MANAGEMENT PLAN

of the River Basins of Epirus River Basin District

Summary

SEPTEMBER 2013

SPECIAL SECRETARIAT FOR WATER

HELLENIC DEMOCRACY
MINISTRY OF ENVIRONMENT ENERGY AND CLIMATE CHANGE
SPECIAL SECRETARIAT FOR WATER

DEVELOPMENT OF RIVER BASIN MANAGEMENT PLANS FOR THE WATER DISTRICT OF THESSALIA, EPIRUS, WESTERN STEREA ELLADA, IN ACCORDANCE WITH THE DIRECTIVE 2000/60/EC, THE LAW 3199/2003 AND THE P.D. 51/2007

JOINT VENTURE: G. KARAVOKYRIS & PARTNERS CONSULTANT ENGINEERS S.A. - VASSILIS PERLEROS – ENVECO S.A. - ANTZOULATOS GERASIMOS– EPEM S.A. - OMIKRON E.P.E. - KONSTANTINIDIS HLIAS - TSEKOURAS GEORGIOS - KOTZAGEORGIS GEORGIOS - GKARGKOULAS NIKOLAOS

SPYROS PAPAGRIGORIOU
PROJECT COORDINATOR – JV LEGAL REPRESENTATIVE

DEVELOPMENT OF THE RIVER BASIN MANAGEMENT PLAN FOR THE WATER DISTRICT OF EPIRUS (GR05)

PHASE C, DELIVERABLE 6: SUMMARY - MAPS - DRAWINGS

Date of first publication: 23/3/2012

Government Gazette approving the RBMP: 2292 Β΄/13.09.2013

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1. INTRODUCTION

The **2000/60/EC Directive** for the establishment of a framework for Community action in the field of water policy or Water Framework Directive, after a long period of discussion and negotiation between the Member States of the European Union came into force on **22 December 2000**.

It is a comprehensive and innovative effort to protect and manage water resources and is the most basic institutional tool introduced in the water sector in the European Union, with similar tools be adopted at international level for many years, reflecting the trend towards integrated environmental planning and sustainable management for long-term protection of all waters (surface and groundwater) and ecosystems.

To achieve this goal River Basin Management Plan has to be established, the content of which is described in Article 13 and Annex VII of 2000/60/EC Directive. Each River Basin Management Plan is a strategic document for the River Basin District to which it refers to and provides the necessary information and instructions for the integrated management of water and ecosystems.

The legislative and institutional framework of the country has been harmonized with 2000/60/EC Directive with various legislative provisions (Law 3199/9-12-2003 and its amendments, Presidential Decree 51/2007, Joint Ministerial Decision 39626/2208/E130, Decision 706/2010 of the National Water Committee, Ministerial Decision 51354/2641/E103/2010, Joint Ministerial Decision 140384/2011, Ministerial Decision 1811 of the Minister of Environment, Energy and Climate Change etc.).

With the Contract signed on 15/10/2010, Special Water Secretariat assigned the preparation of the River Basin Management Plan of Epirus, Epirus and Thessaly River Basin Districts, in the Consortium: « G. KARAVOKYRIS & ASS. CONSULTANTS MECH. S.A - VASILIS PERLEROS – ENVECO SA ENVIRONMENTAL PROTECTION MANAGEMENT AND ECONOMICS- ANTZOULATOS GERASIMOS – EPEM ENVIRONMENTAL STUDIES S.A. - OMIKRON ECONOMIC & DEVELOPEMENTAL STUDIES L.T.D - KONSTANTINIDIS ILIAS - TSEKOURAS GEORGIOS - KOTZAGEORGIS GEORGIOS - GKARGKOULAS NIKOLAOS».

According to Article 5 of Law 4117/5-2-2013, the completed River Basin Management Plan, is approved by the National Water Committee upon the recommendation of the Special Water Secretariat of the Ministry of Environment, Energy and Climate Change, and is published in the Government Gazette FEK 2292/B/13-9-13.

2. RIVER BASIN DISTRICT MANAGEMENT PLAN

2.1 Contents of the Management Plan

This document is a summary of the River Basin Management Plan of Epirus River Basin District (GR06) and the following detailed documentation texts are attached:

Table 1: Documentation texts of Epirus River Basin District Management Plan

DOCUMENTATION TEXTS	
TEXT 1:	RECORD OF THE COMPETENT AUTHORITIES AND DETERMINATION OF THEIR AREA OF RESPONSIBILITY
TEXT 2:	PROTECTED AREAS
TEXT 3:	ECONOMIC ANALYSIS OF THE WATER USES AND DETERMINATION OF THE CURRENT COST RECOVERY DEGREE FOR THE DIFFERENT WATER SERVICES
TEXT 4:	PRELIMINARY ASSESSMENT OF ALTERNATIVE PROPOSALS FOR FLEXIBLE WATER TARIFF POLICY AND COST RECOVERY MECHANISMS
TEXT 5:	IDENTIFICATION AND TYPOLOGY OF SURFACE WATER BODIES. INITIAL AND FURTHER CHARACTERISATION OF GROUNDWATER BODIES
TEXT 6:	TYPE-SPECIFIC REFERENCE CONDITIONS FOR THE TYPES OF SURFACE WATER BODIES
TEXT 7:	FINAL DESIGNATION OF HEAVILY MODIFIED AND ARTIFICIAL WATER BODIES
TEXT 8:	ANALYSIS OF THE ANTHROPOGENIG PRESSURES AND THEIR IMPACTS ON SURFACE AND GROUDWATER BODIES
TEXT 9:	EVALUATION AND CLASSIFICATION OF THE QUALITATIVE STATUS (ECOLOGICAL AND CHEMICAL) OF SURFACE WATER BODIES
TEXT 10:	EVALUATION AND CLASSIFICATION OF THE QUALITATIVE (CHEMICAL) AND QUANTINTATIVE STATUS OF GROUNDWATER BODIES
TEXT 11:	DETERMINATION OF ENVIRONMENTAL OBJECTIVES INCLUDING “EXEMPTIONS” FROM OBJECTIVES ACHIEVEMENT
TEXT 12:	CATALOGUE OF SCHEDULED AND NEW PROJECTS/ ACTIVITIES/ ALTERNATIONS
TEXT 13:	DRAFT PROGRAMME OF MEASURES (BASIC AND SUPPLEMENTARY) FOR THE PROTECTION AND RECOVERY OF WATER BODIES
TEXT 14:	IMPLEMENTATION REPORT OF THE 2006/118/EC DIRECTIVE ‘‘ON THE PROTECTION OF GROUNDWATER AGAINST POLLUTION AND DETERIORATION’’ AND THE JMD 39626/2208/E130/2009
TEXT 15:	EVALUATION OF THE PROPOSED PROGRAMME OF MEASURES, INCLUDING COST EFFECTIVENESS ANALYSIS
TEXT 16:	PUBLIC CONSULTATION PLAN
TEXT 17:	UPDATED MONITORING PROGRAMMES OF THE QUALITATIVE AND QUANTINTATIVE STATUS OF SURFACE AND GROUNDWATER BODIES
TEXT 18:	REVISED PUBLIC CONSULTATION PLAN

DOCUMENTATION TEXTS	
TEXT 19:	REPORT WITH THE EVALUATION OF THE CONSULTATION
TEXT 20:	STRATEGIC ENVIRONMENTAL IMPACTS ASSESSMENT (SEIA)
TEXT 21:	DRAUGHT AND WATER SCARCITY MANAGEMENT PLAN

2.2 Strategic Environmental Impacts Assessment

For each River Basin Management Plan an environmental report should be carried out. The environmental report determines whether the Plan and the suggested measures are likely to have a significant environmental effect. The environmental report is called Strategic Environmental Impacts Assessment (SEIA) and is applied under the SEA Directive (2001/42/EC).

The assessment of possible impacts of the RBMP concluded that no negative effects are to be expected in a strategy level. On the contrary, in the majority of cases the suggested plan is considered to greatly improve the current state of water resources, either directly or indirectly and synergistically. This conclusion was to be expected, considering that the RBMP design aims in protecting the biodiversity and address multiple issues regarding the management of water resources.

It is noted, that for works and activities under law 4014/2011, which have been examined in the RBMP either as measures or as exceptions, the provisions of the current legislative framework regarding environmental impact assessment should be implemented.

2.3 Draught and Water scarcity Management Plan

In the framework of the River Basin Management Plan of the River Basin District of Epirus, a dedicated Drought and Water Scarcity Management Plan (DWSMP) has been developed, based on the principles of proactive management and planning. The main purpose of the DWSMP was to quantify the drought and water scarcity phenomena in the River Basin District, to assess possible methodologies for the prediction of future events, and to propose adequate response measures for the various risk levels.

3. CONSULTATION PROCESS

The public consultation processes have a key role during preparation, reading and revision of the river basin management plans. In addition to the 2000/60/EC Directive, there are requirements for public participation in other EU legislation, especially in the Directive on Strategic Environmental Impacts Assessment (Directive 2001/42/EC, SEIA).

The consultation period of the River Basin Management Plans, with a minimum duration of 6 months, began on **January 13, 2012**, and was completed in two phases:

- **Phase A΄**

Until 29 February 2012 the following were discussed:

Consultation measures to be taken,

Catalogue of stakeholders,

Overview of the significant water management issues,

Organizational issues related to the consultation process

- **Phase B΄**

On **May 2nd, 2012**, the documentation texts of Epirus River Basin District Management Plan were published on the consultation website of the Greek River Basin Managements Plans (http://wfd.opengov.gr).

During Phase B of the consultation the following were discussed:

River Basin Management Plan of Epirus River Basin District,

Programme of Measures

On **October 31st 2012**, the Special Water Secretariat announced the completion of the public consultation of the Draft River Basin Management Plan of Epirus River Basin District.

On **April 2013**, the consultation of SEIA, which was sent by the Special Service of Environment of Ministry of Environment Energy & Climate Change to competent authorities to provide advice, was completed.

4. EPIRUS RIVER BASIN DISTRICT

4.1 River basins

Epirus River Basin District, includes the River Basins Aoou (GR11), Kalama (GR12), Acheronta (GR13), Arachthou (GR14), Kerkyras-Paxon (GR34), Lourou (GR46) (Annex 1, Map 1: River Basin District - Overview of Epirus).

4.2 Anthropogenic characteristics

4.2.1 Administrative status

Epirus River Basin District includes almost the entire Region of Epirus (96.70%), small parts of Dytiki Macedonia (4.19%), Thessalia (0.02) and Dytiki Ellada (0.88%) Regions and the islands of Kerkyra, Othonoi, Ereikousa, Paxoi and Antipaxoi of Ionian islands Region (27.04%).

Its population, according to 1991 census was 445.658 inhabitants and according to the 2001 census was 464.093, indicating an increase of 4.1%.

4.2.2 Land Uses

River Basin District of Epirus is heavily forested (55% of total area), while important is the percentage of the basin covered by crops (22% of total area) and pasture areas (15% of total area). Urban area account by 6% and the other uses cover 2% of the total area.

4.2.3 Major water uses

Water uses are distinguished in water supply, irrigation, livestock and industry. The total annual demand for all uses is about 371 10^6 m^3, with the bulk coming from irrigation, which amounts to about 303 10^6 m^3 (81%). Regarding to other uses the demand for water supply amounts to 57 10^6 m^3 (15%), for livestock 10 10^6 m^3 (3%) and for industry to 4 10^6 m^3 (1%) per year.

About 56% of total annual demand (about 202 10^6 m^3) derives from abstractions from surface water bodies. About 169 10^6 m^3 derives from abstractions from groundwater bodies through boreholes and springs exploitation to meet mainly the water demand for irrigation.

5. COMPETENT AUTHORITIES

The competent authorities of Epirus River Basin District are presented in the following table (Annex 1, Map 2: Map of Competent Authorities).

Table 2: Competent Authorities and areas of responsibility

	River Basin	Percentage of area in every Region	Competent Decentralized Authority	National Competent Authority
Epirus River Basin District (GR05)	Aoou (GR11)	Ipeirou (79.632%), Dyt. Makedonias (20.366%) Thessalias (0.001%)	Ipeirou & Ionion Nison	Special Secretariat for Water / Ministry of Environment, Energy and Climate Change
	Kalama (GR12)	Ipeirou (100%)		
	Acheronta (GR13)	Ipeirou (100%)		
	Arachthou (GR14)	Ipeirou (96.21%), Dyt. Elladas (3.67%) Thessalias (0.12%)		
	Kerkyras- Paxon (GR34)	Ionion Nison (100%)		
	Lourou (GR46)	Ipeirou (100%)		

6. DESIGNATION OF WATER BODIES

6.1 Surface water bodies

The surface water bodies within a river basin district were identified as falling within either one of the following surface water categories: rivers, lakes, transitional waters or coastal waters (Annex I, Map 3:Categories of Surface Water Bodies). In the River Basin District of Epirus all surface water body categories are identified (Annex I, Map 4: Types of Surface Water Bodies).

6.1.1 Rivers

In the River Basin District of Epirus, eighty- two (82) rivers are identified, of the six different types: IsL1, ImL0, ImL1, IsH1, ImH1, IsL0.

Table 3: River water body typology

RW Typology	Description	Number of RW in RBD of GR05
ImH1	Medium mountainous rivers with steep slope, which flow in the region of the Ionian Sea	7
ImL0	Small lowland and semi-mountainous rivers with relatively steep slope (> 1.2 ‰), which flow in the region of the Ionian Sea	13
ImL1	Medium lowland rivers with steep slope which flow in the region of the Ionian Sea	38
IsH1	Small mountainous rivers with steep slope which flow in the region of the Ionian Sea	10
IsL0	Small lowland and semi-mountainous rivers with relatively steep slope (> 1.2 ‰), which flow in the region of the Ionian Sea	2
IsL1	Medium lowland rivers with steep slope which flow in the region of the Ionian Sea	12

6.1.2 Lakes

In the River Basin District of Epirus, three (3) lakes (Techniti Limni Pigon Aoou, Techniti Limni Pournariou, Techniti Limni Pournariou II) are identified as L-M5/ 7W type (deep and large reservoirs, in ¨wet"siliceous areas πυριτικοι, catshment area < 20.000 km^2) and one (1), Limni Pamvotida, as a B Type (medium- high, large surface, average value of depth >3 m and <6 m, multi-mixed type, small drop of water level annualy (<1 m), sharpe variation of water residence time, with artificial controled drainage of water).

6.1.3 Transitional waters

Seven (7) transitional water bodies are identified in the River Basin District of Epirus, that they belong to the TW 2 type (river estuaries or Delta).

6.1.4 Coastal waters

All thirteen (13) coastal waters identified in the River Basin District of Epirus belong to the C1 type that corresponds to the IIE inter calibration type.

