	Devoll	5228 830 1086 1270	5280	80%			
47. Pogradec Pogradec Bucimas Bucimas	Pogradec Pogradec	23762 23762 13322 3160	55004 39849 18000	55004 39850	37754 37754	in operation	

Geshtenjas		2482					
Gurras		1435					
Remenj		2109					
Verdove		3115					
Udenisht	Pogradec	6062		55%			x
Udenisht		1911					
Lin		1054					
Memelisht		2024					
48. Cerrave	Pogradec	8801					
Cerrave		1611					
Blace		1208					
Leshnice		1616					
Pretushe		1242					
49. Dardhas	Pogradec	3118	3536				
Dardhas		1020					
Stropcke		1027					

Drin-Shkoder-Buna Basin District

Agglomeration/ Settlement	District	Population		Water supply (no. or %)	Wastewater management		
		Census 2001	Actual		Sewerage	WWTP	Ongoing investment
1. Peshkopi Peshkopi	Diber	14017	30000	30000	0		x
Tomin Tomin	Diber	10238	13000	13000	0		
Dohoshiht		565	9500	80%	part	primary	
Ushtelenica		1415					
Zdojan		1112					
		1497					
2. Arras Arras	Diber	5168	5180	33%			
Cidhen		531					
Fushe Cidhen Fushe Cidhen	Diber	4203					
Bllice		1005					
		1582					
		1521					
3. Fushe Muhur Fushe Muhur	Diber	4051					
Muhurri		892					
		1055					
4. Kastriot Kastriot	Diber	8520		80%			x
Kishavec		297					
Sohodoll		1020					
		1492					
5. Luzni Katund I Ri	Diber	3801					
		1233					
6. Maqellare Maqellare	Diber	12493					
Kllobcisht		1132					
Pocest		1063					
		1310					
7. Sllove Sllove	Diber	4448					
Shumbat		469					
		1083					
8. Bulqize Bulqize	Bulqize	10454	15518	12257	0		
Vajkal		8780	9631	9631	0		
		1674					
9. Gjorice Gjorice-Eperme	Bulqize	5335					
Gjorice-Poshtme		1957					
		1344					
10. Ostren Ostren I Madh	Bulqize	4855					
		1081					
11. Shupenze Shupenze	Bulqize	6875					
Homesh		604					
Okshatine		1386					
		1085					
12. Zerqan Zerqan	Bulqize	6168					
Valikardhe		577					
		1021					
13. Fushe Bulqize Fushe Bulqize	Bulqize	4156					
Dushe		1443					
		1189					
14. Kukes Kukes	Kukes	17157	40000	40000	16666		x
Shtiqen Shtiqen	Kukes	3777	25000	25000	16666		x
		1690	4200	90%			
15. Bicaj Bicaj	Kukes	7022	7300	100%			x
Nange		1573					
		1530					
16. Malzi Kalimash	Kukes	5017					
		1023					
17. Terthore Breglume	Kukes	4056					
		1162					
18. Shishtavec Shishtavec	Kukes	5871					
Novosej		1276					
		1543					
19. Topojan Topojan	Kukes	3561					
Brekije		1052					
		1161					
20. Krume Krume	Has	6378	5600	5000	0		x
		3215	3600	3000	0		
21. Golaj Golaj	Has	7501					
		1498					

Nikoliq Vlahen		1081 1209					
22. Fajze Fajze Vranisht	Has	4132 599 1556	4201				
23. Bajram Curri Bajram Curri	Tropoje	6546 6546	12306 9141	12302 9138	0 0		x
24. Shkoder Shkoder	Shkoder	83274 82131	135607 92500	93508 85000	65000 65000	Plan	
25. Vau Dejes Vau Dejes Mjede	Shkoder	9430 3667 1454	12438 5490	3110 3110	0 0		
26. Bushat Bushat Kosmac Melgush Rranxe Stajke	Shkoder	13369 1678 1893 1819 2036 2178	19000	26%			x
27. Ana Malit Oblike e Madhe	Shkoder	4815 2327					
28. Berdice Berdice e Madhe Berdice e Siperme Trush	Shkoder	7428 1306 1230 2657	9205	40%			x
29. Dajc Dajc	Shkoder	5603 1191	8693	20%			
30. Gur I Zi Gur I Zi Renc Vukatan	Shkoder	9597 2307 1084 1002	12000				x
31. Hajmel Hajmel Nenshat	Shkoder	5418 1980 1509					
32. Postirbe Boks Dragoc Drishte Kullaj	Shkoder	8922 1639 1413 1361 1067	11400	65%			
33. Rrethinat Bleran Dobrac Golem Grude e Re Hot I Ri Shtoi I Ri Shtoi I Veter	Shkoder	15337 2292 2125 1703 2508 1525 1641 1354					
34. Velipoje Velipoje	Shkoder	5537 1288	8683	96%		Plan	
35. Vig (Mnele) Vig Mnele e Madhe	Shkoder	3146 1082 1239					
36. Barbullush Barbullush	Shkoder	3816 3021					
37. Puke Puke Puke (Fshat)	Puke	4579 3251 1128	7368 4368	2772 2147	1562 1500		x
38. Fushe Arrez Fushe Arrez	Puke	4090 2780	5419 4503	1766 1766	1666 1666		x
39. Qelez Qelez	Puke	2810 1173					
40. Koplik Koplik Qender Koplik Koplik I Siperme	Malesi e Madhe Malesi e Madhe	3126 3126 5551 1291	52000 40000	33850 23350	0 0		x
41. Gruemire Gruemire Boic I Madh Demiraj	Malesi e Madhe	9796 582 1231 1255					
42. Kastrat Kastrat Hot	Malesi e Madhe	8460 575 1047	9000	40%			x

Mati River Basin District

Agglomeration/ Settlement	District	Population		Water supply (no. or %)	Wastewater management		
		Census 2001	Actual		Sewerage	WWTP	Ongoing investment
1. Burrel	Mat	12123	22260	22260	15162		x
Burrel		12123	18200	18200	15162		
2. Klos	Mat	10489	10504	42%			x
Klos		1330					
Bejne		1036					
Fullqet		1300					
3. Gurre	Mat	4373					
Gurre e Madhe		972					
Gurre e Vogel		1074					
4. Baz	Mat	3367	3420				
Baz		1087					
5. Lis	Mat	4984	5100	85%			x
Lis		1213					
6. Macukull	Mat	3453					
Macukull		1095					
7. Ulez	Mat	2064	21500	100%			
Ulez		495					
8. Martanesh	Bulqize	3546	3967	2737	2450		
Kraste		1207	2437	2437	2450		
9. Lezhe	Lezhe	14420	36225	27663	27663	under construction	
Lezhe		14420	34625	26063	26038		
10. Balldre	Lezhe	7203		30%			x
Balldren		705					
Balldren I Ri		1995					
Torovice		1973					
11. Blinisht	Lezhe	4238	6100	90%			x
Blinisht		844					
Troshan		1115					
12. Dajc	Lezhe	5183	6800				
Dajc		1357					
Gjader		1221					
13. Kallmet	Lezhe	5493					
Kallmet I Madh		2065					
Kallmet I Vogel		1041					
Merqi		1196					
Rraboshte		1191					
14. Kolsh	Lezhe	4943					
Kolsh		290					
Manati		1266					
Barbulloje e Re		1344					
15. Shengjin	Lezhe	6807					
Shengjin		2172					
Ishull Lezhe		2258					
Ishull Shengjin		2022					
16. Shenkoll	Lezhe	8894					
Shenkoll		2729					
Barbulloje		1342					
Gryk-Lume		1981					
Rile		1187					
Tale		1063					
17. Zejmen	Lezhe	6713	8800	60%			x
Zejmen		1250					
Pllane		1650					
Spiten		1298					
Tresh		1468					
18. Rreshen	Mirdite	11447	9089	6074	5261		x
Rreshen		5456	8376	5261	5261		
19. Rubik	Mirdite	6842	2973	1852	1722		
Rubik		2675	2719	1778	1445		
20. Fushe Kuqe	Kurbini	6129					
Fushe Kuqe		1253					
Gorre		1025					
Gurez		1653					
Adriatik		1450					
21. Lac	Kurbini	19424		100%			x
Lac		16174					
Lac (Fshat)	Kurbini	17676	3250				
Mamurras		5507					
Mamurras		5507					
Fushe-Mamurras		4223					

Gjormi		2878					
Shperdhet 1		1105					
Zheje		1816					
22. Milot	Kurbin	11163	13021	54%			x
Milot		1774					
Fushe-Milot		1791					
Mal-Bardhe		1470					
Mal-M.		1459					
Shullaze		1440					
23. Gjegjan	Puke	5814	5011	60%			x
Gjegjan		1015					
24. Qafe Mali	Puke	3762					
Qafe Mali		1028					
Kryezi		1218					

Ishmi and Erzeni River Basin District

Agglomeration/ Settlement	District	Population		Water supply (no. or %)	Wastewater management		
		Census 2001	Actual		Sewerage	WWTP	Ongoing investment
1. Durres	Durres	98792	357958	207336	142094	Under construction	
Durres		98792	222703	142317	142094		
Rashbull	Durres	17719					
Rashbull		1965					
Arapaj		4095					
Maliq Muco		3142					
Rromanat		1204					
Shenavlash		3768					
Shkallnur		2398					
2. Shijak	Durres	8097	12720	100%			x
Shijak		8097					
Xhafzotaj	Durres	9007					
Xhafzotaj		3423					
Koxhas		1085					
Rreth		1012					
Sallmonaj		1756					
Katund i Ri	Durres	10942	16700	100%			x
Katund i Ri		1543					
Sukth		2357					
Hamallaj		2100					
Kulle		1539					
Rrushkull		2293					
Sukht i Ri		4824					
Vadardhe		1476					
3. Manez	Durres	7587					
Manez		1752					
Rade		1191					
4. Gjepalaj	Durres	5041	7000	40%			
Gjepalaj		1101					
Hardhisht		1194					
5. Ishem	Durres	6745					
Kuraten		1260					
6. Maminas	Durres	4629					
Maminas		751					
Rubjeke		1227					
7. Kruje	Kruje	13075	15907	15664	10530		x
Kruje		12333	15448	15359	10530		
Fushe Kruje	Kruje	18441	22900	9385	8360		
Fushe Kruje (Qytet)		7039	11300	8375	8360		
Fushe Kruje (Fshat)		2781					
Arrameras		3460					
Halil		1037					
Larushk		1796					
Luz		1579					
8. Bubq	Kruje	6173					

Bubq		1034					
Budulle		1657					
9. Koder Thumane	Kruje	13051					
Koder Thumane		1706					
Borizane		3394					
Derven		1807					
Dukagjin I Ri		1148					
Gramez		1446					
Thumane		2055					
10. Nikel	Kruje	8929					
Nikel		1787					
Qereke		1707					
Tapize		1900					
11. Tirana	Tirana	341453	938350	846700	647500	design	x
Tirana		341453	700000	700000	647500		
Kamez	Tirana	44443	85830	32948	16805		x
Kamez		6104	31910	6658	6658		
Valias		4784					
Laknas		4769					
Zall Mener		1091					
Bathore		16892					
Frut-Kamez		10086					
Vore	Tirana	12558					
Vore		3591					
Gjokaj		1020					
Marikaj		2588					
Marqinet		2272					
Pasquqan	Tirana	21055	42000	30%	20%		x
Pasqukan		3978					
Babbru Qender		3313					
Pasqukan Fush		2994					
Koder-Kuqe		2738					
Fush Kercyk		1891					
Pasqukan Koder		2953					
Babbru Shpat		2242					
Berxull	Tirana	6736	10000	40%	30%		x
Berxull		2373					
Kashar	Tirana	17082					
Katund I Ri		2053					
Mezez		3994					
Yrshek		2185					
Yzberish		4672					
12. Berzhite	Tirana	5437					
Berzhite		897					
Ibe e Siperme		1088					
13. Dajt	Tirana	8486	12065	70%	20%		x
Linze		2069					
Priske e Madhe		1190					
14. Farke	Tirana	7100					

Farke e Madhe		2082					
Farke e Vogel		2338					
15. Ndroq	Tirana	7004					
Ndroq		1549					
16. Peze	Tirana	5059					
Peze e Madhe		847					
Peze e Vogel		734					
Peze-Helmes		1698					
17. Preze	Tirana	4521					
Preze		750					
Gjec Koder		1070					
18. Vaqarr	Tirana	7732					
Vaqarr		1520					
Lalm		1151					
Sharre		1162					
19. Zall Bastar	Tirana	5585					
Zall Bastar		966					
Bastar I Mesem		1462					
Vilez		1174					
20. Zall Herr	Tirana	7409					
Zall Herr		1388					
Cerkez Morine		2233					
Dritas		1270					
21. Krrabe	Tirana	2493	3080	80%			x
Krrabe		1433					
22. Kavaje	Kavaje	24776	92048	56988	20906	in operation	
Kavaje		24776	38317	29111	20906		
Golem	Kavaje	7912					
Golem		1437					
Karpen		1323					
Qerret		1445					
Synej	Kavaje	6645					
Synej		1827					
Bago		1387					
Rrakull		1314					
23. Kryevidh	Kavaje	6413					
Kryevidh		1193					
Zhabjak		1026					
24. Lekaj	Kavaje	7246					
Lekaj		1787					
Luz I Madh		2076					
25. Luz i Vogel	Kavaje	6603	7500				
Luz I Vogel		3105					
Vorrozen		2212					

Hotolisht		1350					
Dardhe		1411					
Xhyre		1561					
19. Lunik	Librazhd	4129	4000	40%			
Lunik		1098					
20. Orenje	Librazhd	6373	5300	30%			
Orenje		761					
Funarez		1275					
21. Polis	Librazhd	4515					
Polis		404					
Gurshpate		1152					
Mirake		1282					
22. Qender Librazhd	Librazhd	11575	11107	3%			
Babje		1540					
Dorez		1932					
Dragostunje		1746					
Gizavesh		1384					
Kuturman		1050					
Spathar		1178					
23. Qukes	Librazhd	10402		38%			
Fanje		1028					
Karkavec		1222					
Pishkash		1071					
Qukes Shkumbin		1711					
Skroske		1565					
24. Rajce	Librazhd	10116	10250	57%			
Rajce Fushe		3151					
Katjel		1823					
Kotodesh		1144					
Sutan		1887					
25. Terbuf	Lushnje	11983	15222	15%	100		
Terbuf		4693					
Cerme e Siperme		2314					
Cerme Proshke		1535					
Shenepremte		1297					
Cerme Shkumbin		1436					
26. Velcan	Pogradec	3989					
Velcan I Mokres		1252					
27. Gose	Kavaje	5258	8160	100%			x
Gose e Madhe		708					
Gose e Vogel		838					
Kercukaj		1672					
Vile Ballaj		1110					
28. Rogozhine	Kavaje	7071	21626	11978	3281		x
Rrogzhine (Qytet)		3373	11179	6064	2464		
Rrogzhine (Fshat)		3698					

Vjosa River Basin District

Agglomeration/ Settlement	District	Population		Water supply (% served)	Wastewater management		
		Census 2001	Actual		Sewerage	WWTP	Ongoing investments
1. Cakran Cakran Buzmadh Kreshpan Voribop Vreshtas Cakran I Ri	Fier	14799 1726 1417 1961 2233 1182 2180					
2. Frakull Frakull e Madhe Frakull e Vogel Peshtan Frakull e Madhe	Fier	8679 1589 969 2687 1589					
3. Levan Levan Ferras	Fier	11549 3916 1180					
4. Fratar Bejar Dames	Mallakaster	4593 1121 1480					
5. Hekal Hekal	Mallakaster	4412 2324	4735	80%			x
6. Kute Kute	Mallakaster	3356 1144					
7. Gjirokaster Gjirokaster Lazarat Lazarat	Gjirokaster 2 water cos. Gjirokaster	20601 20601 3155 2685	38444 34162	32749 28467	19150 19150		x
8. Libohove Libohove	Gjirokaster	2317 2317	4104 3720	3082 2781	563 563		
9. Dropull i Poshtem Dervican	Gjirokaster	7558 1933		100%			x
10. Dropull i Siperm Bodrishte Jorgucat	Gjirokaster	8525 1053 1195					
11. Tepelene Tepelene	Tepelene	6539 6539	18825 16200	9750 8500	0 0		
12. Memaliaj Memaliaj	Tepelene	4748 4748	5100	100%			
13. Permet Permet	Permet	7726 7726	11525 10875	11525 10875	0 0		
14. Kelcyre Kelcyre Kelcyre Fshat	Permet	3419 2134 1021					
15. Vlore Vlore Gender Vlore Babice e Madhe Kanine Narte Panaja	Vlore Vlore	77652 77652 10496 2752 1313 1013 1048	146670 136291	132526 124146	0 not in use 0	under construction	
16. Himare Himare	Vlore	3278 1390					
17. Orikum Orikum Dukat Fushe	Vlore	6676 2189 1878					
18. Selenice Selenice Armen Armen	Vlore Vlore	3949 3949 5707 1287	8300 8300	6725 6725	0 0		
19. Brataj Brataj Gjorm	Vlore	4901 772 1135					
20. Kote Kote	Vlore	5064 1045					
21. Novosele Novosele Bishan Fitore Trevellezher	Vlore	10640 1151 1790 1104 1596	19029	9002	0		
22. Shushice Shushice	Vlore	6212 1215	9080	100			

	Llakatund Risili		1106 1097				
23.	Vllahine Vllahine Kocul	Vlore	5887 795 1082				
24.	Sarande Sarande Gjashte	Sarande	15247 12536 1785	44201 38654	38790 34547	34205 33087	Under constructio
25.	Konispol Konispol	Sarande	2230 2017				
26.	Ksamil Ksamil	Sarande	1840 1840	7500	70		x
27.	Markat Markat Shales	Sarande	2713 457 1055				
28.	Delvine Delvine	Delvine	6421 4100	9600 9600	5700 5700	0 0	

ANNEX V: Cost estimates

V.1 Indicators for cost estimates

1. Wastewater treatment

The estimates of the investment costs have been based on preliminary design of wastewater treatment plants of different capacities. Subsequently the unit costs as € per p.e. were calculated, see Table 1 below. The wastewater treatment processes for conventional and advanced treatment are described in Annex V.2.