The statistical characteristics of the surface water bodies of RBD of Epirus (05), as these were identified per category, are presented in the table below.

Table 4: Statistical characteristics of surface water bodies of RBD of Epirus

Type of WB	Number	Characteristic size	Minimum	Mean	Maximum	Total
Rivers	82	Length (km)	1.73	13.41	46.16	1,100.02
Lakes	4	Surface (km²)	0.70	12.54	22.02	50.18
Transitional waters	7	Surface (km²)	0.61	59.21	241.60	414.47
Coastal waters	13	Surface (km²)	9.15	80.62	406.14	1,048.01

6.2 Groundwater bodies

Initial characterization of groundwater bodies was performed in order to assess their uses and the degree to which they are at risk of failing to meet the environmental objectives of WFD . (Annex 1, Map 5: Map of Groundwater Bodies)

For those groundwater bodies to which significant problems or trends for deterioration of their quantitative or qualitative status were identified or they are characterised by increased importance for local economy, or/and for the environment, further characterization was performed.

Twenty six (26) GWBs are designated at the RBD of Epirus (05) and for ten (10) of them, ‘‘further characterization’’ was carried out.

The statistical characteristics of the groundwater bodies identified in the RBD of Epirus (05), are presented in the table below.

Table 5: Statistical characteristics of groundwater bodies of RBD of Epirus

Type of WB	Number	Minimum area (km^2)	Average area (km^2)	Maximum area (km^2)	Total area (km^2)
GWBs	26	10.6	335.6	1622,2	9,061.26

6.3 Heavily modified water bodies (HMWB) and Artificial water bodies (AWB)

Artificial and heavily modified water bodies resulted from human activities necessary in order to meet a variety of human needs and activities, such as flood protection, water storage for irrigation and drinking-water supply, navigation etc.

Thirteen (13) heavily modified and three (3) artificial water bodies are identified from a total of one hundred and six (106) surface water bodies in RBD of Epirus (05) .

In the context of the current RBMP the identified heavily modified water bodies are treated like surface water bodies that most closely resemble the HMWBs, i.e. the environmental objective corresponds to the “good ecological and chemical status“.

6.4 Protected Areas

The register of protected areas of the RBD of Epirus, specified under Article 6 of the WFD, includes the following types of protected areas.

6.4.1 Areas designated for the abstraction of water intended for human consumption

Rivers as Louros p.4 and Louros p.5, system of Tumfi, Smolika- Mavrovouniou, Kasidiari, Mitsikeliou-Vella, Pogonianis, Kourenton, system of Louros and Corfus island are included to this type of protected areas that are being used for the abstraction of water intended for human consumption of the population of the RBD of Epirus (05) (Annex 1, Map 7.1: Protected areas: Drinking water protection areas) .

6.4.2 Bodies of water designated as recreational waters including areas designated as bathing waters under the Directive 2006/7/EC

In RBD of Epirus (05) the quality of bathing waters is monitored by one hundred and twenty nine (129) monitoring sites, which are grouped in 87 bathing water profiles. Four (4) recreational waters were also identified in the RBD of Epirus (05).

6.4.3 Nutrient- sensitive areas (Annex 1, Map 7.3: Protected areas: Nutrient - sensitive areas)

Areas vulnerable to nitrates from agricultural sources under Directive 91/676/EEC

The greatest part of Arta- Preveza plain, which covers areas of RB of Acheronta, Lourou and Arachthos is officially designated as area vulnerable to nitrates in the RBD of Epirus (05), while the island of Kerkyra is proposed to be included to this register.

Areas designated as sensitive under Directive 91/271/EEC

According to Common Ministerial Decree 19661/1982/1999, the urban wastewater recepients of Amvrakikos kolpos, Metsovitikos, Arachthos river and Louros river have been identified as “sensitive” (Annex II, Common Ministerial Decree 5673/400/1997), while the areas of Tafros Lapsista, Limni Pamvotida, WD of Kalama are proposed to be included to this register.

6.4.4 Areas designated for the protection of habitats or species

Thirty-eight (38) areas are included in the NATURA 2000 Network where the maintenance or improvement of the status of water (surface and groundwater) is an important factor in their protection. Seventeen (17) of them, are Special areas of Conservation (SAC), fifteen (15) are Special Protection Areas (SPA) and six (6) are protected as both SAC and SPA (Annex I, Map 7.4: Protected areas: Habitats & Birds protection areas).

There are five (5) more areas of national importance which they are included in a register of different kind of environmental protection and also one (1) is under Ramsar protection.

6.4.5 Areas designated for the protection of economically significant aquatic species

Eight (8) protected areas under this type were identified in the RBD of Epirus (05). (Annex 1, Map 7.2: Protected areas: Economically significant aquatic species - protection areas & Recreational waters).

7. ANALYSIS OF PRESSURES IN WATER BODIES

The estimation of pressures in the water bodies takes into consideration recorded pressures as a whole (pollution, water abstraction, morphological changes etc), in order to comprehend the most significant management problems and failures in each river basin as well as to clarify the way pressures impact water bodies separately.

Urban Wastewater

In the RBD of Epirus operate fourteen (14) Wastewater Treatment Plants (WWTP): WWTP of Ioannina, Kerkyra, Arta, Igoumenitsa, Preveza, Parga, Meliteieon, Agiou Markou, Filippiada Metsovo, Kynopiaston, Palaiokastriton, Benitson, Agiou Stefanou, which serve 300,000 habitants (80% of total RBD of Epirus population) that correspond to 85% of the population in the Priority A, B and C agglomerations. There is only one Priority B agglomeration (Lefkimmi), which will be served in the near future by newly constructed WWTP.

The greatest point pressure are from WWTPs that serve population over 10,000 habitants: WWTPs of Ioannina, Kerkyra, Arta, Preveza, Igoumenitsa and Parga.

Industry

In the RBD of Epirus two hundred and ninety- two (292) industrial facilities have been recorded. Among these, six (6) are IPPC facilities according to the Directive 2001/8/EC, and eleven (11) are SEVESO according to the Directive 1996/82/EC. In the RBD of Epirus, there are the industrial sites of Ioannina and Preveza and the industrial park of Thesprotia.

The majority of the industries (49.8%) concern olive oil mills, a percentage of 13.7% belong to abattoirs and other facilities for meat process, while a high percentage (20.1%) belong to other type of food industry (milk industry, fruit and vegetables canning industry). 8% of the industries belong to the sector of Metal Industry and remaining are related to the Manufacture of Refined Petroleum Products, Production and Processing of Metals, Processing of Wood, Chemical industry and Thermal Power Stations.

Livestock Farming

In all Regional Units of the RBD of Epirus there is a significant number of pig, poultry and cattle farm units. Most of them have been registered in the River Basin of Kalamas and Louros. Collected data concern 140 poultry farm units (2 are IPPC facilities), 9 pig farm units (2 are IPPC facilities) and 2 cattle farm units.

Non Stabled Livestock

Significant activity has been monitored in the River Basins of Kalamas, Arachthos and Louros. Non-stabled livestock contributes more than 90% in the total organic load of the above RBs.

Landfill Sites – Uncontrolled Waste Dumping Sites

In the RBD of Epirus operate four (4) Sanitary Landfills, in the regions of Igoumenitsa, Arta, Paramithia and Kentriki Kerkyra, while two (2) more landfills are planned to be constructed in Ioannina and South Kerkyra.

According to the reported data of the Ministry of Environment, Energy and Climate Change (March 2012), there are four (4) active Uncontrolled Solid Waste Dumping Sites (Municipality of Paxoi, Othonoi island, Ereikousa and Mathraki), as well as a number of inactive, where their rehabilitation is of top priority.

Mines – Quarry

In the RBD of Epirus there have been recorded 41 mining sites, 28 of which are marble mining.

Aquacultures

In the RBD of Epirus there are 110 aquacultures (44 sea water and 66 freshwater aquacultures). The majority of them have been registered in the River Basin of Kalamas (43.6%), Louros (28.2%), and Acherontas (12.7%).

In the area of Vouliastas-Mousiotitsas of Louros river, there is a number of freshwater aquacultures facilites that they are installed over WB Louros P.5 area, while a number of salt water aquacultures facilites is obseved in Lorida Sagiadas areas on “Voreio Tmima Anatolikon Akton tis Kerkyraikis Thalassas” coastal water.

Agriculture

In the River Basin District (RBD) of Epirus have been not monitored high loads (more than 17 kg/ha/yr), with the exemption of RB of Aoos (GR11) and especially on the river of Aoos, in which it has been recorded the highest load (more than 170 kg/ha/yr but less than 210 kg/ha/yr utilized agricultural area less than 50%). In addition, significant loads have been recorded in areas with more utilized agricultural areas such as RB of Kerkyra, Acheronta and Kalama.

In order to co-evaluate the different categories of pressures in surface waters and finally estimate total pressure, pressure intensity criteria have been determined. Taking into account the total pressure in each sub-basin as well as the connection between sub-basins and water bodies, the

characterization of water bodies has been carried out concerning the possibility to achieve the environmental objectives of the WFD, while simultaneously the causes of failure have been assessed.

The main reason for not achieving the environmental objectives of the WFD seems to be agriculture, which compounds water receiver's eutrophication and deoxygenation phenomena. At the same time, the industrial activity that has been recorded in some areas of the RBD, may result in the receiver's pollution with priority substances, which have a negative impact in the chemical status of the receiver, and special pollutants, which affect the ecological status of the water bodies.

Pressures in **groundwater bodies** affect their natural function, which according to the Directive 2000/60/EC can be described and determined through their quantitative and chemical status.

The following maps present the pressures identified during the impact analysis that was undertaken for the Western Sterea Ellada River Basin District:

- Annex 1, Map 12: Point pressures
- Annex 1, Map 13: Diffuse Pressures on Surface Water Bodies

8. STATUS OF WATER BODIES

8.1 Assessment and classification of status of surface water bodies

Surface water body status is determined by its ecological and chemical status. “Good surface water status” is defined as the status achieved by a surface water body when both its ecological status and its chemical status are at least “good” .

8.1.1 Surface water bodies ecological status

Ecological status mainly concerns biological parameters, depending on WB category, and secondly general physico-chemical conditions or other parameters (specific pollutants).

The surface WBs that will not achieve “good” status by 2015 are estimated at seventeen (17) in the Epirus RBD from a total of is one hundred and six (106) (Annex 1, Map 8: Ecological status & ecological potential of Surface Water Bodies) . More specifically:

The ecological status of three (3) rivers, with total length 44.64 km, which corresponds to 4,06% of total length of all rivers of the RBD, is classified as “high ecological status”, sixty-six (66) rivers, with total length 928.77 km, which corresponds to 84.43% of total length of all rivers of the RBD, is classified as “good ecological status”, while the ecological status of six (6) rivers, with total length 69.99 km, which corresponds to 6.36 % of total length of all rivers of RBD is classified as less than good ecological status. Due to the lack of data, ecological status of seven (7) rivers was not determined.

- The ecological status of one (1) lake, with surface 19.24 km^2, which corresponds to 38.35% of total area of all lakes of the RBD, is classified as less than good ecological status. Due to the lack of data, ecological status of three (3) lakes was not determined.
- The ecological status of one (1) transitional water, with total surface 4.16 km^2, which corresponds to 1% of total surface of all transitional waters of RBD, is classified as “good ecological status”, when the ecological status of four (4) transitional waters, with total surface 407.46 km^2, which corresponds to 98.31% of surface of all transitional waters of RBD is classified as less than good ecological status. Due to the lack of data, the ecological status of two (2) transitional waters was not determined.
- The ecological status of seven (7) coastal waters, with total surface 764.25 km^2, which corresponds to 72.92% of total surface of all coastal waters of RBD, is classified as “high” ecological status. The ecological status of two (2) coastal waters, with total surface 44.41 km^2,

which corresponds to 4.24% of total surface of all coastal waters of RBD, is classified as "good ecological status", when the ecological status of four (4) coastal waters, with total surface 239.95 km², which corresponds to 22.84% of surface of all coastal waters of RBD is classified as less than good ecological status.

8.1.2 Surface water bodies chemical status

Chemical status is directly related to the presence of priority substances in surface waters (Annex 1, Map 9: Chemical Status of Surface Water Bodies) and can be characterized as:

- **"Good",** when all parameters meet the Environmental Quality Standards set out in Common Ministerial Decree 51354/2641/E103/2010, Annex 1, Part A.
- **"Failing to achieve good",** when even one of the parameters does not meet the Environmental Quality Standards set out in Common Ministerial Decree 51354/2641/E103/2010, Annex 1, Part A.

Due to the lack of data related to the monitoring of priority substances in the WBs of RBD of Epirus, the chemical status of the majority of WBs is characterized as "unknown". Specifically:

The chemical status of sixty (60) rivers, with total length 805.42 km, which means 73.22% of total length of all rivers of RBD, is classified as "good chemical status". Due to the lack of data, chemical status of twenty two (22) rivers is not classified in any of the two classes.

- The chemical status of two (2) lakes, with total surface 30.24 km^2, which means 60.26% of total surface of all lakes of RBD, is classified as "good chemical status". The chemical status of one (1) lake, with surface 19.24 km^2, which means 38.35% of total surface of all lakes of RBD, is classified as "failing to achieve good". Due to the lack of data, chemical status of one (1) lake is not classified in any of the two classes.

Due to the lack of data, the chemical status of the total transitional waters was not determined.

Due to the lack of data, the chemical status of the total coastal waters was not determined.

The results of the classification of ecological, chemical and total status for each surface water body, are presented in the table below.