Table 1: Wastewater treatment plant investment costs (excl. design, construction supervision commissioning and contingencies)

Conventional treatment Capacity (p.e.)	Investment costs (€/p.e.)		
	Civil works	Mechanical-electrical	Total
2000 – 3000	290	328	618
3000 – 4000	257	281	538
4000 – 5000	222	229	451
5000 – 6000	202	198	400
6000 – 7000	189	185	374
7000 – 8000	180	173	353
8000 – 9000	178	159	337
9000 – 10000	176	149	325

Advanced treatment Capacity (p.e.)	Investment costs (€/p.e.)		
	Civil works	Mechanical-electrical	Total
10000 – 20000	176	154	330
20000 – 30000	138	104	242
30000 – 40000	124	83	207
40000 – 50000	119	76	195
50000 – 60000	107	65	172
60000 – 70000	105	62	167
70000 – 80000	100	57	157
80000 – 90000	97	53	150
90000 - 100000	95	51	146
> 100000	92	49	141

The annual costs for operation and maintenance of the wastewater treatment plants are given below:

Energy consumption:

Conventional treatment: $2.5W \times 24 \times 365/1000 \times 0.8 = 17.5 \text{ kW.h/p.e. per year} = € 1.75 \text{ per p.e. per year}$

Advanced treatment: $7.6 W \times 24 \times 365/1000 \times 0.8 = 53.2 \text{ kW.h/p.e. per year} = € 5.32 \text{ per p.e. per year}$

Chemicals consumption:

5 kg poly-electrolyte per tonne sludge dry solids (Costs: € 5 per kg poly-electrolyte)

Sludge production:

Conventional treatment: 46.1 g sludge per p.e./day

Chemicals use: $46.1 \times 0.005 \times 365 = 84 \text{ g per p.e./year} (= € 0.42)$

Advanced treatment: 58 g sludge per p.e./day

Chemicals use: $58 \times 0.005 \times 365 = 105 \text{ g per p.e./year} (= € 0.52)$

Sludge disposal costs: € 10 per tonne sludge dry solids

Conventional treatment: € 0.18 per p.e./year

Advanced treatment: € 0.21 per p.e./year

Staffing and monitoring costs: € 2.50 per p.e./year

2. Wastewater collection

The costs of wastewater collection systems have been estimated on the following basis:

Systems are only for collection and transportation of wastewater. Costs of conveyance of storm water are not considered.

Estimated average costs of waste water collection systems amount to € 559 per p.e. (of which 12% for electrical-mechanical equipment), including pipes, manholes, house connections, pumping stations and (pressure) pipes for wastewater transportation. The estimation has been based on the following assumptions:

- Population density: 53,3 p.e. per ha
- Persons per connection to the sewerage network: 4 p.e. per connection
- Connection costs: € 800 per connection
- Length of sewer pipe: 2.7 m per p.e.
- Costs of sewer pipe (average) incl. manholes € 107 per m
- Overall costs of sewerage network,
incl. manholes and house connections € 180,000 per km

The actual costs of sewerage works depend significantly on the local conditions, and may be higher or lower than the used figure of € 180,000 per km sewer network. Other uncertainties at this stage concern the costs of rehabilitation of existing sewerage systems, which have not been included in the investment costs.

Estimated costs of waste water transportation amount to € 85,000 per km pressure line and € 50,000 per pumping station.

The estimated operation and maintenance costs of wastewater collection and transportation networks are as follows:

- Power consumption: € 1.17 per inhabitant per year
- Staff € 3,35 per inhabitant per year
- Maintenance civil works: 0.5 % of investment costs per year
- Maintenance mechanical-electrical works: 2 % of investment costs per year

V.2 Wastewater treatment processes

1. Assumptions

The sewerage system is separated. Rainwater is conveyed separately. Consequently only wastewater flows into the wastewater treatment plant.

Peak flow (Q_p) = 2 x Average flow (Q_a)

Person Equivalent: 60 g BOD/d

12 g N/d

1.8 g P/d

120 l wastewater per day (Q_a)

2. WWTP Design parameters

For the preparation of cost estimates of the wastewater treatment plants of different sizes 2 types of wastewater treatment systems have been applied. For each system the investment costs for a number of different capacities have been calculated. Below the main design parameters for 2 different wastewater treatment systems are given, respectively

- Conventional activated sludge treatment
- Advanced activated sludge treatment.

Table 2: Main design parameters for two types of wastewater treatment plant

Plant component	Conventional activated sludge treatment (no nitrification)	Advanced activated sludge treatment - (nitrification, denitrification, P-removal)
Inlet chamber with grease removal	Velocity = 1 m/s	Id.
Screening	Coarse screen: 80 mm Fine screen: 5 mm Velocity: 0.8 m/s	Id.
Influent pumping station	Optional 10 l/h per p.e.	Id.
Grit removal	Not required	Id.
Primary sedimentation tank	Loading rate at $Q_p = 2.4 \text{ m}^3/\text{m}^2 \cdot \text{h}$ Surface area: $0.004 \text{ m}^2/\text{p.e.}$ Volume: $0.01 \text{ m}^3/\text{p.e.}$ Primary sludge production = 55 g/p.e./d = 1.8 l/p.e./d BOD removal = 18 g/p.e./d	
Anaerobic tank, P stripper and Selector (P release from sludge, sludge settleability)		Hydraulic retention time = 2.5 h at Q_p Mechanically mixed 3 compartments Volume: 25 l/p.e.
Aeration tank:		
Sludge loading rate	0.15 kg BOD/kg sludge/d	0.06 kg BOD/kg sludge/d
Sludge concentration	4 g/l dry solids	4 g/l dry solids
Oxygen requirement: BOD removal Sludge respiration Nitrification Total Correction driving force (x 10/8.5) Alpha factor (0.7) Total O ₂ requirement	1.65 g O ₂ /h 1.16 g O ₂ /h 2.81 g O ₂ /h 3.30 g O ₂ /h 4.72 g O ₂ /h 4.72 g O ₂ /h per p.e. = 2.5 W/p.e. = 20.8 W/m ³	2.4 g O ₂ /h 4.33 g O ₂ /h 2.23 g O ₂ /h (35% into surplus sludge) 8.96 g O ₂ /h 10.54 g O ₂ /h 15.05 g O ₂ /h 15.05 g O ₂ /h per p.e. = 7.6 W/p.e. = 63.3 W/m ³
Tank volume	70 l/p.e.	250 l/p.e. (Anoxic = 70 l; Aerated = 180 l)
Secondary sedimentation tank	Loading rate at $Q_p = 0.8 \text{ m}^3/\text{m}^2 \cdot \text{h}$ Surface area: $0.0125 \text{ m}^2/\text{p.e.}$ Volume: $0.03 \text{ m}^3/\text{p.e.}$	
Sludge pumping station	Primary + surplus sludge to thickener From sedimentation tank to aeration tank Thickened sludge to digester Digested sludge to dewatering	From sedimentation tank to selector Anoxic sludge to anaerobic tank Aerobic sludge to anoxic compartment Surplus sludge to thickener Thickened sludge to dewatering
Sludge growth	27.3 g/p.e./d (total sludge production = 82.3 g/p.e./d) 4.1 l/p.e./d	58 g/p.e./d = 7.25 l/p.e./d
Sludge thickener	Loading rate = $50 \text{ kg ds}/\text{m}^2 \cdot \text{d}$ Depth = 3 m Thickened sludge = 4 % ds Area = $0.00165 \text{ m}^2/\text{p.e.}$ Volume = $0.005 \text{ m}^3/\text{p.e.}$ Thick sludge = 2 l/p.e./d	Area = $0.00116 \text{ m}^2/\text{p.e.}$ Volume = $0.0035 \text{ m}^3/\text{p.e.}$ Thick sludge = 1.5 l/p.e./d
Anaerobic sludge digestion	Retention time = 20 d at $T = 35^\circ\text{C}$ Volume: $0.041 \text{ m}^3/\text{p.e./d}$	
Total (digested) sludge production	46.1 g/p.e./d (45 % organic) ($0.00115 \text{ m}^3/\text{p.e./d}$)	58 g/p.e./d (54 % organic) ($0.00145 \text{ m}^3/\text{p.e./d}$)
Sludge dewatering	Sludge drying beds: $t = 75 \text{ d}$ Filling depth = 30 cm $0.288 \text{ m}^2/\text{p.e./d}$	$0.362 \text{ m}^2/\text{p.e./d}$
Service building		
Site Works		
Electrical and control equipment		

V.3 Tables of estimated costs of sewage collection systems and wastewater treatment plants

Table 3: Estimated costs of system collection costs

Code	Agglomeration	Population	Existing sewerage	Sewerage needs	Investment costs			Operation and maintenance costs (€/year)
					Total	Civil works	M-E works	
					(€)	(€)	(€)	
		(Number of people)						
1001	Berat	52000	0	52000	29,068,000	25,579,840	3,488,160	432702
1002	Kutalli	8300	0	8300	4,639,700	4,082,936	556,764	69066
1003	Lumas	2000	0	2000	1,118,000	983,840	134,160	16642
1004	Otlak	8600	0	8600	4,807,400	4,230,512	576,888	71562
1005	Velabisht	7000	0	7000	3,913,000	3,443,440	469,560	58248
1006	Vertop	2000	0	2000	1,118,000	983,840	134,160	16642
1007	Cukalat	2500	0	2500	1,397,500	1,229,800	167,700	20803
1008	Kucove	45000	8000	37000	20,683,000	18,201,040	2,481,960	344044
1009	Corovode	6800	0	6800	3,801,200	3,345,056	456,144	56584
1010	Polican	6700	0	6700	3,745,300	3,295,864	449,436	55752
1011	Grekan	3200	0	3200	1,788,800	1,574,144	214,656	26628
1012	Kajan	2000	0	2000	1,118,000	983,840	134,160	16642
1013	Mollas	4000	0	4000	2,236,000	1,967,680	268,320	33285
1014	Kurjan	2000	0	2000	1,118,000	983,840	134,160	16642
1015	Libofshe	5000	0	5000	2,795,000	2,459,600	335,400	41606
1016	Fier	100000	80000	20000	11,180,000	9,838,400	1,341,600	528024
1017	Roskovec	21000	0	21000	11,739,000	10,330,320	1,408,680	174745
1018	Topoje	2000	0	2000	1,118,000	983,840	134,160	16642
1019	Lushnje	42000	0	42000	23,478,000	20,660,640	2,817,360	349490
1020	Divjake	7500	0	7500	4,192,500	3,689,400	503,100	62409
1021	Allkaj	2000	0	2000	1,118,000	983,840	134,160	16642
1022	Bubullime	3500	0	3500	1,956,500	1,721,720	234,780	29124
1023	Dushk	6000	0	6000	3,354,000	2,951,520	402,480	49927
1024	Fier Shegan	2500	0	2500	1,397,500	1,229,800	167,700	20803
1025	Grabian	4000	4000	0	0	0	0	18080
1026	Gradisht	5000	0	5000	2,795,000	2,459,600	335,400	41606
1027	Hysgjokaj	2000	0	2000	1,118,000	983,840	134,160	16642
1028	Karbunare	2000	0	2000	1,118,000	983,840	134,160	16642

1029	Kolonje	2500	0	2500	1,397,500	1,229,800	167,700	20803
1030	Krutje	4500	0	4500	2,515,500	2,213,640	301,860	37445
1031	Remas	2000	0	2000	1,118,000	983,840	134,160	16642
1032	Ballsh	15000	6500	8500	4,751,500	4,181,320	570,180	100110
1033	Korce	75000	48000	27000	15,093,000	13,281,840	1,811,160	441632
1034	Maliq	12500	0	12500	6,987,500	6,149,000	838,500	104015
1035	Liqenas	2000	0	2000	1,118,000	983,840	134,160	16642
1036	Mollaj	3000	0	3000	1,677,000	1,475,760	201,240	24964
1037	Pirg	4000	0	4000	2,236,000	1,967,680	268,320	33285
1038	Pojan	5600	0	5600	3,130,400	2,754,752	375,648	46599
1039	Voskop	2000	0	2000	1,118,000	983,840	134,160	16642
1040	Vreshtas	6500	0	6500	3,633,500	3,197,480	436,020	54088
1041	Leskovik	2000	0	2000	1,118,000	983,840	134,160	16642
1042	Erseke	5500	0	5500	3,074,500	2,705,560	368,940	45767
1043	Bilisht	10500	0	10500	5,869,500	5,165,160	704,340	87373
1044	Miras	3100	0	3100	1,732,900	1,524,952	207,948	25796
1045	Hocisht	2800	0	2800	1,565,200	1,377,376	187,824	23299
1046	Proger	2500	0	2500	1,397,500	1,229,800	167,700	20803
1047	Pogradec	50000	40000	10000	5,590,000	4,919,200	670,800	264012
1048	Cerrave	6000	0	6000	3,354,000	2,951,520	402,480	49927
1049	Dardhas	2200	0	2200	1,229,800	1,082,224	147,576	18307
2001	Pershkopi	19000	4500	14500	8,105,500	7,132,840	972,660	140997
2002	Arras	4200	0	4200	2,347,800	2,066,064	281,736	34949
2003	Fushe Muhur	2000	0	2000	1,118,000	983,840	134,160	16642
2004	Kastriot	2500	0	2500	1,397,500	1,229,800	167,700	20803
2005	Luzni	2000	0	2000	1,118,000	983,840	134,160	16642
2006	Maqellare	3500	0	3500	1,956,500	1,721,720	234,780	29124
2007	Silove	2000	0	2000	1,118,000	983,840	134,160	16642
2008	Bulqize	11000	0	11000	6,149,000	5,411,120	737,880	91533
2009	Gjorice	3500	0	3500	1,956,500	1,721,720	234,780	29124
2010	Ostren	2000	0	2000	1,118,000	983,840	134,160	16642
2011	Shupenze	3000	0	3000	1,677,000	1,475,760	201,240	24964
2012	Zerqan	2000	0	2000	1,118,000	983,840	134,160	16642
2013	Fushe Bulqize	2600	0	2600	1,453,400	1,278,992	174,408	21635
2014	Kukes	19000	0	19000	10,621,000	9,346,480	1,274,520	158103

2015	Bicaj	3200	0	3200	1,788,800	1,574,144	214,656	26628
2016	Malzi	2000	0	2000	1,118,000	983,840	134,160	16642
2017	Terthore	2000	0	2000	1,118,000	983,840	134,160	16642
2018	Shishtavec	3000	0	3000	1,677,000	1,475,760	201,240	24964
2019	Topojan	2500	0	2500	1,397,500	1,229,800	167,700	20803
2020	Krume	3300	0	3300	1,844,700	1,623,336	221,364	27460
2021	Golaj	3800	0	3800	2,124,200	1,869,296	254,904	31621
2022	Fajze	2000	0	2000	1,118,000	983,840	134,160	16642
2023	Bajram Curri	7000	0	7000	3,913,000	3,443,440	469,560	58248
2024	Shkoder	100000	0	100000	55,900,000	49,192,000	6,708,000	832120
2025	Vau Dejes	5200	0	5200	2,906,800	2,557,984	348,816	43270
2026	Bushat	9600	0	9600	5,366,400	4,722,432	643,968	79884
2027	Ana Malit	2500	0	2500	1,397,500	1,229,800	167,700	20803
2028	Berdice	5300	0	5300	2,962,700	2,607,176	355,524	44102
2029	Dajc	2000	0	2000	1,118,000	983,840	134,160	16642
2030	Gur i Zi	4400	0	4400	2,459,600	2,164,448	295,152	36613
2031	Hajmel	5600	0	5600	3,130,400	2,754,752	375,648	46599
2032	Postirbe	5500	0	5500	3,074,500	2,705,560	368,940	45767
2033	Rrethinat	14000	0	14000	7,826,000	6,886,880	939,120	116497
2034	Velipoje	2000	0	2000	1,118,000	983,840	134,160	16642
2035	Vig Mnele	2500	0	2500	1,397,500	1,229,800	167,700	20803
2036	Barbullush	3500	0	3500	1,956,500	1,721,720	234,780	29124
2037	Puke	4500	4000	500	279,500	245,960	33,540	22241
2038	Fushe Arrez	3000	0	3000	1,677,000	1,475,760	201,240	24964
2039	Qelez	2000	0	2000	1,118,000	983,840	134,160	16642
2040	Koplik	4500	3000	1500	838,500	737,880	100,620	26042
2041	Gruemire	3000	0	3000	1,677,000	1,475,760	201,240	24964
2042	Kastrat	2000	0	2000	1,118,000	983,840	134,160	16642
3001	Burrel	12500	0	12500	6,987,500	6,149,000	838,500	104015
3002	Klos	3600	0	3600	2,012,400	1,770,912	241,488	29956
3003	Gurre	2200	0	2200	1,229,800	1,082,224	147,576	18307
3004	Baz	2000	0	2000	1,118,000	983,840	134,160	16642
3005	Lis	2000	0	2000	1,118,000	983,840	134,160	16642
3006	Macukull	2000	0	2000	1,118,000	983,840	134,160	16642
3007	Ulez	22000	0	22000	12,298,000	10,822,240	1,475,760	183066