Table 6: Classification of surface water bodies status of the RBD of Epirus

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
L	GR0511L000000001H	TECHNITI LIMNI PIGON AOOU	Unknown	Good	Unknown
R	GR0511R0A0101022N	DRINOS P.	Good	Good	Good
R	GR0511R0A0200013N	AOOS P. 2	Good	Good	Good
R	GR0511R0A0200016N	AOOS P. 3	Good	Good	Good
R	GR0511R0A0200018N	AOOS P. 4	Good	Good	Good
R	GR0511R0A0200020H	AOOS P. 5	Good	Good	Good
R	GR0511R0A0200021N	AOOS P. 6	Moderate	Good	Moderate
R	GR0511R0A0201001N	AOOS P. 1	Good	Good	Good
R	GR0511R0A0202002N	SARANTAPOROS P. 1	Good	Good	Good
R	GR0511R0A0202007N	SARANTAPOROS P. 2	Good	Good	Good
R	GR0511R0A0202008N	SARANTAPOROS P. 3	Good	Good	Good
R	GR0511R0A0202103N	SARANTAPOROS P. - PARAPOTAMOS AMARANTOU R.	Good	Good	Good
R	GR0511R0A0202204N	VOURKOPOTAMOS P.	Good	Good	Good
R	GR0511R0A0202305N	VOURMPIANITIKO R.	Good	Good	Good
R	GR0511R0A0202406N	PISTILIAPI R.	Good	Good	Good
R	GR0511R0A0204009N	VOIDOMATIS P. 1	Good	Unknown	Unknown
R	GR0511R0A0204010N	VOIDOMATIS P. 2	Good	Good	Good
R	GR0511R0A0204011N	VOIDOMATIS P. 3	High	Good	High
R	GR0511R0A0204012N	VOIDOMATIS P. 4	Good	Good	Good
R	GR0511R0A0206014N	AOOS P. - PARAPOTAMOS RASENITIS 1	Good	Good	Good
R	GR0511R0A0206015N	AOOS P. - PARAPOTAMOS RASENITIS 2	Good	Good	Good
R	GR0511R0A0208017N	GIOTSAS R.	Good	Good	Good
R	GR0511R0A0210019N	AOOS P. - PARAPOTAMOS ARKOUDAS	Good	Good	Good
C	GR0512C0003H	Ormos Igoumenitsas	Moderate	Unknown	Moderate
C	GR0512C0A01N	Voreio Tmima Anatolikon Akton tis Kerkyraikis Thalassas	Moderate	Unknown	Moderate
C	GR0512C0A02N	Notio Tmima Anatolikon Akton tis Kerkyraikis Thalassas	Moderate	Unknown	Moderate
L	GR0512L000000004H	LIMNI PAMVOTIDA	poor	failing to achieve good	Poor
R	GR0512R000200024N	THYAMIS P. KALAMAS 2	Unknown	Unknown	Unknown
R	GR0512R000200027H	THYAMIS P. KALAMAS 3	Good	Good	Good
R	GR0512R000200029N	THYAMIS P. KALAMAS 4	Good	Unknown	Unknown
R	GR0512R000200032N	THYAMIS P. KALAMAS 5	High	Unknown	Unknown
R	GR0512R000200033N	THYAMIS P. KALAMAS 6	Good	Good	Good
R	GR0512R000200034N	THYAMIS P. KALAMAS 7	Good	Good	Good
R	GR0512R000200040N	THYAMIS P. KALAMAS 8	Good	Unknown	Unknown
R	GR0512R000200041N	THYAMIS P. KALAMAS 9	Good	Good	Good
R	GR0512R000201023N	THYAMIS P. KALAMAS 1	Unknown	Good	Unknown
R	GR0512R000202025A	TECHNITO TMIMA EKVOLIS KALAMA 2	Unknown	Unknown	Unknown
R	GR0512R000202026A	TECHNITO TMIMA EKVOLIS KALAMA 1	Unknown	Good	Unknown
R	GR0512R000204028N	THYAMIS P. KALAMAS - PARAPOTAMOS ASPRO R.	Good	Good	Good

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
R	GR0512R000206030N	THYAMIS P. KALAMAS - PARAPOTAMOS KALPAKIOTIKOS 1	Good	Unknown	Unknown
R	GR0512R000206031N	THYAMIS P. KALAMAS - PARAPOTAMOS KALPAKIOTIKOS 2	Good	Good	Good
R	GR0512R000208035N	THYAMIS P. KALAMAS - PARAPOTAMOS LAGKAVITSA R.	Good	Good	Good
R	GR0512R000210036N	TYRIA P.	Good	Good	Good
R	GR0512R000212037N	SMOLITSAS P.	Good	Unknown	Unknown
R	GR0512R000212138H	KLIMATIAS R.	Moderate	Unknown	Moderate
R	GR0512R000212139A	TAFROS LAPSISTA	Moderate	Good	Moderate
T	GR0512T0001N	Ekvoles Kalama	Moderate	Unknown	Moderate
C	GR0513C0004N	Aktes Ipeirou sto Ionio	High	Unknown	Unknown
C	GR0513C0005N	Aktes Pargas	High	Unknown	Unknown
C	GR0513C0006N	Ormos Nikopoleos	High	Unknown	Unknown
C	GR0513C0007N	Voreios Amvrakikos kolpos	Moderate	Unknown	Moderate
R	GR0513R000101042N	ARETHOUA R.	Moderate	Unknown	Moderate
R	GR0513R000200045N	ACHERON P. (MAVROPOTAMOS) 2	Good	Good	Good
R	GR0513R000200046N	ACHERON P. (MAVROPOTAMOS) 3	Good	Good	Good
R	GR0513R000200047N	ACHERON P. (MAVROPOTAMOS) 4	Good	Unknown	Unknown
R	GR0513R000201043N	ACHERON P. (MAVROPOTAMOS) 1	Good	Unknown	Unknown
R	GR0513R000202044N	ACHERON P. (MAVROPOTAMOS) - PARAPOTAMOS KOKTOS (VOUVOS)	Good	Unknown	Unknown
T	GR0513T0004N	Limnothalassa Mazoma	Moderate	Unknown	Moderate
L	GR0514L000000002H	TECHNITI LIMNI POURNARIOU II	Unknown	Unknown	Unknown
L	GR0514L000000003H	TECHNITI LIMNI POURNARIOU	Unknown	Good	Unknown
R	GR0514R000100048N	DIPOTAMON R.	Good	Good	Good
R	GR0514R000102049N	MANTANI R.	Good	Unknown	Unknown
R	GR0514R000200051H	ARACHTHOS P. 2	Moderate	Unknown	Moderate
R	GR0514R000200054N	ARACHTHOS P. 3	Good	Good	Good
R	GR0514R000200055N	ARACHTHOS P. 4	Good	Good	Good
R	GR0514R000200056N	ARACHTHOS P. 5	Good	Good	Good
R	GR0514R000200063N	ARACHTHOS P. 6	Good	Good	Good
R	GR0514R000200064N	ARACHTHOS P. 7	Good	Good	Good
R	GR0514R000200065N	ARACHTHOS P. 8	Good	Good	Good
R	GR0514R000200072N	ZAGORITIKOS P.	Good	Good	Good
R	GR0514R000201050H	ARACHTHOS P. 1	Unknown	Good	Unknown
R	GR0514R000202052N	RETSANORREMA	Good	Good	Good
R	GR0514R000203068N	ARACHTHOS P. 9	Good	Good	Good
R	GR0514R000204053N	SARANTAPOROS P.	Good	Good	Good
R	GR0514R000206057N	KALARRITIKOS P. 1	Good	Good	Good
R	GR0514R000206058N	KALARRITIKOS P. 2	Good	Good	Good
R	GR0514R000206060N	KALARRITIKOS P. 3	Good	Good	Good
R	GR0514R000206061N	KALARRITIKOS P. 4	Good	Good	Good
R	GR0514R000206062N	KALARRITIKOS P. 5	Good	Good	Good
R	GR0514R000206159N	KALARRITIKOS P. - PARAPOTAMOS MELISSOURGIOTIKOS	Good	Good	Good
R	GR0514R000208066H	METSOVITIKOS P. 1	Unknown	Unknown	Unknown
R	GR0514R000208067N	METSOVITIKOS P. 2	Good	Good	Good
R	GR0514R000210069N	ARACHTHOS P. 10	Good	Good	Good

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
R	GR0514R000210071N	ARACHTHOS P. 11	Good	Good	Good
R	GR0514R000210170N	SOURIKA R.	Good	Good	Good
R	GR0514R000212073N	MEGAS LAKKOS R.	Good	Good	Good
T	GR0514T0002N	Ekvoles Arachthou	Μέτρια	Unknown	Moderate
C	GR0534C0008N	Aktes Paxon	High	Unknown	Unknown
C	GR0534C0009N	Dyt. kai Vor. Aktes Kerkyras	High	Unknown	Unknown
C	GR0534C0010N	Dytikes Aktes Kerkyraikis Thalassas - Benitses	Good	Unknown	Unknown
C	GR0534C0011H	Ormos Garitsas kai Limenas Kerkyras	Good	Unknown	Unknown
C	GR0534C0012N	N. Othonoi	High	Unknown	Unknown
C	GR0534C0013N	N. Ereikousa	High	Unknown	Unknown
R	GR0534R000101074N	POTAMI	Good	Unknown	Unknown
R	GR0534R000301075N	MESANGIS R.	Good	Unknown	Unknown
R	GR0534R000501076N	FONISAS P.	Good	Unknown	Unknown
T	GR0534T0005N	Limnothalassa Korission (Kerkyras)	Good	Unknown	Unknown
T	GR0534T0006N	Limnothalassa Antinioti	Unknown	Unknown	Unknown
T	GR0534T0007N	Limnothalassa Chalikiopoulou	Unknown	Unknown	Unknown
R	GR0546R000200078N	LOUROS P. 2	Good	Unknown	Unknown
R	GR0546R000200080H	LOUROS P. 3	Unknown	Good	Unknown
R	GR0546R000200081N	LOUROS P. 4	High	Good	High
R	GR0546R000200082N	LOUROS P. 5	Good	Unknown	Unknown
R	GR0546R000201077N	LOUROS P. 1	Moderate	Good	Moderate
R	GR0546R000202079N	LOUROS P. - PARAPOTAMOS	Good	Unknown	Unknown
T	GR0546T0003N	Ekvoles Lourou - Limnothalasses Rodia, Tsoukalio, Logarou	Moderate	Unknown	Moderate

8.2 Assessment and classification of groundwater bodies status

The overall groundwater status is determined by the poorer of its quantitative status and its chemical status. As “good groundwater status” is determined a groundwater status when both its quantitative status and its chemical status are at least “good”.

8.2.1 Groundwater bodies quantitative status

The quantitative status of twenty five (25) GWBs is classified as “good”. The surface of these WBs covers about 7,810,837.3 km², corresponding to 86.19% of the total groundwater surface of the RBD of Epirus (Annex 1, Map 6.1: Quantitative Status of Ground Water Bodies) .

8.2.2 Groundwater bodies chemical status

The chemical status of twenty five (25) GWBs is classified as “good”. The surface of these WBs covers about 7,810,837.3 km², corresponding to 86.19% of the total groundwater surface of the RBD of Epirus (Annex 1, Map 6.2: Chemical Status of Ground Water Bodies).

The results of the classification of quantitative and chemical status for each GWB are presented in the table below.

Table 7: Quantitative – qualitative (chemical) status for each GWB in RBD of Epirus

RB code	WB code	WB name	Quantitative status	Chemical status
GR34	GR0500010	Systima asvestolithon N.Kerkyras	Good	Good
GR34	GR0500020	Systima Triadikon latypopagon N. Kerkyras	Good	Good
GR34	GR0500030	Systima kokkodon ydroforion N. Kerkyras	Good	Good
GR34	GR0500040	Systima N.Paxon	Good	Good
GR34	GR0500050	Systima N.Othonon	Good	Good
GR12	GR050A060	Systima Mourgkanas	Good	Good
GR12	GR050A070	Systima Filiaton-Igoumenitsas	Good	Good
GR12	GR0500080	Systima Mesou Rou Kalama	Good	Good
GR13	GR0500090	Systima Souliou-Paramythias	Good	Good
GR11	GR0500100	Systima Tymfis	Good	Good
GR12	GR0500110	Systima Klimatias	Good	Good
GR12	GR0500120	Systima Kasidiari	Good	Good
GR13	GR0500130	Systima Koronis	Good	Good
GR13	GR0500140	Systima Chersonisou Prevezas	Bad	Bad
GR46	GR0500150	Systima Lourou	Good	Good
GR46	GR0500160	Systima Artas	Good	Good
GR13	GR0500170	Systima Pargas	Good	Good
GR12	GR0500180	Systima Mitsikeliou-Vella	Good	Good
GR12	GR050A190	Systima Pogonianis	Good	Good
GR12	GR0500200	Systima ydroforion p.Kalama	Good	Good
GR12	GR0500210	Systima Kourenton	Good	Good
GR11	GR0500220	Systima ydroforion Sarantaporou-Aoou	Good	Good
GR11	GR0500230	Systima ydroforion Smolika-Mavrovouniou	Good	Good
GR14	GR0500240	Systima ydroforion p.Arachthou	Good	Good
GR46	GR0500250	Systima Zalongou	Good	Good
GR13	GR0500260	Systima ydroforion ano rou Acherontos-rematos Arethoua	Good	Good

8.3 Heavily modified and Artificial water bodies status

The results of the classification of status for each heavily modified and artificial water body are presented in the table below.

Table 8: Classification AWB status of RBD of Epirus

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
L	GR0511L000000001H	TECHNITI LIMNI PIGON AOOU	Unknown	Good	Unknown
R	GR0511R0A0200020H	AOOS P. 5	Good	Good	Good
C	GR0512C0003H	Ormos Igoumenitsas	Moderate	Unknown	Moderate
L	GR0512L000000004H	LIMNI PAMVOTIDA	Poor	failing to achieve good	Poor
R	GR0512R000200027H	THYAMIS P. KALAMAS 3	Good	Good	Good
R	GR0512R000202025A	TECHNITO TMIMA EKVOLIS KALAMA 2	Unknown	Unknown	Unknown
R	GR0512R000202026A	TECHNITO TMIMA EKVOLIS KALAMA 1	Unknown	Good	Unknown
R	GR0512R000212138H	KLIMATIAS R.	Moderate	Unknown	Moderate
R	GR0512R000212139A	TAFROS LAPSISTA	Moderate	Good	Moderate

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
L	GR0514L000000002H	TECHNITI LIMNI POURNARIOU II	Unknown	Unknown	Unknown
L	GR0514L000000003H	TECHNITI LIMNI POURNARIOU	Unknown	Good	Unknown
R	GR0514R000200051H	ARACHTHOS P. 2	Moderate	Unknown	Moderate
R	GR0514R000201050H	ARACHTHOS P. 1	Unknown	Good	Unknown
R	GR0514R000208066H	METSOVITIKOS P. 1	Unknown	Unknown	Unknown
C	GR0534C0011H	Ormos Garitsas kai Limenas Kerkyras	Good	Unknown	Unknown
R	GR0546R000200080H	LOUROS P. 3	Unknown	Good	Unknown

8.4 Classification results of WBs status of the RBD of Epirus

The number and the percentage of the WBs that will meet the environmental objectives of the WFD, as well as those that will fail to achieve a “good” status, as a result of any type of pressure (point and/or diffuse sources of pollution, abstraction, etc.) for all the WB categories (rivers, lakes, coastal, groundwater), are presented in the table below.