3008	Martanesh	2000	0	2000	1,118,000	983,840	134,160	16642
3009	Lezhe	16000	14000	2000	1,118,000	983,840	134,160	79922
3010	Balldre	4800	0	4800	2,683,200	2,361,216	321,984	39942
3011	Blinisht	2000	0	2000	1,118,000	983,840	134,160	16642
3012	Dajc	2500	0	2500	1,397,500	1,229,800	167,700	20803
3013	Kallmet	5500	0	5500	3,074,500	2,705,560	368,940	45767
3014	Kolsh	2600	0	2600	1,453,400	1,278,992	174,408	21635
3015	Shengjin	7000	0	7000	3,913,000	3,443,440	469,560	58248
3016	Shenkoll	8400	0	8400	4,695,600	4,132,128	563,472	69898
3017	Zejmen	5700	0	5700	3,186,300	2,803,944	382,356	47431
3018	Rreshen	5500	0	5500	3,074,500	2,705,560	368,940	45767
3019	Rubik	3000	0	3000	1,677,000	1,475,760	201,240	24964
3020	Fushe Kuqe	5400	0	5400	3,018,600	2,656,368	362,232	44934
3021	Lac	44000	0	44000	24,596,000	21,644,480	2,951,520	366133
3022	Milot	8000	0	8000	4,472,000	3,935,360	536,640	66570
3023	Gjegjan	2000	0	2000	1,118,000	983,840	134,160	16642
3024	Qafe Mali	2500	0	2500	1,397,500	1,229,800	167,700	20803
4001	Durres	140000	130000	10000	5,590,000	4,919,200	670,800	670812
4002	Shijak	38000	0	38000	21,242,000	18,692,960	2,549,040	316206
4003	Manez	3800	0	3800	2,124,200	1,869,296	254,904	31621
4004	Gjepalaj	2500	0	2500	1,397,500	1,229,800	167,700	20803
4005	Ishem	2000	0	2000	1,118,000	983,840	134,160	16642
4006	Maminas	2000	0	2000	1,118,000	983,840	134,160	16642
4007	Kruje	36000	5000	31000	17,329,000	15,249,520	2,079,480	280557
4008	Bubq	3000	0	3000	1,677,000	1,475,760	201,240	24964
4009	Koder Thuman	13000	0	13000	7,267,000	6,394,960	872,040	108176
4010	Nikel	5500	0	5500	3,074,500	2,705,560	368,940	45767
4011	Tirana	1000000	700000	300000	167,700,000	147,576,000	20,124,000	5660360
4012	Berzhite	2000	0	2000	1,118,000	983,840	134,160	16642
4013	Dajt	3300	2000	1300	726,700	639,496	87,204	19858
4014	Farke	4500	0	4500	2,515,500	2,213,640	301,860	37445
4015	Ndroq	2000	0	2000	1,118,000	983,840	134,160	16642
4016	Peze	3200	0	3200	1,788,800	1,574,144	214,656	26628
4017	Preze	2000	0	2000	1,118,000	983,840	134,160	16642
4018	Vaqarr	4000	0	4000	2,236,000	1,967,680	268,320	33285

4019	Zall Bastar	3700	0	3700	2,068,300	1,820,104	248,196	30788
4020	Zall Herr	4000	0	4000	2,236,000	1,967,680	268,320	33285
4021	Krrabe	2000	0	2000	1,118,000	983,840	134,160	16642
4022	Kavaje	40000	0	40000	22,360,000	19,676,800	2,683,200	332848
4023	Kryevindh	2400	0	2400	1,341,600	1,180,608	160,992	19971
4024	Lekaj	4000	0	4000	2,236,000	1,967,680	268,320	33285
4025	Luz i Vogel	5400	0	5400	3,018,600	2,656,368	362,232	44934
5001	Elbasan	120000	0	120000	67,080,000	59,030,400	8,049,600	998544
5002	Cerrik	23000	0	23000	12,857,000	11,314,160	1,542,840	191388
5003	Belsh	5000	0	5000	2,795,000	2,459,600	335,400	41606
5004	Gjergjan	5000	0	5000	2,795,000	2,459,600	335,400	41606
5005	Labinot Mal	2500	0	2500	1,397,500	1,229,800	167,700	20803
5006	Labinot Fushe	4000	0	4000	2,236,000	1,967,680	268,320	33285
5007	Paper	2800	0	2800	1,565,200	1,377,376	187,824	23299
5008	Shales	5200	0	5200	2,906,800	2,557,984	348,816	43270
5009	Shushice	4200	0	4200	2,347,800	2,066,064	281,736	34949
5010	Peqin	9100	0	9100	5,086,900	4,476,472	610,428	75723
5011	Gjocaj	2200	0	2200	1,229,800	1,082,224	147,576	18307
5012	Pajove	2000	0	2000	1,118,000	983,840	134,160	16642
5013	Sheze	2000	0	2000	1,118,000	983,840	134,160	16642
5014	Gramsh	15000	0	15000	8,385,000	7,378,800	1,006,200	124818
5015	Kukur	2000	0	2000	1,118,000	983,840	134,160	16642
5016	Librazhd	7200	0	7200	4,024,800	3,541,824	482,976	59913
5017	Prenjas	6500	0	6500	3,633,500	3,197,480	436,020	54088
5018	Hotolisht	4500	0	4500	2,515,500	2,213,640	301,860	37445
5019	Lunik	2000	0	2000	1,118,000	983,840	134,160	16642
5020	Orenje	2000	0	2000	1,118,000	983,840	134,160	16642
5021	Polis	2500	0	2500	1,397,500	1,229,800	167,700	20803
5022	Qender Li- brazhd	9000	0	9000	5,031,000	4,427,280	603,720	74891
5023	Qukes	7000	0	7000	3,913,000	3,443,440	469,560	58248
5024	Rrajce	8000	0	8000	4,472,000	3,935,360	536,640	66570
5025	Terbuf	12000	12000	0	0	0	0	54240
5026	Velcan	2000	0	2000	1,118,000	983,840	134,160	16642
5027	Gose	4500	0	4500	2,515,500	2,213,640	301,860	37445
5028	Rrogozhine	7500	0	7500	4,192,500	3,689,400	503,100	62409

6001	Cakran	11000	0	11000	6,149,000	5,411,120	737,880	91533
6002	Frakull	7000	0	7000	3,913,000	3,443,440	469,560	58248
6003	Levan	5200	0	5200	2,906,800	2,557,984	348,816	43270
6004	Fratar	3600	0	3600	2,012,400	1,770,912	241,488	29956
6005	Hekal	2400	0	2400	1,341,600	1,180,608	160,992	19971
6006	Kute	2000	0	2000	1,118,000	983,840	134,160	16642
6007	Gjirokaster	48000	0	48000	26,832,000	23,612,160	3,219,840	399418
6008	Libohove	2800	1500	1300	726,700	639,496	87,204	17598
6009	Dropull i Poshtem	2000	0	2000	1,118,000	983,840	134,160	16642
6010	Dropull i Siperm	2500	0	2500	1,397,500	1,229,800	167,700	20803
6011	Tepelene	7000	0	7000	3,913,000	3,443,440	469,560	58248
6012	Memaliaj	5000	0	5000	2,795,000	2,459,600	335,400	41606
6013	Permet	7700	0	7700	4,304,300	3,787,784	516,516	64073
6014	Kelcyre	3400	0	3400	1,900,600	1,672,528	228,072	28292
6015	Vlore	125000	100000	25000	13,975,000	12,298,000	1,677,000	660030
6016	Himare	2000	0	2000	1,118,000	983,840	134,160	16642
6017	Orikum	4000	0	4000	2,236,000	1,967,680	268,320	33285
6018	Selenice	5300	0	5300	2,962,700	2,607,176	355,524	44102
6019	Brataj	2000	0	2000	1,118,000	983,840	134,160	16642
6020	Kote	2000	0	2000	1,118,000	983,840	134,160	16642
6021	Novosele	5500	0	5500	3,074,500	2,705,560	368,940	45767
6022	Shushice	3400	0	3400	1,900,600	1,672,528	228,072	28292
6023	Vllahine	2000	0	2000	1,118,000	983,840	134,160	16642
6024	Sarande	15000	12000	3000	1,677,000	1,475,760	201,240	79204
6025	Konispol	2200	0	2200	1,229,800	1,082,224	147,576	18307
6026	Ksamil	2000	0	2000	1,118,000	983,840	134,160	16642
6027	Markat	2000	0	2000	1,118,000	983,840	134,160	16642
6028	Delvine	4500	0	4500	2,515,500	2,213,640	301,860	37445
Total					981,715,800			19,922,431
Contingencies			30%		294,514,740			
Design etc.			20%		196,343,160			
Total investment costs					1,472,573,700			