Table 9: Statistical data of WB status of the RBD of Epirus

Type of WB	Status								
	Number of WBs			WB Percentage			Surface or length Percentage		
	High or Good	Less than good*	Unknown	High or Good	Less than good*	Unknown	High or Good	Less than good*	Unknown
Rivers	53	6	23	65%	7%	28%	66,84%	6,36%	26,80%
Lakes	0	1	3	0%	25%	75%	0,00%	38,35%	61,65%
Transitional waters	0	4	3	0%	57%	43%	0,00%	98,31%	1,69%
Coastal Waters	0	4	9	0%	31%	69%	0,00%	22,84%	77,16%
Groundwaters	26	1	0	96%	4%	0%	98,06%	1,94%	0,00%

*"Less than good" corresponds to surface WBs status that may be "moderate", or "poor", or "bad", or "bad" one for GWBs.

8.5 Monitoring Program

8.5.1 Monitoring of surface waters

Officially established monitoring program for surface waters

The monitoring programme included in the Common Ministerial Decree 140384/2011 provides in total fifty- four (54) monitoring sites; thirty seven (37) for surveillance and seventeen (17) for operational monitoring, for the surface waters of the RBD of Epirus. (Annex 1, Map 10.1: Existing Monitoring Network Surface Water Bodies (J. M. D.140384/2011).

Updated Monitoring program for surface waters

The design of the Updated Monitoring Programme for surface waters was based on the new information obtained under the RBMP, i.e. new water bodies, the analysis of anthropogenic pressures and their impact, the determination of the ecological and chemical status of surface waters and the inventory of protected areas. This programme is optimised both in terms of the monitoring sites selected, as well as the type of the programme, the parameters monitored and their frequency of monitoring (Annex 1, Map 10.2: Updated Monitoring Network of Surface Water Bodies (Proposed By The R.B.M.P.).

The updated monitoring program of the RBD of Epirus includes fifty- five (55) monitoring sites in total; twenty- nine (29) for surveillance and twenty- six (26) for operational monitoring.

8.5.2 Monitoring of groundwaters

Officially established monitoring program for groundwaters

The monitoring programme of the Common Ministerial Decree 140384/2011 includes ninety (90) sites in total; nineteen (19) for surveillance and seventy one (71) for operational monitoring, for the

groundwaters of the RBD of Epirus (Annex1, Map 11.1:Existing Monitoring Network Groundwater Bodies(J. M. D.140384/2011).

Updated Monitoring program for groundwaters

The design of the Updated Monitoring programme for groundwaters is formed on the basis of the officially established monitoring programme as well as the data elaborated under the RBMP and specifically, the characterization of GWBs, the analysis of anthropogenic pressures and their impacts, the inventory of protected areas, and the status classification of GWBs.

The updated monitoring programme of RBD of Epirus includes one hundred and eight (108) monitoring sites in total; thirty nine (39) for surveillance and seventy one (71) for operational monitoring (Annex 1, Map 11.2: Updated Monitoring Network of Groundwater Bodies (Proposed By The R.B.M.P.).

9. ECONOMIC ANALYSIS OF WATER USES

The economic analysis of water uses is realized in accordance with the provisions of the Directive. It contains:

1. Estimate of the current financial, environmental and resource cost of water
2. Calculation of the current cost recovery rate
3. Discussion of flexible pricing policies that offer incentives for efficient use of water resources and for the achievement of the environmental objectives of the Directive

Three categories of costs are incorporated:

- Financial cost, including operational and maintenance costs, capital costs, administrative costs.
- Resource costs, defined as opportunity costs for the alternative uses of water, in cases where a water body is exploited beyond the rate of its natural replacement
- Environmental cost, defined as economic cost due to the environmental damage caused

Total cost is estimated for each water use per cubic meter as the sum of the individual cost elements.

The general formula for calculating the cost recovery rate for water services used was: $\mathrm{CRR} = \frac{\mathrm{TR-Subsidy}}{\mathrm{TC}} * 100\%$, where CRR is the Cost Recovery Rate, TR the total revenues (in €/year), Subsidy the total amount of subsidies paid to the water service, and TC the economic costs (in €/year) of the water service provided.

The results of the cost analysis are summarized as follows:

Financial cost

1. It is 2.451 €/m^3 consumed for refined water providers
2. Non-refined water providers face a much lower financial cost equal to 0,033 €/m^3 consumed.

Resource and environmental cost

On average, for the whole of the water department:

1. The environmental cost is zero for refined water for domestic use and equal to 0,156 €/m^3 consumed for irrigation purposes.

2. The resource cost is zero for refined water for domestic use and very low equal to 0,001 €/m^3 consumed for irrigation purposes.

Total cost, average revenue and recovery rate

1. Total cost is 2,451 €/m^3 for refined water for domestic use and its recovery rate is 84,8%, with a corresponding average revenue of 2,078€/m^3.
2. For non-refined irrigation water total cost equals 0,190 €/m^3 consumed. Its recovery rate is low equaling 7,5%

The overall objective for future pricing policies is to contribute in achieving qualitative and quantitative upgrading of water resources. Two conditions are to be respected:

1. Cost should be recovered to a satisfactory level
2. The new pricing policies should not create or exacerbate conditions of water poverty in low income households or households living in regions of water scarcity

In parallel, it is considered necessary that exemptions are recognized on the basis of mainly social criteria (eg., school or health institutions or multi-member households).

10. ENVIRONMENTAL OBJECTIVES – EXEMPTIONS

In Article 4 and specifically the paragraphs 4.4, 4.5, 4.6 and 4.7 of the WFD, a list of possible exemptions from the environmental objectives is provided and a description of the terms and processes for their application. The types of exemptions are:

- Article 4.4: An extended deadline
- Article 4.5: A less stringent objective
- Article 4.6: Temporary deterioration in status
- Article 4.7: New Modifications- Activities

Implementation of Article 4.4 (extended deadline) exemption, is proposed for fifteen (15) surface WBs and one (1) GWB and also implementation of Article 4.7 for two (2) surface WBs from the total WBs of the RBD of Epirus that are included in the list of “exemptions”. The extended deadline for every water body that consist an “exemption” is based on a justification and it depends on the nature of the problem, and also the measures for the achievement of “good status” by 2015. The type and the exemption justification, the year of achievement of environmental objectives for each WB exempted, and their applied measures are presented in the table below.

Table 10: Measures and estimated year of environmental objectives achievement for each water body exempted

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0500140	Systima Chersonisou Prevezas	Art. 4.4	Technical feasibility	2027	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B080, WD05B090, WD05B100, WD05B110, WD05B120, WD05B130, WD05B140, WD05B150, WD05B160, WD05B180, WD05B190, WD05B200, WD05B210, WD05B220, WD05B230, WD05B270, WD05B290, WD05B300, WD05B310, WD05B320, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S070, WD05S090, WD05S100, WD05S140, WD05S170, WD05S250, WD05S280, WD05S290
GR0511R0A0200021N	AOOS P. 6	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290
GR0512C0003H	Ormos Igoumenitsas	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0512C0A01N	Voreio Tmima Anatolikon Akton tis Kerkyraikis Thalassas	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290
GR0512C0A02N	Notio Tmima Anatolikon Akton tis Kerkyraikis Thalassas	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290
GR0512L000000004H	LIMNI PAMVOTIDA	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S120, WD05S170, WD05S230, WD05S250, WD05S280, WD05S290, WD05S310, WD05S330, WD05S340

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0512R000212138H	KLIMATIAS R.	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290
GR0512R000212139A	TAFROS LAPSISTA	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290, WD05S330
GR0512T0001N	Ekvoles Kalama	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0513C0007N	Voreios Amvrakikos kolpos	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S040, WD05S110, WD05S170, WD05S250, WD05S280, WD05S290, WD05S310
GR0513R000101042N	ARETHOUA R.	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S170, WD05S250, WD05S280, WD05S290
GR0513T0004N	Limnothalassa Mazoma	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S110, WD05S170, WD05S250, WD05S280, WD05S290

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0514R000200051H	ARACHTHOS P. 2	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S170, WD05S250, WD05S280, WD05S290
GR0514T0002N	Ekvoles Arachthou	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S040, WD05S110, WD05S170, WD05S250, WD05S280, WD05S290
GR0546R000201077N	LOUROS P. 1	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S170, WD05S250, WD05S280, WD05S290, WD05S310, WD05S330

WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0546T0003N	Ekvoles Lourou - Limnothalasses Rodia, Tsoukalio, Logarou	Art. 4.4	Technical feasibility	2021	WD05B010, WD05B020, WD05B030, WD05B040, WD05B050, WD05B060, WD05B070, WD05B090, WD05B100, WD05B110, WD05B140, WD05B150, WD05B160, WD05B170, WD05B180, WD05B190, WD05B210, WD05B220, WD05B230, WD05B240, WD05B250, WD05B260, WD05B270, WD05B280, WD05B290, WD05B300, WD05B310, WD05B320, WD05B330, WD05B340, WD05B350, WD05B360, WD05B370, WD05B380	WD05S010, WD05S020, WD05S030, WD05S040, WD05S110, WD05S170, WD05S250, WD05S280, WD05S290

In conclusion, for fifteen (15) WBs the year of environmental objectives achievement is estimated the year 2021, while for one (1) the year 2027 (see Table 10).

Table 11: Number of WBs per year of achievement of environmental objectives for each WBs category

	Year of achievent of environmental objectives		
WB category	**2015**	**2021**	**2027**
Rivers	76	6	0
Lakes	3	1	0
coastal	9	4	0
transitional	3	4	0
groundwaters	25	0	1

The results of the application of exemption, per WB category in RBD of Epirus, are presented below.

Table 12: Rivers exemption

Type of Exemption	% percentage of WBs total length	Justification	% percentage of WBs of each justification	Comments
Article 4.4	6.4%	1) Technical feasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical feasibility 2) disproportionate cost	1) 0% 2) 0%	
Article 4.6	0%	1) natural causes (floods, droughts) 2) unforessen circumstances 3) accidents	1) 0% 2) 0% 3) 0%	
Article 4.7	2%	1) new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater 2) New sustainable human development activities	1)2% 2) 0%	

Table 13: Lakes exemption

Type of Exemption	% percentage of WBs total surface	Justification	% percentage of WBs of each justification	Comments
Article 4.4	38.4%	1) Technical feasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical feasibility 2) disproportionate cost	1) 0% 2) 0%	
Article 4.6	0%	1) natural causes (floods, droughts) 2) unforeseen circumstances 3) accidents	1) 0% 2) 0% 3) 0%	
Article 4.7	2%	1) new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater 2) New sustainable human development activities	1) 2% 2) 0%	

Table 14: Transitional WBs exemption

Type of Exemption	% percentage of WBs total surface	Justification	% percentage of WBs of each justification	Comments
Article 4.4	98.3%	1) Technical feasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical feasibility 2) disproportionate cost	1) 0% 2) 0%	
Article 4.6	0%	1) natural causes (floods, droughts) 2) unforeseen circumstances 3) accidents	1) 0% 2) 0% 3) 0%	
Article 4.7	2%	1) new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater 2) New sustainable human development activities	1) 2% 2) 0%	

Table 15: Coastal WBs exemption

Type of Exemption	% percentage of WBs total surface	Justification	% percentage of WBs of each justification	Comments
Article 4.4	22.8%	1) Technical feasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical feasibility 2) disproportionate cost	1) 0% 2) 0%	
Article 4.6	0%	1) natural causes (floods, droughts) 2) unforeseen circumstances 3) accidents	1) 0% 2) 0% 3) 0%	
Article 4.7	2%	1) new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater 2) New sustainable human development activities	1) 2% 2) 0%	

Table 16: GWBs exemption

Type of Exemption	% percentage of WBs total length	Justification	% percentage of WBs of each justification	Comments
Article 4.4	13.81%	1) Technical feasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical feasibility 2) disproportionate cost	1) 0% 2) 0%	
Article 4.6	0%	1) natural causes (floods, droughts) 2) unforeseen circumstances 3) accidents	1) 0% 2) 0% 3) 0%	
Article 4.7	2%	1) new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater 2) New sustainable human development activities	1) 2% 2) 0%	

In the River Basin Management Plan of Epirus there are future projects and activities, that are expected to be completed by 2015 and their impact can be important for the achievement of environmental objectives of specific water bodies (Annex 1, Map 26: Environmental Targets for 2015 - Surface Water Bodies and Map 27: Environmental Targets for 2015 - Groundwater Bodies).

.Programmed or new projects that have been examined for their compatibility with the WFD guidelines or as exemptions according to Article 4.7 are presented in the following Table. These projects are examined under the procedure for Environmental Permitting.

Table 17: New activities and related WBs

Name of Programmed or new project	Reason for evaluating the project	Implementation of Art. 4.7 and Affected Water Bodies
Metsovitikos Hydroelectric Dam in Ioannina regional unit	Runoff Reduction or Flow Regulation / HMWB/AWB Creation / Canalisation	YES, METSOVITIKOS P. 1 (GR0514R000208066H)
Kompotiou Dam in Arta regional unit	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB/AWB Creation / Canalisation/ Reduction of groundwater flow	YES, DIPOTAMON P. (GR0514R000100048N)

11. PROGRAMME OF MEASURES

The program of measures is the key element of the River Basin Management Plan for the achievement of the 2000/60/EC Directive objectives. The measures are divided into basic and supplementary:

- **Basic measures** result from the implementation of national and European legislation on water protection, including 2000/60/EC Directive and the overall environmental policy and these measures at least should be included in the Programme of Measures.
- **Supplementary measures** include measures designed and implemented in addition to the basic measures.

In Epirus River Basin District, **it is proposed to be implemented by 2027, seventy-two (72) measures, thirty- (39) basic and thirty-four (34) supplementary**.