Table 4: Estimated costs of wastewater treatment plants

Code	Agglomeration	Waste water load (PE)	Type	Wastewater treatment plant										O&M total €/year
				Costs			Maintenance		Operational costs (€/year)					
				Unit €/PE	Total	M/E	Civil	M/E	Civil	Power use	Chemicals use	Sludge disposal	Staff and monitoring	
1001	Berat	62000	AT	167	10,354,000	3844000	6510000	76880	32550	230888	32240	13020	155000	540578
1002	Kutalli	8300	CT	337	2,797,100	1319700	1477400	26394	7387	10168	3486	1494	20750	69679
1003	Lumas	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1004	Otlak	8600	CT	337	2,898,200	1367400	1530800	27348	7654	10535	3612	1548	21500	72197
1005	Velabisht	7000	CT	353	2,471,000	1386000	1085000	27720	5425	8575	2940	1260	17500	63420
1006	Vertop	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1007	Cukalat	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
1008	Kucove	54000	AT	172	9,288,000	3510000	5778000	70200	28890	201096	28080	11340	135000	474606
1009	Corovode	6800	CT	374	2,543,200	1258000	1285200	25160	6426	8330	2856	1224	17000	60996
1010	Polican	6700	CT	374	2,505,800	1239500	1266300	24790	6332	8208	2814	1206	16750	60099
1011	Grekan	3200	CT	538	1,721,600	899200	822400	17984	4112	3920	1344	576	8000	35936
1012	Kajan	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1013	Mollas	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
1014	Kurjan	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1015	Libofshe	5000	CT	400	2,000,000	990000	1010000	19800	5050	6125	2100	900	12500	46475
1016	Fier	120000	AT	141	16,920,000	5640000	11280000	112800	56400	446880	62400	25200	300000	1003680
1017	Roskovec	25000	AT	242	6,050,000	2600000	3450000	52000	17250	93100	13000	5250	62500	243100
1018	Topoje	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1019	Lushnje	50000	AT	172	8,600,000	3250000	5350000	65000	26750	186200	26000	10500	125000	439450
1020	Divjake	7500	CT	374	2,805,000	1297500	1507500	25950	7538	9188	3150	1350	18750	65925
1021	Allkaj	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1022	Bubullime	3500	CT	538	1,883,000	983500	899500	19670	4498	4288	1470	630	8750	39305
1023	Dushk	6000	CT	374	2,244,000	1110000	1134000	22200	5670	7350	2520	1080	15000	53820
1024	Fier Shegan	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
1025	Grabian	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
1026	Gradisht	5000	CT	400	2,000,000	990000	1010000	19800	5050	6125	2100	900	12500	46475
1027	Hysgjokaj	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1028	Karbunare	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1029	Kolonje	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838

1030	Krutje	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
1031	Remas	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1032	Ballsh	15000	AT	330	4,950,000	2310000	2640000	46200	13200	55860	7800	3150	37500	163710
1033	Korce	75000	AT	157	11,775,000	4275000	7500000	85500	37500	279300	39000	15750	187500	644550
1034	Maliq	12500	AT	330	4,125,000	1925000	2200000	38500	11000	46550	6500	2625	31250	136425
1035	Liqenas	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1036	Mollaj	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
1037	Pirg	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
1038	Pojan	5600	CT	400	2,240,000	1108800	1131200	22176	5656	6860	2352	1008	14000	52052
1039	Voskop	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1040	Vreshtas	6500	CT	374	2,431,000	1202500	1228500	24050	6143	7963	2730	1170	16250	58305
1041	Leskovik	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
1042	Erseke	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
1043	Bilisht	10500	AT	330	3,465,000	1617000	1848000	32340	9240	39102	5460	2205	26250	114597
1044	Miras	3100	CT	538	1,667,800	871100	796700	17422	3984	3798	1302	558	7750	34813
1045	Hocisht	2800	CT	618	1,730,400	918400	812000	18368	4060	3430	1176	504	7000	34538
1046	Proger	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
1047	Pogradec	50000	AT	172	8,600,000	3250000	5350000	65000	26750	186200	26000	10500	125000	439450
1048	Cerrave	6000	CT	374	2,244,000	1110000	1134000	22200	5670	7350	2520	1080	15000	53820
1049	Dardhas	2200	CT	618	1,359,600	721600	638000	14432	3190	2695	924	396	5500	27137
2001	Pershkopi	19000	AT	330	6,270,000	2926000	3344000	58520	16720	70756	9880	3990	47500	207366
2002	Arras	4200	CT	451	1,894,200	961800	932400	19236	4662	5145	1764	756	10500	42063
2003	Fushe Muhur	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2004	Kastriot	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
2005	Luzni	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2006	Maqellare	3500	CT	538	1,883,000	983500	899500	19670	4498	4288	1470	630	8750	39305
2007	Silove	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2008	Bulqize	11000	AT	330	3,630,000	1694000	1936000	33880	9680	40964	5720	2310	27500	120054
2009	Gjorice	3500	CT	538	1,883,000	983500	899500	19670	4498	4288	1470	630	8750	39305
2010	Ostren	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2011	Shupenze	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
2012	Zerqan	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2013	Fushe Bulqize	2600	CT	618	1,606,800	852800	754000	17056	3770	3185	1092	468	6500	32071
2014	Kukes	19000	AT	330	6,270,000	2926000	3344000	58520	16720	70756	9880	3990	47500	207366
2015	Bicaj	3200	CT	538	1,721,600	899200	822400	17984	4112	3920	1344	576	8000	35936

2016	Malzi	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2017	Terthore	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2018	Shishtavec	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
2019	Topojan	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
2020	Krume	3300	CT	538	1,775,400	927300	848100	18546	4241	4043	1386	594	8250	37059
2021	Golaj	3800	CT	538	2,044,400	1067800	976600	21356	4883	4655	1596	684	9500	42674
2022	Fajze	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2023	Bajram Curri	7000	CT	374	2,618,000	1211000	1407000	24220	7035	8575	2940	1260	17500	61530
2024	Shkoder	100000	AT	143	14,300,000	4900000	9400000	98000	47000	372400	52000	21000	250000	840400
2025	Vau Dejes	5200	CT	400	2,080,000	1029600	1050400	20592	5252	6370	2184	936	13000	48334
2026	Bushat	9600	CT	325	3,120,000	1430400	1689600	28608	8448	11760	4032	1728	24000	78576
2027	Ana Malit	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
2028	Berdice	5300	CT	400	2,120,000	1049400	1070600	20988	5353	6493	2226	954	13250	49264
2029	Dajc	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2030	Gur i Zi	4400	CT	451	1,984,400	1007600	976800	20152	4884	5390	1848	792	11000	44066
2031	Hajmel	5600	CT	400	2,240,000	1108800	1131200	22176	5656	6860	2352	1008	14000	52052
2032	Postirbe	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
2033	Rrethinat	14000	AT	330	4,620,000	2156000	2464000	43120	12320	52136	7280	2940	35000	152796
2034	Velipoje	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2035	Vig Mnele	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
2036	Barbullush	3500	CT	538	1,883,000	983500	899500	19670	4498	4288	1470	630	8750	39305
2037	Puke	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
2038	Fushe Arrez	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
2039	Qelez	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
2040	Koplik	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
2041	Gruemire	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
2042	Kastrat	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3001	Burrel	12500	AT	330	4,125,000	1925000	2200000	38500	11000	46550	6500	2625	31250	136425
3002	Klos	3600	CT	538	1,936,800	1011600	925200	20232	4626	4410	1512	648	9000	40428
3003	Gurre	2200	CT	618	1,359,600	721600	638000	14432	3190	2695	924	396	5500	27137
3004	Baz	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3005	Lis	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3006	Macukull	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3007	Ulez	22000	AT	242	5,324,000	2288000	3036000	45760	15180	81928	11440	4620	55000	213928
3008	Martanesh	2000	CT	618	1,668,600	885600	783000	17712	3915	3308	1134	486	6750	33305

3009	Lezhe	16000	AT	207	3,312,000	1328000	1984000	26560	9920	59584	8320	3360	40000	147744
3010	Balldre	4800	CT	451	2,164,800	1099200	1065600	21984	5328	5880	2016	864	12000	48072
3011	Blinisht	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3012	Dajc	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
3013	Kallmet	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
3014	Kolsh	2600	CT	618	1,606,800	852800	754000	17056	3770	3185	1092	468	6500	32071
3015	Shengjin	7000	CT	353	2,471,000	1211000	1260000	24220	6300	8575	2940	1260	17500	60795
3016	Shenkoll	8400	CT	337	2,830,800	1335600	1495200	26712	7476	10290	3528	1512	21000	70518
3017	Zejmen	5700	CT	400	2,280,000	1128600	1151400	22572	5757	6983	2394	1026	14250	52982
3018	Rreshen	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
3019	Rubik	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
3020	Fushe Kuqe	5400	CT	400	2,160,000	1069200	1090800	21384	5454	6615	2268	972	13500	50193
3021	Lac	44000	AT	195	8,580,000	3344000	5236000	66880	26180	163856	22880	9240	110000	399036
3022	Milot	8000	CT	337	2,696,000	1272000	1424000	25440	7120	9800	3360	1440	20000	67160
3023	Gjegjan	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
3024	Qafe Mali	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
4001	Durres	140000	AT	141	19,740,000	6580000	13160000	131600	65800	521360	72800	29400	350000	1170960
4002	Shijak	38000	AT	207	7,866,000	3154000	4712000	63080	23560	141512	19760	7980	95000	350892
4003	Manez	3800	CT	538	2,044,400	1067800	976600	21356	4883	4655	1596	684	9500	42674
4004	Gjepalaj	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
4005	Ishem	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4006	Maminas	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4007	Kruje	36000	AT	207	7,452,000	2988000	4464000	59760	22320	134064	18720	7560	90000	332424
4008	Bubq Koder Thu- man	3000	CT	538	1,614,000	843000	771000	16860	3855	3675	1260	540	7500	33690
4009		13000	AT	330	4,290,000	2002000	2288000	40040	11440	48412	6760	2730	32500	141882
4010	Nikel	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
4011	Tirana	1000000	AT	141	141,000,000	47000000	94000000	940000	470000	3724000	520000	210000	2500000	8364000
4012	BerzHITE	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4013	Dajt	3300	CT	538	1,775,400	927300	848100	18546	4241	4043	1386	594	8250	37059
4014	Farke	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
4015	Ndroq	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4016	Peze	3200	CT	538	1,721,600	899200	822400	17984	4112	3920	1344	576	8000	35936
4017	Preze	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4018	Vaqarr	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
4019	Zall Bastar	3700	CT	538	1,990,600	1039700	950900	20794	4755	4533	1554	666	9250	41551

4020	Zall Herr	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
4021	Krrabe	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
4022	Kavaje	40000	AT	195	7,800,000	3040000	4760000	60800	23800	148960	20800	8400	100000	362760
4023	Kryevidh	2400	CT	618	1,483,200	787200	696000	15744	3480	2940	1008	432	6000	29604
4024	Lekaj	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
4025	Luz i Vogel	5400	CT	400	2,160,000	1069200	1090800	21384	5454	6615	2268	972	13500	50193
5001	Elbasan	120000	AT	141	16,920,000	5640000	11280000	112800	56400	446880	62400	25200	300000	1003680
5002	Cerrik	23000	AT	242	5,566,000	2392000	3174000	47840	15870	85652	11960	4830	57500	223652
5003	Belsh	5000	CT	400	2,000,000	990000	1010000	19800	5050	6125	2100	900	12500	46475
5004	Gjergjan	5000	CT	400	2,000,000	990000	1010000	19800	5050	6125	2100	900	12500	46475
5005	Labinot Mal	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
5006	Labinot Fushe	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
5007	Paper	2800	CT	618	1,730,400	918400	812000	18368	4060	3430	1176	504	7000	34538
5008	Shales	5200	CT	400	2,080,000	1029600	1050400	20592	5252	6370	2184	936	13000	48334
5009	Shushice	4200	CT	451	1,894,200	961800	932400	19236	4662	5145	1764	756	10500	42063
5010	Peqin	9100	CT	325	2,957,500	1355900	1601600	27118	8008	11148	3822	1638	22750	74484
5011	Gjocaj	2200	CT	618	1,359,600	721600	638000	14432	3190	2695	924	396	5500	27137
5012	Pajove	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5013	Sheze	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5014	Gramsh	15000	AT	330	4,950,000	2310000	2640000	46200	13200	55860	7800	3150	37500	163710
5015	Kukur	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5016	Librazhd	7200	CT	353	2,541,600	1245600	1296000	24912	6480	8820	3024	1296	18000	62532
5017	Prenjas	6500	CT	374	2,431,000	1202500	1228500	24050	6143	7963	2730	1170	16250	58305
5018	Hotolisht	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
5019	Lunik	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5020	Orenje	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5021	Polis	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
5022	Q. Librazhd	9000	CT	325	2,925,000	1341000	1584000	26820	7920	11025	3780	1620	22500	73665
5023	Qukes	7000	CT	353	2,471,000	1211000	1260000	24220	6300	8575	2940	1260	17500	60795
5024	Rrajce	8000	CT	337	2,696,000	1272000	1424000	25440	7120	9800	3360	1440	20000	67160
5025	Terbuf	12000	AT	330	3,960,000	1848000	2112000	36960	10560	44688	6240	2520	30000	130968
5026	Velcan	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
5027	Gose	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
5028	Rrogozhine	7500	CT	353	2,647,500	1297500	1350000	25950	6750	9188	3150	1350	18750	65138
6001	Cakran	11000	AT	330	3,630,000	1694000	1936000	33880	9680	40964	5720	2310	27500	120054

6002	Frakull	7000	CT	353	2,471,000	1211000	1260000	24220	6300	8575	2940	1260	17500	60795
6003	Levan	5200	CT	400	2,080,000	1029600	1050400	20592	5252	6370	2184	936	13000	48334
6004	Fratar	3600	CT	538	1,936,800	1011600	925200	20232	4626	4410	1512	648	9000	40428
6005	Hekal	2400	CT	618	1,483,200	787200	696000	15744	3480	2940	1008	432	6000	29604
6006	Kute	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6007	Gjrokaster	48000	AT	195	9,360,000	3648000	5712000	72960	28560	178752	24960	10080	120000	435312
6008	Libohove	2800	CT	618	1,730,400	918400	812000	18368	4060	3430	1176	504	7000	34538
6009	Dropull i Poshtem Dropull i	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6010	Siperm	2500	CT	618	1,545,000	820000	725000	16400	3625	3063	1050	450	6250	30838
6011	Tepelene	7000	CT	353	2,471,000	1211000	1260000	24220	6300	8575	2940	1260	17500	60795
6012	Memaliaj	5000	CT	400	2,000,000	990000	1010000	19800	5050	6125	2100	900	12500	46475
6013	Permet	7700	CT	353	2,718,100	1332100	1386000	26642	6930	9433	3234	1386	19250	66875
6014	Kelcyre	3400	CT	538	1,829,200	955400	873800	19108	4369	4165	1428	612	8500	38182
6015	Vlore	125000	AT	141	17,625,000	5875000	11750000	117500	58750	465500	65000	26250	312500	1045500
6016	Himare	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6017	Orikum	4000	CT	451	1,804,000	916000	888000	18320	4440	4900	1680	720	10000	40060
6018	Selenice	5300	CT	400	2,120,000	1049400	1070600	20988	5353	6493	2226	954	13250	49264
6019	Brataj	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6020	Kote	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6021	Novosele	5500	CT	400	2,200,000	1089000	1111000	21780	5555	6738	2310	990	13750	51123
6022	Shushice	3400	CT	538	1,829,200	955400	873800	19108	4369	4165	1428	612	8500	38182
6023	Vllahine	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6024	Sarande	15000	AT	330	4,950,000	2310000	2640000	46200	13200	55860	7800	3150	37500	163710
6025	Konispol	2200	CT	618	1,359,600	721600	638000	14432	3190	2695	924	396	5500	27137
6026	Ksamil	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6027	Markat	2000	CT	618	1,236,000	656000	580000	13120	2900	2450	840	360	5000	24670
6028	Delvine	4500	CT	451	2,029,500	1030500	999000	20610	4995	5513	1890	810	11250	45068
Total		2981700			683,504,900									
Contingencies			10%		68,350,490									
Design etc.			20%		136,700,980									
Total investment costs					888,556,370									