Proposed Basic Measures for Epirus RBD are presented in the table below:

Table 18: Basic measures of Epirus RBD

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD05B010	Measures to implement the cost recovery principle	Adaptation of pricing policies so as to avoid waste of water and serve in a flexible way the objective of environmental sustainability and avoidance of wasting water	Formulation of a common pricing policy for refined water for domestic use in order to curb wasting water and gradually recover the cost of water, taking into account social and environmental parameters.
WD05B020	Measures to promote an efficient and sustainable water use	Implementation of Water Safety Plans in big Municipal Enterprises for Water Supply and Sewerage (such as Ioannina, Arta, Preveza, Igoumenitsa and Corfu)	The Water Safety Plans are a holistic approach related to the qualitative management of water from the water source to the distribution, adopting the principle of multiple barriers and focusing on the need for implementation of control measures in all links of the water supply chain. The Specifications for the implementation of the Water Safety Plans were developed in the framework of the project "Technical Support to the General Secretariat for Water of the Ministry of Environment, Energy and Climate Change for the recording of the problems for the implementation of the Directive 98/83/EC on the quality of drinking water in Greece and investigation of possibilities for the adoption of Water Safety Plans", which was funded by the Operational Programme "Environment and Sustainable Development" (OPESD) and completed by 2011. It is proposed to implement the Water Safety Plans in big Municipal Enterprises for Water Supply and Sewerage, such as these of Ioannina, Arta, Preveza, Igoumenitsa and Corfu, aiming at safeguarding public health and adopting and implementing good practices in the drinking water supply network, through the minimization of pollutants in the drinking water and especially at its source, the right water treatment and distribution to water supply networks regardless the size of these networks.
WD05B030	Measures to promote an efficient and sustainable water use	Promotion of efficient water management technologies in industry	Encouragement of the conservation and recycle of water in water consuming industries with consumption greater than 50.000 m^3/year.
WD05B040	Measures to promote an efficient and sustainable water use	Development of the legislative framework and of Program of Measures for residential water saving	The potential for water saving at residences has been investigated in the framework of the project "Technical Support to the General Secretariat for Water for the preparation of a Programme of Measures and of the Institutional framework for Residential Water savings", funded by the OPESD. The implementation of residential water saving programs leads to the promotion of new technologies for water reuse and conservation. The relevant study, which has been completed, indicated that simple interventions in the household equipment can achieve important water

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
			savings (at least 30% in individual households and around 10% in total). The Ministry of Environment, Energy and Climate Change, through the General Secretariat for Water, started at April of 2014 examining the development of an Institutional Framework and Program of Measures for residential water savings. The measures promoted are of institutional, regulatory, financial και demonstrating character. The New Building Code foresees already the installation of water saving equipment (which will be specified by decisions of the Minister of Environment, Energy and Climate Change) in new residences.
WD05B050	Measures to promote an efficient and sustainable water use	Reorganization / Rationalization of the institutional framework for the operation of the collective irrigation networks management bodies.	The framework for the operation of the Land Reclamation Organisations was enacted in 1958 and since then has been amended / supplemented by a series of acts. Nowadays, these organizations have, in their great majority, serious malfunctions due partly to the non implementation of the legislative framework for the operation and partly to the outdated organisational structure. The measure refers to the formulation of proposals and institutional changes associated with the upgrade of operation and the update of the insitutional framework of Local Land Reclamation Organisations / General Land Reclamation Organisations, so that they are adapted to the current administrative structure of the State and that the irrigation water management is substantially improved. Towards this direction, the Directorate for Utilization of Land Reclamation Projects and Equipment of the Ministry of Rural Development and Food has already elaborated a relevant legislative regulation, which has been sent to the Ministry of Interior for consultation with all competent Ministries.
WD05B060	Measures to promote an efficient and sustainable water use	Strengthening of the actions to reduce losses in collective irrigation networks.	It is necessary to: (1) optimize the irrigation programme through the cooperation of the Local Land Reclamation Organization with the farmers, so that the irrigation during the hours of the day with a very high temperature is avoided. If it is necessary, it is also suggested to update the irrigation programmes after recommendation of the Regional Authority and in collaboration with the supervising department of the Local Land Reclamation Organization. It is noted that the Local Land Reclamation Organizations are already obliged by the existing legislative framework to develop timeschedules and irrigation programme. (2) The water transfer infrastructure should be maintained at a high standard, under the care of the Regional Authority and (3) The controls aiming at ensuring the proper implementation of the irrigation programmes

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
			should be intensified. It is proposed that the controls are conducted by the Body that supervises the Local Land Reclamation Organizations.
WD05B070	Measures to promote an efficient and sustainable water use	Drafting of a Technical Specifications Manual for the implementation of the reuse methods	Drafting of a Technical Specifications Manual for the implementation of the reuse methods foreseen in the Common Ministerial Decision 145116/2.3.2011 (OJ 354B) where the following will be indicatively determined: A) The description of the potential reuse methods, in which cases the implementation of each method is recommended, the minimum implementation requirements for each method, as well as the proper and effective Implementation practices. B) The reuse study and application procedures, i.e. the successive approach stages (expression of intent - preliminary study, Environmental Impact Assessment Study, Consultation of interested Parties, Technical implementation study, Licensing, Pilot implementation, implementation), as well as the specification of responsibilities of the stakeholders.
WD05B080	Measures to meet the requirements of Article 7 (drinking water)	Detailed delineation of protection zones of groundwater abstraction points (springs, boreholes) for drinking water abstractions> 1.000.000 m³ per year	Detailed delineation of protection zones of groundwater abstraction points (springs, drillings) for drinking water abstractions> 1.000.000 m³ per year (Municipalities of Corfu, Igoumenitsa, Ioannina, Passaronas, Perama and Fanari). The elaboration of special hydrogeological studies, after the completion of which the detailed delineation will be feasible, is a prerequisite.
WD05B090	Measures to meet the requirements of Article 7 (drinking water)	Projects for restoration / reinforcement of external water supply network	The measure refers to the restoration of old damaged water pipes and to the reinforcement of external water supply reservoirs in order to cover increased water supply demand. Some projects concerning the improvement / expansion of the water supply network in new agglomerations or growing municipalities have already been integrated in the OPESD. These projects, aiming at the effective covering of the increasing water needs in agglomerations and municipalities, are priority projects for the implementation of the Directive. Indicatively, such projects for the areas of Stroggyli and Moraitika of the Municipality of Melitieon are integrated in OPESD. The competent authorities are held responsible for the promotion of them as well as of all similar projects.
WD05B100	Measures to meet the requirements of	Actions for the modernization of the water supply network	The control of leakages in the water supply networks aims at detecting leaks and preventing great losses of water. It is supported by the OPESD, in the framework of the Priority Axis 2

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
	Article 7 (drinking water)	operation for big urban agglomerations of the water district. Leakages control.	"Water Resources Protection and Management", within the Invitation 2.6 "Leakages Minimization projects in problematic urban water supply networks", with a budget of 60 million Euros and a time horizon for project implementation until 2015. Leakages of any type due to defective connections or damages on pipelines, illegal connections, measurement errors, due to defective water meters or merely the absence of water meters, contribute to a non-pricing of water, which the Municipal Enterprises for Water Supply and Sewerage have estimated to be between 35 % and 70%. Methods for the detection of water losses in water distribution networks should be implemented under the responsibility of the Municipal Enterprises for Water Supply and Sewerage on an on-going basis. The detection should be followed by the repair and restore of the proper operation. The installation of water meters and/or replacement of the defective ones should be promoted. Projects involving such actions have already been integrated in the OPESD. However, such actions must be generalized as a priority in all Municipal Enterprises for Water Supply and Sewerage, where losses in the water distribution network of more than 50% occur. Indicatively, such projects for the Municipal Enterprises for Water Supply and Sewerage of Igoumenitsa and Arta are integrated in the OPESD and should be promoted with responsibility of the competent authorities. In order to extend such actions to other Municipal Enterprises for Water Supply and Sewerage, initially the losses on networks should be recorded by the respective Municipal Enterprises under the supervision of the Direction of Water and the area priorities should be set, so that similar projects can be launched within the next programming period.
WD05B105	Measures to meet the requirements of Article 7 (drinking water)	Protection of water abstraction areas from surface water bodies for water supply	Designation of a protection area around the surface water bodies that are being used for water supply, where no Water Safety Plan is being applied. These areas will be designated by the conduction of special studies. Until those studies are finished, in case of a permission request regarding either new projects and/or activities in the River Basin of the particular WB or the discharge of their wastewater in the RB, the Competent Authorities that are responsible for the environmental permitting should consider the impact of the abovementioned activities on the quality of the surface water, aiming at the preservation of the quality on the current levels. For the WBs that are designated for abstraction of drinking water, during the environmental permission of the projects regarding the utilization of the water resources, the developer of the project should deliver to the competent authorities the following: • Detailed plan of the areas designated for the protection of water,

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
			• Regulatory framework of the abovementioned designation and of the permitted activities
WD05B110	Measures to meet the requirements of Article 7 (drinking water)	Delineation of protection zones for drinking water abstraction works	In the drinking water abstraction infrastructure (drillings, springs, wells), and until the completion of the specific hydrogeological studies, temporary protection zones of water abstraction points are defined as follows: ❖ Zone of absolute protection I: 10-20 m around the abstraction site. ❖ Zone of controlled protection II: defined depending on the type of aquifer as follows: • Karstic systems: 600 m upstream and both sides (recharge area) and 300m downstream of water abstraction site. • Fractured systems: 400 m upstream and on both sides (recharge area) and 200m downstream of water abstraction site. • Granular unconfined systems: perimeter with radius of 400m • Granular confined or semi-confined aquifers: perimeter with radius of 300m For the karstic and fractured systems in case no data is available regarding the piezometric level or the recharge area, a protection zone with radius equal to the abovementioned upstream distance is implemented. ❖ Zone of protection III: It refers to the recharge basin of the abstraction site and can be determined only by the aforementioned hydrogeological study. Activities in principle prohibited by zone: ❖ Protection zone I (absolute protection): The zone, which protects the immediate environment of the abstraction from pollution, is characterized as zone of full ban. Within this zone, all activities are prohibited, with the exception of the necessary works for the operation and maintenance of the water abstraction works. ❖ Protection zone II (controlled): This zone protects the drinking water mainly from the microbiological pollution (50-day zone) and from the pollution cause by human activities or works that are dangerous due to their proximity with the abstraction site. Within this zone, all activities with high polluting risk, such as (indicatively) intensive agricultural activities using pesticides – agrochemicals, livestock facilities, industrial – handicraft facilities, facilities for treatment or transfer of wastewater or solid waste, garages, quarrying and mining activities, cemeteries, and generally any relevant activity that can be a potential pollution source equal or greater than the aforementioned, are prohibited. ❖ Protection zone III (supervised): It surrounds the zones I and II and develops throughout the recharge basin that feeds the underground aquifer from which the abstraction is supplied.

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
			In Zone III the existing legislation on water protection applies. The specifications for the aforementioned hydrogeological studies will be determined by the competent authorities, under the coordination of the General Secretariat for Water.
WD05B120	Measures to meet the requirements of Article 7 (drinking water)	Protection of the groundwater systems included in the register of drinking water protected areas and definition of the protection legislative framework.	First, for the installation of new activities the prohibitions of the protection zone II of groundwater abstraction points for drinking with the exception of cemeteries, garages and parkings, and quarrying activities, are implemented. The installation of new activities may be permitted in specific locations after the submission of the hydrogeological study or report, depending on the size and category of the activity and after the positive decision issued by the competent Water Direction. Determination of the legislative protection framework, where the measures for the protection of the groundwater systems included in the register of protected areas will be adopted in detail.
WD05B130	Measures for control of of surface water and groundwater abstractions	Installation of groundwater abstraction monitoring systems.	This measure requires the gradual installation of water meters in all forms of groundwater abstraction (boreholes, wells or spring water diversions) from which a volume of water equal to or greater than 10m^3 per day is abstracted, for the monitoring and control of groundwater abstractions. This measure refers to all individuals and legal entities responsible for the operation of abstraction (e.g. Municipal Water and Sewerage Companies, Municipalities, Irrigation Boards, individuals). The cost of the necessary associated equipment will be covered by the abovementioned persons or entities, while it is possible to provide incentives for the implementation of the measure. The persons or entities responsible shall be obliged to declare the start of operation of the metering equipment to the relevant Water Directorate while large users (Municipal Water and Sewerage Companies, municipalities, industries, collective irrigation networks) are obliged to report to the Water Directorate the measurement data on the quantities annually abstracted within the first ten days of October of each year.
WD05B140	Measures to control the abstractions of surface water and groundwater	Monitoring of surface water abstractions for water supply, irrigation and other uses from large consumers.	This measure refers to abstractions greater than 10 m^3 per day and includes the installation or modernization of existing recording equipment (water meters, water level loggers, etc.) at surface water abstraction projects. The associated necessary equipment will be determined upon issuing of a new water use license or renewal of an existing one and the relevant cost will be covered by the individual or entity that performs the abstraction of water; it is possible to provide suitable incentives for the implementation of this measure. The person or entity responsible shall be obliged to declare the start of operation of the metering equipment to the relevant Water Directorate. The measurements of the quantities of water abstracted annually

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
			will be communicated to the Water Directorate during the first ten days of October of each year.
WD05B150	Measures to control the abstractions of surface water and groundwater	Update of the Ministerial Decision Φ16/6631/1989 on the lower and upper limits of necessary quantities of irrigation water.	The Ministerial Decision Φ16/6631/1989 defined minimum and maximum necessary quantities for rational use of irrigation water, per category of crop and per River Basin District. These limits were calculated on a monthly basis for the period April - September and can also be applied cumulatively. The calculation of the necessary quantities was done by means of the Blaney – Griddle method. The update of the abovementioned Ministerial Decision is proposed, taking into account meteorological data from 1989 onwards, as well as the provisions of the River Basin Management Plans.
WD05B160	Measures to control the abstractions of surface water and groundwater	Creation of a common registry of licensed water abstractions through the process of issuing water use licenses.	This measure refers to the unification of the basic information collected by the Water Directorates when issuing water use licenses, mainly in relation to the location of the abstraction, the quantities abstracted and the water body affected, as well as information on the accountable person or persons, so that a rationalization of controls required for compliance with the terms and conditions of each license may be achieved. The information which should be included in the registry will be determined by SSW in cooperation with the Water Directorates. The registry will be available to the regional authorities so as to facilitate the necessary checks provided for such projects.
WD05B170	Measures to control the abstractions of surface water and groundwater	Establishment of criteria to determine the limit of total abstractions per surface water body.	This measure is aimed at investigating the possibility of establishing a methodology and criteria for determining environmental flows downstream of major water projects based on the results of the National Monitoring Network on the status of surface water bodies in the country and having as goal the development of specific standards.
WD05B180	Measures to control the abstractions of surface water and groundwater	Revaluation of the legislative framework for water use licensing and construction of water resources development works.	The provisions of JMD 43504/2005 (Government Gazette No. 1784 B') and other relevant regulations should be revised in order to, among other things, (a) examine the compatibility of any water development project with the provisions of the River Basin Management Plan at an early stage for the timely information of stakeholders, and (b) to investigate the licensing procedure of water use for geothermal purposes
WD05B190	Measures to control the abstractions of surface water and groundwater	Prohibition of constructing new water abstraction works (boreholes, wells, etc.) for new water uses and for extending existing water use licenses within: • Groundwater bodies with quantitative status classified as "poor"	In GWBs which have been determined to be in poor quantitative status, within areas serviced by collective irrigation networks and within the protection zones of drinking water abstraction points, new drilling should be forbidden in order to avoid further deterioration of their status and to protect these GWBs. This rule excludes special cases with priority to drinking water use projects and projects which can lead to a measurable decrease of abstraction from GWBs. Such projects will be reviewed and approved by the competent Water Directorate after submission of a documented hydrogeological desk study for abstractions less than 10 m^3/day or a full hydrogeological study for abstractions greater than 10 m^3/day. The technical specifications for the aforementioned hydrogeological studies will be determined by the competent authorities