V.4 Overall cost estimates for implementation of UWWT Directive

TABLE 5: Derivation of overall costs for Urban Waste Water Treatment Directive

Intervention / activity		Primary responsibility	Requirements		Unit costs		Capital cost (€)	Operating cost (€/year)	When (rel. year)	Remarks
No.	Description		No. units	Type/description	Unit	€/unit				
1 Establish Competent Authorities (CAs) at national level										
1.1	TA on institutional arrangements	Albanian govt.	1	large TA study	unit	1,600,000	1,600,000	0	1-2	
1.2	Establish/assign CAs	Albanian govt.						0	2	No costs. Government decision on basis of recommendations of activity 1.1
1.3	<i>Employ additional personnel in CAs</i>									
1.3.1	Employ additional personnel in MoEFWA	MoEFWA	3	ftpe - senior (S)	/month	1,200		43,200	2	Includes social costs and employment related costs: office space, heating, normal equipment, reporting, overheads. One of the persons will be a database/ GIS specialist
1.3.2	Employ additional personnel in MPWTT	MPWTT	1	ftpe (S)	/month	1,200		28,800	2	Includes social costs and employment related costs: office space, heating, normal equipment, reporting, overheads
1.4	Train CA personnel	MoEFWA						0	2	No additional costs. Initial training will be part of TA project (1.1)
1.5	Procure hardware and software for MoEFWA	MoEFWA		lump sum			10,000	0	2	This is additional to normal workstation equipment (included in employment). Hardware: colour laser, A3 colour printer, plotter. Software: Office, Database, GIS, Hydrological/River basin models, project. management etc.
1.6	Create an integrated wastewater and GIS database	MoEFWA						0	2	No additional costs. Database expert and equipment already costed. Support will be provided by TA project (1.1)
2 Identify sensitive areas and agglomerations with > 2000 p.e.										
2.1	TA project on identification of sensitive areas, agglomerations	MoEFWA	1	medium TA study	unit	1,200,000	1,200,000	0	0-1	

3 Financial aspects of implementing UWWD										
3.1	TA project on financial aspects	MoEFWA	1	large TA study	unit	1,600,000	1,600,000	0	1-3	No additional costs beyond personnel costs (1.3.2)
3.2	Establish project pipeline	MPWTT						0	3	
4 Recruit and train human resources in the municipalities										
4.1	Employ new staff in municipalities. 196 ftpe's, corresponding to 1 for each of the agglomerations	Municipalities	196	ftpe (S)	/month	1,200		2,822,400	2-16	Includes social costs and employment related costs: office space, heating, normal equipment, reporting, overheads
4.2	TA project to develop and pilot training methods and materials	MoEFWA	1	medium TA study	unit	1,200,000	1,200,000	0	2-3	
4.3	Train officials of other municipalities	MoEFWA	15	training session of 1 week per year	training session	2,000	30,000	0	4-18	Local trainers. Assume 10 person-days in the week @ €100/day plus €1000 for space rental and other miscellaneous costs
5 Construction of infrastructure										
5.1	Establish an implementation programme for the UWWTD	MPWTT						0	3	No additional costs. The first implementation programme can be based on this DSIP.
5.2	<i>Stage 1: agglomerations > 20,000 p.e.</i>									
5.2.1	Feasibility studies/financing applications	Municipalities	19	agglomerations	1% of construction costs		8,977,100	0	1-8	1% of construction costs
5.2.2	Design, supervision, and commissioning	Municipalities					179,542,000	0	2-9	20% of construction costs
5.2.3	Construction of collection systems	Municipalities	19	agglomerations			733,967,000	13,426,132	3-12	See calculation section in main report
5.2.4	Construction of WWTPs	Municipalities	19	agglomerations			366,432,000	18,527,958	3-12	See calculation section in main report
5.3	<i>Stage 2 agglomerations 5,000 - 20,000 p.e.</i>									
5.3.1	Feasibility studies/financing applications	Municipalities	59	agglomerations	1% of construction costs		4,150,420	0	8-11	1% of construction costs
5.3.2	Design, supervision, and commissioning	Municipalities					83,008,400	0	9-12	20% of construction costs
5.3.3	Construction of collection systems	Municipalities	59	agglomerations			318,149,260	3,864,501	10-15	See calculation section in main report

5.3.4	Construction of WWTPs <i>Stage 3 agglomerations < 5,000 p.e.</i>	Municipalities	59	agglomerations			187,342,980	4,694,300	10-15	See calculation section in main report
5.4.1	Feasibility studies/financing applications	Municipalities	118	agglomerations	1% of construction costs		3,524,687	0	12-14	1% of construction costs
5.4.2	Design, supervision, and commissioning	Municipalities					70,493,740	0	13-15	20% of construction costs
5.4.3	Construction of collection systems	Municipalities	118	agglomerations			224,114,280	2,631,798	14-18	See calculation section in main report
5.4.4	Construction of WWTPs	Municipalities	118	agglomerations			198,080,410	3,715,496	14-18	See calculation section in main report
6	Establish treatment and effluent standards and system of prior authorisations for industrial wastewater									
6.1	TA project to establish standards and authorisation system	MoEFWA	1	medium TA study	unit	1,200,000	1,200,000		4-5	<p>As far as new applications are concerned, the volume, particularly in the early years, is likely to be fairly small. For an estimated 50 existing applications, these will be processed over a number of years. 1 ftpe is therefore considered adequate.</p> <p>It will not be possible to estimate the costs accurately until the project (6.1) has been carried out. Nevertheless a very rough estimate is made as a first attempt. Examination of a list of companies grouped by industrial sector suggested that there might be about 30 relevant companies which discharge polluted water into the sewers. Assume 20 of these would be required to install some form of pretreatment, at a cost of €250,000/plant. Assume 5% O&M.</p>
6.2	Extra personnel for prior authorisation regime	Environment Agency	1	ftpe (S)	/month	1,200		14,400	4	
6.3	Implement Article 11 pretreatment standards	Industry	30	Industrial wastewater pretreatment unit	unit	250,000	7,500,000	375,000	5-7	

6.4	Implement Article 13 discharge standards	Industry	20	Industrial wastewater treatment plant	unit	1,500,000	30,000,000	1,500,000	5-7	It will not be possible to estimate the costs accurately until the project (6.1) has been carried out. Nevertheless a very rough estimate is made as a first attempt. Examination of a list of companies grouped by industrial sector suggested that there might be about 35 companies in Albania which belong to the sectors listed in Annex III. Assume that 20 of these have a BOD loading of > 4000 p.e.. Assume mean unit cost of €1.5 million. Assume 5% O&M.
7	Guidance and capacity building	MoEFWA	1	medium TA study	unit	1,200,000	1,200,000	0	1-2	
8	Sewage sludge	MoEFWA	1	small TA study	unit	800,000	800,000	0	3-4	This activity comprises only a research component. The operating costs for sewage treatment plants already includes some of the costs of sludge disposal, namely the dewatering costs. Further costs arising from EU legislation are attributed to the waste sector.
9	Monitoring and inspection									
9.1	Additional inspection - employ personnel	MoEFWA	1	ftpe (S)	/month	1,200		14,400	3	Plants would normally be expected to self-monitor, and be audited during inspections. Direct costs small - say 50 samples per year, €25 mean analysis costs Plants would normally be expected to self-monitor, and be audited during inspections. Direct costs say 50 samples per year, €120 mean analysis costs Assume 60 points, 6 times per year, mean analysis cost €25, integrated with other environmental monitoring activities
9.1	Expenses of inspection	MoEFWA	50	travel and subsistence away from base	days	70		3,500	3	
9.2	Monitor discharges from UWWT plants	MoEFWA	50	chemical analysis of samples	samples/year	25		1,250	3	
9.3	Monitor amounts and composition of sludges	MoEFWA	50	chemical analysis of samples	samples/year	120		6,000	3	
9.4	Monitor waters subject to discharges where significant impacts possible	MoEFWA	360	chemical analysis of samples		25		9,000	3	
10	Upgrade laboratory capacity	MoEFWA						0	0-1	Included <i>pro memoria</i> , but no additional costs, as this activity has already been covered in the Water Framework Directive

<p>11 Consulting and reporting MoEFWA</p>		<p>Annual budget to cover costs of reporting to public and Commission</p>	<p>lump sum</p>			<p>5,000</p>	<p>4</p>	<p>To include consultancy (local), map and graphics preparation, etc.</p>
<p>Totals</p>					<p>2,424,122,277</p>	<p>51,683,135</p>		