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		• Areas serviced by collective irrigation networks • Protection zones (zones I and II) of potable water abstraction works.	under the coordination of SSW. Within areas of collective irrigation networks, new borehole licenses may be granted to reinforce the collective irrigation network towards greenhouse water supply, protection against frost and other uses excluding irrigation.
WD05B200	Measures to control the artificial recharge of GWBs	Investigation of the conditions for application of artificial recharge of groundwater bodies as a measure to enhance the quantitative status and protect the quality of GWBs.	The artificial recharge of groundwater aquifers is an essential tool for addressing the quantitative reduction or qualitative degradation of GWBs which is caused by the various pressures on groundwater such as over-pumping, contamination, etc. This is an environmental action taking advantage of natural underground reservoirs, formed in the subsoil, for storing good quality water during the winter period to be available for use during the summer period of increasing demands. The implementation of artificial recharge aims to enhance the quantitative and qualitative upgrading of GWBs. The measure is also important due to its contribution to the mitigation and gradual repelling of the seawater intrusion front in coastal aquifers. The effectiveness of artificial recharge is determined by several factors such as the determination of the storage capacity of aquifers, the water availability in sufficient quantity for the needs of the application and in the desired quality compatible or better than the quality of the recharged groundwater body. The artificial recharge procedures described are based on the exploitation of good quality surface water and are not related to artificial recharge foreseen by the JMD 145116/8.3.2011 (Government Gazette No. 354 B'). For the implementation of artificial recharge applications it will be necessary to conduct a specific hydrogeological study which will investigate the depth of the aquifer, the presence or absence of superimposed strata, the hydraulic conductivity and the depth of enrichment. This study will incorporate the detailed design of the recharge program, the appropriate method and the best implementation procedures. Technical specifications for these Hydrogeological Studies of artificial recharge will be determined by the Special Secretariat for Water (SSW).
WD05B210	Measures for point source pollution	Promoting the design of central treatment units for agricultural and animal waste	Originally the preparation of techno-economic studies and studies of scope per Regional Unit are recommended in order to investigate the sustainability for agricultural and animal waste as well as their preliminary location so as to allow launching of their construction.
WD05B220	Measures for point source pollution	Defining terms and conditions for connection of industries to sewerage networks / acception of industrial wastes in WWTP	The management bodies of the sewerage networks and WWTP will have to issue sewerage networks operation rules or revise the existing ones in order to define the conditions for connection of industries to sewerage networks and/or terms for the reception of industrial wastes in WWTP. For the issuance of such regulations the opinion of the Water Directorate is

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			required. The operating rules will be communicated to the Water Directorate, to the Special Secretariat for Water as well as to the competent for the relevant controls authorities of the Region.
WD05B230	Measures for point source pollution	Establishment/settlement of emission limit values, in RBD level, regarding the priority substances and the other pollutants established in the Joint Ministerial Decision 51354/2641/E103/2010 as well as the Physicochemical parameters related to the quality objectives designated in the River Basin Management Plans.	The aim of this measure is the designation of emission limit values for the priority substances and the other pollutants that are established in the Joint Ministerial Decision 51354/2641/E103/2010 and affect the surface water bodies. During the designation of the emission limit values, attention should be paid to the following: i The Environmental Quality Standards that are designated in terms of Annual Average concentration by the Joint Ministerial Decision 51354/2641/E103/2010. ii. The Guidance 91/271/EEC. iii. The dilution during the summer period, when the river discharge is minimum and also the dilution when the wastewater discharge from the industries or from other activities is maximum. iv. The sensitivity of the area. v. The daily and annual estimated pollution load of the companies. vi. The concentration of the basic parameters of the pollution load. vii. The correlation with the protected areas for drinking water. The Emission Limit Values will be the maximum values and the wastewater of the industries or other activities developed in the RBD should conform to them in every case. Originally the Water Directorates should determine the rivers basins that are priority for their regions and then to price the activities that are essential in order to be implemented the appropriate researches and surveys in the next managing period.
	Measures for point source pollution	Specification of criteria for licensing new / expansion of existing aquaculture units.	During the licensing process of new or the expansion of existing aquaculture units in water bodies whose status is characterized as bad, it must be demonstrated that in the immediate area of the units' installation, the status of the water bodies is good according to the Directive 2000/60/EC. The classification of the water bodies' status as bad is presumed by the Water Management Plans and the results of the National Monitoring Program of JMD 140384 (GG 2017/B/9.92011), which is in progress.
WD05B250	Measures for point source pollution	Specification of the process to control and designate zones for aquacultures in inland waters.	This measure refers to establishing special specifications and issuing a regulatory act for the designation of zones for the development of inland waters aquaculture, implementation of operation checks (frequency, intensity, infrastructure, waste), imposition of sanctions and fines in case of environmental conditions violations and / or illegal operation. The co-operation of the Special Secretariat for Water with the competent authorities of the Ministry of Rural Development and Food is required as well as with the competent authorities for environmental licensing.

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WD05B260	Measures for point source pollution	Enhancement of the periodical audits of the coastal waters that are being pressured from stormwater outfalls and other pollution sources.	The monitoring program of the Directorate of Health and Social Care in every Regional Unit should be reviewed in order to expand the sampling period and therefore concentrate in coastal water bodies that are being pressured from stormwater outfalls and other pollution sources. The final aim is the adoption of a special program of periodical audits of the water that ends up to the sea. The sampling programming will be performed in collaboration with the Competent Division responsible for Waters and according to the provisions of the RBD Management Plans. The sampling results will be communicated to the abovementioned Division.
WD05B270	Measures for point source pollution	Modernization of national legislation on the management of urban and industrial waste waters	The Ministerial Decision E1b/221/1965 on the management of urban and industrial waste waters and its subsequent amendments was and still is even today, the basic institutional framework that governs the disposal of urban sewage and industrial and municipal waste waters. The Ministerial Decision E1b/221/1965 was characterized as an innovative institutional framework at its time, which, however, does not cover for the modern environmental policy. The relevant provisions of Articles 2, 7, 8, 12 and 14 of the Health Act No E1b/221/1965 (GG B'138) as amended, have already been repealed, while Article 59 of the Greek Law 4042/2012 describes its universal abolition, which however poses ambiguity on an eventual legal loophole. After co evaluating the above mentioned, the establishment of a modern legal framework for the management of urban and industrial waste water is proposed.
WD05B280	Measures for point source pollution	Development of a regulatory framework / guidelines for monitoring water quality in aquaculture units	In the context of environmental licensing according to the Greek law 1650/86 as amended and in force with the Greek law .3010/2002 as well as protection and management of water bodies in accordance with the Greek law 3199/2003 and Presidential Decree 51/2007 the systematic monitoring of water quality in aquaculture units is provided for. The competent authorities for issuing environmental terms and water use licenses usually apply the JMD No. 46399/1352/27-6-1986 '' Quality required of surface water that are intended for : «drinking water», «bathing», «fish life in freshwater» and « shellfish waters », measuring methods, sampling frequency and analysis of surface water intended for drinking water, in compliance with the instructions of the Council of the European Communities 75/440/EEC, 76/160/EEC, 78/659/EEC, 79/923/EEC and 79/869/EEC'' even though it does not relate with the fish life in the sea. It has also been observed that the decisions issued do not include unified terms as to monitoring the parameters for all the units. In this context it is proposed to issue unified guidelines defining the parameters of water and sediment that should be monitored at regular time intervals in aquaculture units of coastal and inland waters in order to protect and maintain the status of the water bodies.
WD05B290	Measures for point source pollution	Instruction of an institutional	There is a need to adopt an integrated legal framework that will govern the licensing of tanker trucks that transport sewage, as the existing legal framework, does not require licensing for the

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		framework for the licensing of sewage tanks transport.	work of collection and transportation of urban waste. According to an earlier decision of the Ministry of Infrastructure, Transport and Networks, the licensing of tanker trucks that transport sewage only required the issuance of a vehicle registration document, which only determines traffic issues. Severe problems arise from unmonitored management and uncontrollable disposal of urban waste transferred by the tanks to protected areas, biotopes, water bodies, surface water drains or sewers, landfills, fields etc. due to lack of a control mechanism . The measure involves the creation of a regulatory framework for the licensing of tanker trucks transporting sewage that will define special measures for the positioning and control of the tanker trucks. Indicatively: electronic monitoring for each tank, a register of licensed tanks, provision for crosschecking with industries in the area, provision for the expansion of the inspectors' network (defining the competent monitoring services and imposing strict penalties for environmental violations, (e.g. immediate collectable fines and escalation of the above with license withdraw and vehicle seizure), involvement of the municipalities, confirmation of the disposal of transported waste to a WWTP.
WD05B300	Measures for diffuse source pollution	Gradual, selective conversion of conventional crops to organic	Encouragement and support (Technical & Scientific) of producers that implement conventional cultivation techniques towards conversion of crops to organic, primarily in vulnerable areas of the Directive 91/676/EEC.
WD05B310	Measures for diffuse source pollution	Modernization of the institutional framework for sludge management from waste water treatment plants with emphasis on expanding the scope of its applications and review the quality characteristics of the applied sludge.	The agricultural reuse of sludge is subject to the provisions of Directive 86/278/EK which has been incorporated to the National Law with the JMD 80568/4225/91 and amended by the JMD 114218/97 (GG-1016/B/17-11-97). The Public Consultation being completed in January 2012, the Draft Common Ministerial Decision entitled «Measures, conditions and procedures for the use of sludge which derives from domestic and urban sewage treatment as well as some wastewater, in compliance with the provisions of Council Directive 86/278/EEC of the European Communities » has been drafted thereafter. This Draft modernizes and expands the scope of JMD 80568/4225/91 and aims to maximize utilization of sludge and specifically to increase the potential applications of sludge in the form of soil enhancer in agriculture, forestry, urban and suburban green sites and landscape planning. Adoption of a modern institutional framework that will promote viability in the management of sludge and reduce the amount disposed in landfills is recommended.
WD05B320	Measures for diffuse source pollution	Development of specialized tools for the rational use of fertilizers and water	Development of specialized tools for the determination of fertilizer treatment, in the pattern of the program «Recording of nutrients, heavy metals and Hydrodynamic Properties of Soils for the rational use of fertilizers and water and Production of Safe Products» of the Region of Central Macedonia to be applied to the nutrient- zones under Directive 91/676/EEC.

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WD05B330	Measures to confront the negative effects on water status	Set up of an institutional framework for the determination of the terms of protection of inland recreational waters according to Article 6 of the WFD – Temporary regulation for new projects in inland water bodies that are included in the list of protected areas as recreational waters.	The measure refers to the adoption of the necessary regulations that will contain the main criteria for the determination of the recreational waters according to Article 6 of the WFD in the inland waters and will determine the terms, the limitations and the conditions for the development of projects and activities on them. Until the enactment of the above institutional framework and the specification of the above terms, restrictions and conditions in inland water bodies included in the list of protected areas as recreational waters, the installation of small Hydroelectric projects and other projects of water intake is temporarily suspended. In special cases the Water Directorate may authorize the installation of water intake and small hydroelectric projects in those areas if it is proved that the water body status is not affected, in accordance with the provisions of Article 4 of the WFD and also if the project feasibility is co evaluated with the existing and / or planned recreational activities. In this case the opinion of the Water Council of the Decentralized Administration is required.
WD05B340	Measures to confront the negative effects on water status	Determination of selected areas suitable for material abstraction for technical project needs.	This measure deals with the problem of arbitrary interventions in streams across the whole country, in a rational and environmentally friendly way. The aim of the measure is to confront the hydromorphological pressures of the abovementioned WBs The conduction of a special study in every RB of the RBD is proposed, with the following main subjects: A) Determination of sediment concentration areas along the broad riverbed of the stream. B) Estimation of the available quantities in every region. C) Ecological evaluation per region with emphasis on the habitat types (structure, conservation status), on the flora species (herbaceous, shrubby and arboreal with emphasis on the arboreal in good conservation status) and on fauna habitats. D) Hierarchy of the concentration areas regarding the potential of material extraction taking into account the abovementioned. The study is proposed to be done with the responsibility on the competent Water Directorate of each RB. An assessment should be done regarding the need for Strategic Environmental Impact Assessment. The measure aims at the management of the sediment yield and at the regulation of the material extraction from stream bed, in a manner that both the sustainable exploitation of the resource and the maximum protection of the ecosystems developed on the WBs are ensured. It also aims at the protection of the coastline against erosion. • The implementation of this measure will be done as it is described below: **Phase I (short-term)**: Modernization of the legislative framework for material

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			abstraction for technical project needs of the bed of water bodies, torrents and streams. For more about determination of selected areas suitable for material abstraction you can see also 42279/24/24.11.1938 (ΦΕΚ Β΄ 267) **Phase II (short-term)**: The Ministry of Environment, Energy and Climate Change will compose the specifications for a preliminary assessment per River Basin District, where the main criteria for distinguishing the three (3) zones of sediment deposition will be configured: Zone I: Zone of high capacity regarding sediment deposition, where sediment abstractions will be allowed. Zone II: Zone of medium capacity regarding sediment deposition, where sediment abstractions will be allowed under specific conditions. Zone III: Zone of low capacity regarding sediment deposition, where sediment abstraction will not be allowed. The criteria for distinguishing the abovementioned zones will mainly be hydromorphological, environmental and techno-economic as well as criteria for the management of the flood risk. **Phase II (medium-term)**: Conduction of a preliminary study per RB for the designation of the sediment deposition zones, according to the specifications that were defined in Phase I and to the conditions for the permitting for sediment extraction in zones I and II. The dynamics of the physical deposition process and the sediment transport should be co evaluated with the conditions required per zone. In protected areas the above study is properly adjusted in order to meet the requirements of the provisions according to which the institutionalization of the requirements was done, if such requirements exist. For the protection of the bed of the water bodies, until the aforementioned are implemented no more new aggregate abstractions are allowed in the following areas: • From the shore and the riparian zone of lakes, • From the areas where technical structures are located (e.g. bridges, dams, drainage or irrigation ditches) and in a distance of 500m upstream and 500m downstream of the structure, unless it is otherwise specified in the environmental permission of other projects or other existing provisions, or some other reasons regarding the protection or the maintenance of existing projects exists. Concerning the aggregate abstraction works, the position and the amount of abstracted material should be determined during the permitting procedure as well as the method and the timing of works.

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD05B350	Measures to prevent pollutant discharge directly into the Groundwater Bodies.	Creation of a single register of regions of wastewater disposal either through irrigation or through artificial recharge (Government Gazette 354/B/08.03.2011)	Under the current institutional framework for the reuse of treated wastewater either through irrigation or through artificial recharge, the Water Directorate of the Decentralized Administration decides after the submission of the design study. The measure regards the creation of a registry of disposal areas, that will include the details of the body responsible for the construction of the project, the basic technical specifications, the Water Body affected as well as any additional monitoring measure and any data collected from monitoring that was possibly asked during the permitting procedure and was delivered to the Water Directorate. The determination of the information that should be included in the register will be determined from the Special Secretariat for Water in collaboration with the Water Directorates. The register will be available to the competent audit authorities of the Regional Unit in order to facilitate the programmed necessary audits of these projects.
WD05B360	Special measures for Priority Substances and other pollutants.	Register of pollution sources (emissions, discharges and leaks).	According to the first paragraph of Article 5 of «List of emissions, discharges and leaks» of the JMD 51354/2641/E103 (GG 1909B/8.12.2010)« The Water Divisions of the Regions, based on information collected in accordance with Articles 5 and 11 of PD 51/2007, Regulation (EC) No 166/2006 and other available data, compile for each Water District or part of that District within their administrative boundaries, a List of emissions, discharges and leaks for all priority substances and pollutants listed in Part A of Annex I of this Decision, including their concentrations in sediment and biota, as appropriate.» In particular, in the context of developing a list of emissions, discharges and leaks setting up a register of pollution sources is proposed. This will include: a) registration of installations, activities and uses constituting sources of release for priority substances and specific pollutants in order to set up the relevant register, b) the description of the waste that is discharged regularly from specific sources accompanied by the chemical analysis of that waste, c) issuing circulars and other information actions for the staff of the competent departments for licensing and control d) updating the relevant licenses to various facilities. The register will include the list of emissions, discharges and leaks for all priority substances and pollutants set out in Appendix I to JMD 51354/2641/E103/2010 in accordance with the provisions of Article 5 of the JMD. The register records the potential sources of pollution and forms the basis for an action plan to reduce the above mentioned substances if the increased concentrations of certain substances are due to anthropogenic causes or natural processes it should be investigated in the context of that measure.

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			In addition, the register will assist the licensing authorities with locating all the bound plants and to proceed with the modification of the environmental licenses, where necessary and other relevant requirements deriving from the legislation.
WD05B370	Measures against pollution from accidents / natural events.	Design and implementation of a central warning and management system against pollution from accidents / natural events.	The measure includes strengthening of the activities of information, warning, control and rehabilitation, which will allow the correct procedures and actions to be taken in case of failure of projects such as urban wastewater treatment plants, industrial wastewater treatment plants, landfills, highways, etc. For better monitoring, control and management of water pollution incidents caused by accidents, it is proposed to establish a centralized control system at River Basin District level under the responsibility of the respective Water Directorate in collaboration with the regional unit of Civil Protection, where the operators of projects will refer to. Priority areas are zones of abstraction of drinking water, zones of economic interest (e.g. fish farms), bathing waters areas and protected areas.
WD05B380	Measures against pollution from accidents / natural events.	Reinforcement of synergies between the River Basin Management Plans and the Major Technological Accident Prevention Policy Plans provided for in the IPPC and SEVESO Directives.	Setting out of a major technological accident prevention policy plan, including ways to protect water bodies from major spills and accidents, especially WBs included in the register of protected areas as well as ways of dealing with such incidents in order to protect the ecosystem (e.g. NATURA 2000 areas), and human health (systems used for or intended for human consumption). Especially for high risk establishments, according to SEVESO, the internal emergency plans should include at least the following: • the WBs in the affected area, which should be visible as points of interest in defining protection areas (and in the relevant maps) • the specification of an early warning system (mobilization in the event of a serious incident) for the responsible water authorities of the Decentralized Administrations and the Regions for the management and protection of the corresponding WBs. Similar changes may be required in the external emergency plans setting out the measures to be taken outside of the establishment in which dangerous substances are produced, used, handled or stored. The external emergency plans implementing the major technological accident prevention policy of the General Plan of Civil Protection Agency, are reviewed, tested, and where necessary updated every three years and in any case whenever there is a significant change in the operation of the establishment or as required by the instructions of the General Secretariat for Civil Protection. Responsible for the preparation of the external emergency plans are the Directorates of Civil Protection of the Decentralized Administration that produce a plan for each Decentralized Administration area which is subsequently elaborated on a regional level within the administrative boundaries of each regional unit. In this context the relevant Water Directorate should send the approved River Basin Management Plan to: (a) the competent

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			authority for environmental licensing of SEVESO establishments in order to initiate the process for updating these licenses according to the existing legislative framework and (b) to the competent Directorates and Offices of Civil Protection of the Decentralized Administration to deal with any necessary amendments to the external emergency plans.

Proposed Supplementary Measures for Epirus RBD are presented in the table below:

Table 19: Supplementary measures of Epirus RBD

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD05S010	Economic or tax measures	Adaptation of accounting systems of water providers	Application of common principles for recording and estimating the cost of water by water providers. It will contribute to improved reliability. It has been found that (a) there is incompatibility among systems used by different providers (b) there is not systematic recording of revenue and expenditure items by water service. Furthermore, resource and environmental costs should be internalized. Use of information processing technology is a precondition. For irrigation water provided by private installations of the producers, provision should be made for estimating resource and environmental costs to be paid.
WD05S020	Economic or tax measures	Introduction of systems benchmarking cost data by provider to a common standard in order to pinpoint areas of lagging performance	Disclosure of water cost data to promote awareness by the public. Data should include comparative cost standing of providers
WD05S030	Environmental agreements after negotiations	Initiatives on making an environmental agreement between the Management Authority of the protected area of Amvrakikos wetland and the agricultural sector in order to reduce the negative effects of farming on the wetland habitats.	The Water Directorate made a suggestion about the formation of a collaboration framework between the Management Authority and the agriculture and livestock Authorities of regions adjacent to the protected areas in order to improve the conservation status of wetland habitats and create the circumstances for eco-friendly agricultural practices with simultaneous improvement of the added value of the products Individual tools for achieving the final goal could be the following: A) Registration of the quantity and types of the fertilizers and pesticides that are being used per cultivation B) Measurement or assumption of the water used per cultivation from the source until the final application. C) Implementation of a program for measuring the water quality before and after using it for agricultural purposes. D) Promotion of biological cultivations and biological livestock practices. E) Implementation of a special program regarding the certification of the products of the primary sector by the Management Authority of the protected area, taking into account commonly designated criteria. F) Promotion of measures regarding the amplification of fresh water supply in lagoons and brackish areas especially during the summer period. G) Settlement of areas adjacent to the lagoons, that can be left unused for a period that will

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
			be commonly agreed. All the abovementioned could be part of a Program Agreement whose implementation could be funded from the European Union. The time framework for the preparation of the Agreement is considered this ongoing RBMP Planning Period and as implementation period is considered the next RBMP Planning Period (2016-2021).
WD05S040	Environmental agreements after negotiations	Initiatives on making an environmental agreement between the Management Authority of the protected area of Amvrakikos wetland and the Authorities of fishermen and aquaculture in order to limit any possible negative effects of the extensive and intensive aquaculture on the status of the transitional and coastal water bodies and ecosystems.	This measure is related to an environmental agreement after negotiations that can have benefits both for the protection of the coastal and transitional water bodies belonging to certain Protected Areas and also for the improvement of the competitiveness of fishing products. In the terms of the agreement the fishermen or their associations, could commit to adopt eco-friendlier practices. Respectively, the Management Authority could implement reciprocal benefits for the fishermen regarding the certification and the promotion of their products. All the abovementioned could be part of a Program Agreement where more Authorities could take part. The initiative for the beginning and support of this Program is proposed to be taken by the relevant Water Directorate.
WD05S050	Environmental agreements after negotiations	Promotion of voluntary agreements with significant water consumers (Public Enterprise for Water and Sewerage, collective irrigation networks, industries) that consume large quantities of water or pollute Groundwater Bodies in order to adopt a Code of Conduct.	Communication with significant water consumers (Public Enterprise for Water and Sewerage, collective irrigation networks, industries) that consume large quantities of groundwater (>300.000m³/year) and pollute Groundwater Bodies in order to adopt specific initiatives and Code of Conduct.
WD05S060	Emission control	Establishing sinks protection rules	Establishing standards for the protection of existing active or inactive sink with prohibition for polluting activities and especially any activities that dispose wastewater directly to sinks. The sinks drain closed basins and measures must be taken to protect and improve the quality of water that is drained, such as: 1. Incentives to farmers to replace crops with organic cultivation, 2. Incentives for tertiary treatment of wastewater 3. Strict controls on compliance of the environmental conditions on the existing units.
WD05S070	Emission control	Special protection measures in areas of water bodies where there are geothermal and mineral waters.	The special protection measures for geothermal and thermal water are combined and adapted to the existing statutory framework and protection. First of all are applied the prohibitions of controlled zone II for protection of points of groundwater abstraction for drinking.

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			The installation of new activities may be permitted in specific locations after submitting hydrogeological study or report, depending on the size and type of activity, and after positive opinion issued by the Water Directorate.
WD05S080	Emission control	Investigative monitoring program of quality state in groundwater bodies and surface bodies in areas of existing landfills.	It is proposed to investigate the quality status of surface water and groundwater at the perimeter of the area of existing landfills.
WD05S090	Emission control	Set in principle restriction zones for drilling new wells for new water uses and extensions of permits for existing use in coastal groundwater bodies where salination phenomena are observed.	Coastal water bodies which have been determined to be in poor condition due to brackish quality or show local salination caused by human pressures (over-pumping) restrictive measures are taken for new construction of abstraction projects (boreholes, wells) of groundwater. Restrictive measures are taken for the expansion of existing licenses as well. Until the precise zoning of restriction zones based on specific hydrogeological studies that should be drawn up, it is suggested to set the following coastal zones for prohibiting of drilling new wells for new water uses and extensions of existing licenses: For karst systems: 300 m. For granular free piezometric surface: 200m. For granular vacuum: 100m. The abovementioned distances are measured from the coast. In special cases (eg drinking water, drilling for aquaculture and desalination) can be given permission for drilling a new borehole after submitting hydrogeological study or report and approval by the Water Directorate.The above refer to the whole underground water body, and not only to the spatial position of a new drilling. These restrictions are intended to limit the expansion of seawater intrusion in coastal systems .Where coastal karstic systems with extensive natural salination through regulatory decisions , the restriction zones may be extended further with the responsibility of Water Directorates because it concerns the whole underground body and not only the spatial location of possible new drilling project. The zones with restrictions or prohibitions for drilling projects will be defined by a specific hydrogeological study . Prohibition excludes special circumstances related to project execution for irrigation using potable water and other special occasions such as drilling for aquaculture, wells pumping water for desalination plants etc. In such cases, authorization is upon substantiated

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			hydrogeological study which will be examined and approved by the relevant Water Directorate . The specifications for the aforementioned hydrogeological studies will be determined by the contact authorities under the coordination of the Special Secretariat for Water.
WD05S100	Emission control	Definition and demarcation of areas of water bodies showing poor quality due to seawater intrusion situation or presenting local salination.	For coastal water bodies that are in poor condition due to brackish quality or show local salination should be drawn special hydrogeological studies to precisely define the boundaries for prevention of abstraction and new extensions of the salination front, so in that area to take measures for the gradual restoration through no only prohibiting new drillings, but also through reduction or even remove of existing abstraction in use , giving priority to finding alternatives water sources for irrigation needs. The specifications for the aforementioned hydrogeological studies will be determined by the contact authorities under the coordination of Special Secretariat for Water.
WD05S110	Recreation and restoration of wetlands.	Projects for the improvement of the hydraulic connection between some parts of the Amvrakikos wetland system, that face problems of insufficient fresh or saltwater supply.	This measure applies to lagoons of the Amvrakikos where the connection with the open sea is limited because of either natural phenomena or human interventions. The conduction of a special environmental and hydraulic study is proposed in order to examine the need for recovery projects, the area and the way that those projects will be done in order to confer the greatest benefits to the lagoon ecosystem.
WD05S120	Recreation and restoration of wetlands.	Conduction of a study for the possibility of creating wetland areas around the surface sources of Pamvotida Lake.	Examination, from hydraulic, environmental and techno-economic perspective, of the possibility of creating wetland areas around Pamvotida Lake, where surface sources of the lake exist (e.g. inflow ditches of Kastritsa, Vasiliki and Logadon). More specifically the following issues should be investigated: The suitability of those areas, the extent and the way of intervention (extensive or linear), the species that will be preferred for vegetation and the techno-economic requirements of the proposed projects (e.g. cost of expropriations, cost of planting configuration treatments, etc).
WD05S130	Abstractions Control	Prohibition of new exploitation wells in the Ioannina Basin beyond specific cases (water, etc.) that will be examined by the Directorate of Water by submitting documented hydrogeological report.	Prohibition of new exploitation wells in the Ioannina Basin for groundwater bodies Mitsikeli-Vella and Klimatia (GR0500110, GR0500180) beyond specific cases (drinking water, replacement of existing water uses, etc.) can be given permission after submission of hydrogeological report or study and the positive answer from the Water Directorate.
WD05S140	Abstractions Control	In-situ inspections to licensed abstractions (large consumers) at least 2 times per year.	Periodic inspections (at least 2 per year) Water Division to licensed abstractions (especially large consumers) for control of abstractions and installed recording system pumped volumes.

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD05S150	Abstractions Control	Installing operating valve in artesian wells	Valve or pipe fitting pressure balance or any other appropriate means for controlling discharge of artesian wells during the wet periods, sometimes discharge it throughout the year underground confined aquifers creating problems for quantitative aptitude in irrigation - potable water period.
WD05S160	Abstractions Control	Systematic monitoring of quality state in Licensed abstractions wells in ground water bodies with high natural background level (chlorides, sulphates)	Annual review for qualitative status changes of groundwater in ground water bodies with high natural background levels (eg chlorides , sulphates). The annual verification of qualitative status of groundwater is to check the possible extension zone characterized by high concentrations of this natural background level and the possible increase or decrease the concentrations of the element that causes it . The Water Division with evaluate of the data resulting from the annual quality audits will have the opportunity to take the necessary measures according to the potential deterioration or improvement status.
WD05S170	Demand management measures	Encouraging and strengthening of extension methods localized irrigation (drip irrigation) receptive irrigation methods such plantations.	Expansion of micro-irrigation in total irrigated tree crops and increase the percentage receptive of such systems other extensive crops (strawberries, asparagus, tree crops, etc.).
WD05S180	Efficiency and reuse measures	Modernization of existing tertiary pipelines to irrigation networks.	As a first step of realization proposed study which will explore the possibility of replacing existing pipes open tertiary irrigation pipes under pressure. Should be taken into account through a cost - benefit both the financial and environmental benefits. The implementation of the measure is proposed to start from those parts of the network with the greatest losses, the reduction of which would endanger the corresponding groundwater bodies.
WD05S190	Construction Projects	Kalamiotisa Dam & Melisoudi I and II Dams – Drinking Water Supply System in the Prefecture of Corfu Island including the water related works for the water supply of Paxos Island	The project refers to the following water related works at Corfu Island: • Melisoudi I Dam, a concrete faced rockfill dam, 48m high with a storage volume of 5.76 MCM, FSL at +124m, and a crest length of 235m • Melisoudi II Dam, a RCC dam, 11m high with a storage volume of 0.27 MCM Environmental flow of 8lt/s for both dams (Melisoudi I &II). • Kiprianadon Diversion Dam (13m high) with a diversion tunnel (Kiprianadon tunnel), of a storage volume of 30.000 m³ and annual average abstraction of 1.6 MCM. Environmental flow of 5 lt/s. • Water Treatment Plants (Melisoudi WWT and Kalamiotisa WWT) • Two units of water softening, Chrisida Unit and Neoxorakiou Unit Additionally, the measure includes the construction of the following drinking water works at

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
			Paxos Island: • Installation of a desalination unit of 900 m³/day capacity at Kakia Lagkada area • Enhancement of water storage works at the existing Kakia Lagkada and Lakka reservoirs. • Primary conveyance network and related works
WD05S200	Construction Projects	Water Supply Project in Thesprotia Prefecture, Raveni-Igoumenitsa Pipeline: Section 5, titled as "Ekklisiwn – Gefyras Neraidas"	The pipeline under study, which is part of the drinking water supply project at the Thesprotia Prefecture, will be connected with the under construction Raveni-Igoumenitsa pipeline. The pipeline under study transfers water flow of 18.000 m³/d from Pente Ekklisie springs and additionally of about 7.500 m³/d from Neraida springs in order to serve the urgent needs for drinking water of the areas that the pipeline is connected and of Igoumenitsa city in the long term. In specific, the works under study are the following: a) Water Collector Ditch, 1.00m wide and 30m long, at the area of Pente Ekklisies springs, which conveys water to a tank located within the central pumping station. b) Central Pumping Station of three pumps, of manometric head of 133m, and substation of medium voltage. c) Force main, 11.93 km long that connects the central pumping station with the existing (under construction) pipeline located near Neraida Bridge.
WD05S210	Construction Projects	Development of Irrigation System Works in Arta Plain (Phase B)	Construction of : • the remaining main irrigation canal titled as "D1 – Hydropower Pournari II – Imaret"(600m long and of 20 m³/sec maximum flow) • the irrigation open channel titled as "D1 – 2nd section (Imaret- Arachthos ditch) (7050 long and of 13 m³/sec flow) • reconstruction of the irrigation canal titled as "D2"(650 m long και of 6,20 m³/sec flow) • part of the canal D2.2 (600 m long και of 3.8 m³/sec flow) Construction of: The civil works of the pumping stations A4, A5 of the zones 4 and 5 and the tank of pumping station 4. The irrigated area is of 1966 ha and the required 24 hour discharge for the peak month July is of 1,33 m³/sec.
WD05S220	Construction	Water Conveyance Network and	Irrigation Scheme area of 4500ha. Construction of abstraction work and of water transfer

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
	Projects	Irrigation Schemes of Zone 8 and of Peta – Kobotiou area, Prefecture of Arta.	works from Pournari Dam until the irrigation network of Koboti area.
WD05S230	Construction Projects	Integrated Wastewater Management Plan of the Ioannina municipality for the protection of Pamvotida Lake	In order to integrate the projects related with the treatment of urban wastewater, it is significant to proceed in the construction of the expansion of the existing wastewater treatment plan (WWT) of Ioannina municipality and of the urban drainage system for the coverage of the drainage needs of four villages of third priority (Katsikas, Perama, Eleousa, Anatoli) and the lakeside villages of the municipality of Ioannina. The project is entered in the approved list of subsidized projects by the Operational Programme for the Environment and Sustainable Development, and comprises of the following sub-projects: Sub-Project 1: Construction of the Urban Drainage System of the Ioannina city (Historical Centre- Loutsa – Makrigianni – Abelokipi – Anexartisias – Tsakalof) Sub-Project 2: Study of urban drainage systems of areas within the municipality of Ioannina (e.g. Kardamitsia, Exochi, Tsiflikopoylo, Drosia-Penteli etc) of total length of about 97km. Sub-Project 3: Construction of urban drainage systems of the above mentioned areas within the municipality of Ioannina Sub-Project 4: Expansion of the Wastewater Treatment Plan of the municipality of Ioannina Sub-Project 5: Technical Consulting for the supervision of the construction phase and the monitoring of the trial performance of the WWT plant. Sub-Project 6: Resettlement costs for the construction of the required civil works of the pumping stations
WD05S240	Construction Projects	Koboti Dam, Arta Prefecture	Dam Crest at +205m and FSL at +199m. The reservoir capacity is 13.9 x 10^6 m³. Environmental Flow is 0,3 m³/s. The irrigated area from the dam is of 2990 ha (net).
WD05S250	Emission control	Efficient management of wastewater from agglomerations with a population peak <2000.	Implementation of guidelines of the Special Secretariat for Water on proper wastewater management practices for agglomerations with equivalent population <2,000. Indicative agglomerations are Anilio, Megalo Peristeri, Hrysovitsa and Votonosi of Metsovo Municipality, Fragadesof Zagoria Municipality and Neos Oropos of Louros Municipality.
WD05S260	Projects of Infrastructure	Enhancement Works for Drinking Water Supply System of Preveza, Arta and	The supplementary abstraction of the project is designed to be performed from the Ag. Georgiou Springs from where the existing infrastructure is supplied. The new aqueduct

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
	Rehabilitation	Lefkada areas from Ag. Georgiou Springs.	consists of two sections: The first section begins from Ag. Georgiou Springs (at +112m) until the Smyrtoula Reservoir and the second section begins from Smyrtoula Reservoir until the Lefkada Reservoir. The annual average required flow is estimated at 0.6 m^3/s and the maximum flow is estimated at about 1.3 m^3/s. Both flow values cover the drinking water demand for the base year of 2041. The annual water demand for the year 2041 is 19 MCM in total for Preveza, Lefkada and Arta prefectures. The population (both residents and tourists) that will be served by the project, is estimated at about 260,000 habitants. In specific: • At Preveza Prefecture the population in total is about 78,000 habitants and the respective summer peak water demand is estimated at 35,000 m^3/day. • At Arta Prefecture the population in total is about 92,000 habitants and the respective summer peak water demand is estimated at 37,000 m^3/day. • At Lefkada Prefecture the population in total is about 88,000 habitants and the respective summer peak water demand is estimated at 40,000 m^3/day.
WD05S270	Educational measures	Information and awareness of the public for issues concerning the use and management of water resources	A continuous enlightenment campaign of consumers is proposed with the emphasis placed upon the meaning of rational management of the resource, as well as the continuous informing of consumers and the public, regarding the occasional conditions of the current balance of water in Corfu and the need for the measures taken at the time.
WD05S280	Educational measures	Organization of one day events regarding new technologies, modern agricultural techniques, environmental protection issues, fertility of agricultural soils etc.	The organisation by the Agricultural Economy and Veterinary Services of one day events, twice annually, with invited speakers, such as veterinary doctors, professors of agricultural sciences, biologists, technical staff of agricultural machinery agencies, soil experts, etc. The proposed measure aims at the enlightenment of producers and their encouragement to adopt best practices which will enable them to carry out their activities and which will improve their productivity and performance of agricultural holdings, highlighting at the same time the necessity of protecting the agricultural environment and preserving soil resources and the sustainable use of natural resources.
WD05S290	Research, development & demonstration programmes	Establishment and organisation of innovative agricultural estates – Pilot estates.	The participation of 2 - 3 agricultural producers from every regional unit of the particular Water District in scientific programmes and technical assistance in the organisation and management of farms, utilising state of the art technologies and techniques, applying in an exemplary manner the various measures of the code of Good Agricultural Practice Code and Cross Compliance, utilising the different financial programmes etc., aiming at the

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
			mobilisation of the rest of the producers in order to adopt and apply the same procedures and methods.
WD05S300	Research, development & demonstration programmes	Evaluation and eco-capacity of Louros river, regarding the sitting of trout farms	The implementation of the aforementioned special study resulting from the study "Creation of a monitoring system and evaluation of the environmental condition of the Louros and Arachthos river systems and the greater area of Amvrakikos bay". Production of soil maps and testing of soil quality of the plain areas of Northern Amvrakikos. Research of the abiotic and biotic parameters of the Amvrakikos bay seabed and their role in fish production (Prefecture Authority, December 2009). Trout farming is a traditional and very productive activity of river Louros; it is proposed that it is embodied in a new development and management framework which is expected to be beneficial for the river ecosystem as well as the fish farming units. The results of the study mentioned will be utilised in the next management plan of the rivers draining basin (2016-2021).
WD05S310	Research, development & demonstration programmes	Implementation of Special Control Programme for active substances which are contained in agrochemicals and which have been banned.	It is proposed to carry out such a programme for specific substances. The aforementioned substances will be subjected to investigation, in case they are not included in the National Monitoring Programme. Sampling will take place in 5 points (one per water system) twice yearly and during April and July. The duration of the programme is three years. It is proposed that monitoring should be carried out at the mouth of Kalamas, Louros and Arachthos rivers and lake Pamvotis and northern Amvrakikos bay.

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD05S320	Research, development & demonstration programmes	Application of Special Research Programme in a) certain rivers of the WS for ascertaining the sufficiency of water quantities in order to obtain or preserve the good ecological status downstream of existing constructions and b) certain rivers (HMWS) whose hydromorphological alterations do not constitute change of their character but mainly control of supply.	It is proposed that during the current planning period a targeted examination based on a special research programme should be initiated for the following: a) For existing projects These projects concern sections of rivers (HMWB) which are found downriver from the dams. The hydromorphological alterations of these bodies refer to the reduction of flow or regulation of their basic flow and the interruption of their natural continuation. In order to ascertain sufficient flow for the achievement of a good ecological potential, measures are proposed for the retainment or review of the ecological flow (if it is provided) or for the calculation of ecological flow (if it is not provided). More specifically the following measures are proposed: 1. In the section of Aoos directly downstream of the reservoir of the springs (Aoos P.5, GR0511ROA0200020H): the artificial lake of Aoos resulted from the construction of a hydroelectric dam by the Public Electricity Company in 1997, without provision for the necessary ecological flow of water. It is estimated that the outflow of the river (HMWB) which is the part downstream of the dam and upstream of the convergence with the river water body Aoos tributary Arkoudas, is approximately 1.35 m^3/sec (44.55 hm^3/yr). This supply is considered to be sufficient for the preservation of a good ecological status. However it is proposed that the state of the HMWB should be reevaluated under this special research programme. 2. In the section Kalamas downstream of the hydroelectric station (Thyamis R. Kalamas 3, GR0512R000200027H): the h/e project of Gitanis controls the flow in this HMWB. This supply is considered to be sufficient for the preservation of a good ecological status. However it is proposed that the status of the HMWB should be reevaluated under this special research programme. b. For the WBs whose hydromorphological alteration concerns the main flow control, such as in the sections downstream of the river dams, the installation of monitoring stations is proposed aiming at the examination of the “substantial alterations” which makes unfeasible the achievement of good ecological status (for other reasons except pollution) and therefore a definite answer to the question of whether the specific WBs are Highly Modified.

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD05S330	Other measures	Special Geochemical – Hydrochemical study in the River Basin of Ipeiros for the investigation of possible exceedance of the Environmental Quality Standards (EQS) of Molybdenum (Mo).	Investigation of possible EQS exceedance of Molybdenum (Mo), in order to clarify whether the high concentrations of Molybdenum in the surface water bodies of Ipeiros RB result from natural causes or from human activities. More specifically it is proposed that a special Geochemical – Hydrochemical study in the RB of Ipeiros primarily focused on the WBs where an EQS exceedance occurs, will be conducted. The specifications of the study are proposed to be conducted by the Water Directorate of the Decentralized Administration of Dytiki Makedonia & Ipeiros in cooperation with the Institute of Geology & Mineral Exploration.
WD05S340	Other measures	Contact restoration between Piges of Santinikou and Amphitheas with Pamvotida	Restoration of the contact between Piges Santinikou and Amphitheas with Pamvotida lake, which today is blocked by a clay mound.

Additionally, in the Epirus River Basin District Management Plan, **actions** related to the implementation of European Directives are also included. Also, **supportive activities** have been identified, which are not measures of the River Basin Management Plan, although contributing to deliver its objectives.

The **implementation cost** of the proposed **supplementary measures** is estimated to **581,84 M€**.

For the **proposed supplementary measures** a **Cost Effectiveness Analysis (CEA)** was carried out.

The CEA is used for assessing the cost-effectiveness of potential measures for achieving the environmental objectives set out in the Directive, and in particular for making judgments about the most cost effective program of measures and assessing the cost-effectiveness of alternative measures.

The analysis included the following parameters: 1. degree of effect, 2. number of relevant Water Bodies, 3. period of implementation, 4. period of efficiency, 5. social impact, 6. economic impact, 7. environmental impact. These parameters received an appropriate rating and the rate of effectiveness was estimated. By taking into account the discounted cost of the measures, a **factor of economic efficiency** was calculated. In this way the group of the most effective measures was identified.

Additionally, the plan has two key issues (restrictions) to address:

- the limited remaining time period until the year 2015 and
- the limited financial capacity of the country at least until the year 2015.

It is estimated that 26 of 34 supplementary measures have zero or low cost of implementation. 7 supplementary measures have cost below 100.000€ and 1 of them costs between 100 and 250 thousands €.

Annex I - Maps

LIST OF MAPS

www.ypeka.gr

Special Secretariat for Water,
2 M. Iatridou str. & Kifisias Ave. 115 26 Athens, Greece
Tel: +30 210 693 1265, +30 210 693 1253
Fax: +30 210 699 4355, +30 210 699 4357
E-mail: info.egy@prv.ypeka.gr

www.epperaa.gr

Co-funded by Greece and the European Union