



MANAGEMENT PLAN

of the River Basins
of Western Sterea Ellada River Basin District
Summary

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SPECIAL
SECRETARIAT
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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**

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**DEVELOPMENT OF THE RIVER BASIN MANAGEMENT PLAN FOR THE WATER DISTRICT OF WESTERN
STEREA ELLADA (GR04)**

PHASE C, DELIVERABLE 6: SUMMARY - MAPS - DRAWINGS

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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 Western Sterea Ellada, 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 GEORG IOS - 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 2562/B/25-09-14.

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 Western Sterea Ellada River Basin District (GR04) and the following detailed documentation texts are attached:

Table 1: Documentation texts of Western Sterea Ellada 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 ANTHROPOGENIC PRESSURES AND THEIR IMPACTS ON SURFACE AND GROUNDWATER 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 QUANTITATIVE 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 QUANTITATIVE STATUS OF SURFACE AND GROUNDWATER BODIES

DOCUMENTATION TEXTS	
TEXT 18:	REVISED PUBLIC CONSULTATION PLAN
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.

In the supplementary measures of Thessalia RBD a specific group of measures is included in order to achieve the objectives of the WFD concerning the surface and groundwaterwater bodies of Pinios RB. These measures were determined after the examination of different scenarios of measures which are related with the achievement of “Good status” in the groundwater bodies and surface water bodies of the Pinios RB.

Three relevant scenarios are evaluated in the SEIA based on environmental, social, development, and economical criteria such as: the achievement of the targets of the Directory 2000/60/EC, the financial cost, the diversion cost, the added value in the agricultural sectorof, the impact in the production of hydroelectric power and the social-economic impacts.

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 Western Sterea Ellada, 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 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/EK, SEIA).

The consultation period of the River Basin Management Plans, with a minimum duration of 6 months, began on **October 15, 2011**, and was completed in two phases:

- **Phase A'**

Until **29 February 2012** the following were discussed:

1. Consultation measures to be taken,
2. Catalogue of stakeholders,
3. Overview of the significant water management issues,
4. Organizational issues related to the consultation process.

- **Phase B'**

On **May 2, 2012**, the documentation texts of Western Sterea Ellada 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:

1. River Basin Management Plan of Western Sterea Ellada River Basin District,
2. Program of Measures

On **October 31, 2012**, the Special Water Secretariat announced the completion of the public consultation of the Draft River Basin Management Plan of Western Sterea Ellada 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. WESTERN STEREA ELLADA RIVER BASIN DISTRICT

4.1 River basins

Western Sterea Ellada River Basin District, includes the River Basins Achelooou (GR15), Evinou (GR20), Mornou (GR21), Lefkados (GR44). (Annex 1, Map 1: River Basin District - Overview of Western Sterea Ellada)

4.2 Anthropogenic characteristics

4.2.1 Administrative status

Western Sterea Ellada River Basin District includes a large part of the Region of Western Ellada (47.07%), part of the Sterea Ellada (19.88%), Ionian islands (16.63%) Regions and small parts of the Regions of Thessalia (10.29%) and Ipeiros Epirus (2.73%).

Its population, according to 1991 census was 305.512 inhabitants and according to the 2001 census was 312.516, indicating an increase of 2.3%.

4.2.2 Land Uses

Achelooos River Basin is heavily forested (58% of total area), while important is the percentage of the basin covered by crops (24% of total area). Urban areas are 1% of total area while pasture is 12% of the total area.

Evinos River Basin is heavily forested (72% of total area), while important is the percentage of the basin covered by crops (19% of total area). Urban areas do not exist in that River Basin (0% of total area) while pasture is 7% of the total area.

Mornos River Basin is heavily forested (69% of total area), while important is the percentage of the basin covered by crops (17% of total area). Urban areas are 1% of total area while pasture is 11% of the total area.

Lefkada River Basin is mostly covered by crops (51% of total area). Forests cover also a large area (39% of total area). Urban areas are 1% of total area while pasture is 8% 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 $392 \cdot 10^6 \text{ m}^3$, with the bulk coming from irrigation, which amounts to $340 \cdot 10^6 \text{ m}^3$ (86.7%). Regarding to other uses, the demand for water supply amounts to $44 \cdot 10^6 \text{ m}^3$ (11.2%), for industry $39.2 \cdot 10^6 \text{ m}^3$ (0,1%) and for livestock to $78.4 \cdot 10^6 \text{ m}^3$ (2 %) per year.

Total annual abstractions from surface water bodies are estimated to about $1137 \cdot 10^6 \text{ m}^3$, from which about $373 \cdot 10^6 \text{ m}^3$ are being used to cover the demand in the River Basin District of Western Sterea Ellada while the rest water cover the needs of other River Basin Districts. Water abstraction from the groundwater bodies of Western Sterea Ellada River Basin District is estimated to approximately $153 \cdot 10^6 \text{ m}^3/\text{year}$, and water is abstracted through boreholes and springs exploitation.

5. COMPETENT AUTHORITIES

The competent authorities of Western Sterea Ellada 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
Western Sterea Ellada River Basin District (GR04)	Acheloou (GR15)	Western Elladas (53.16%) Thessalias (19.20%) Stereas (24.08%) Ipeirou (3.32%) Ionion Nison (0.24%)	Western Elladas & Stereas Elladas & Ionion Nison & Thessalias & Ipeirou	Special Secretariat of Water / Ministry of Environment, Energy and Climate Change
	Evinou (GR20)	Western Elladas (81.27%) Stereas (18.73%)		
	Mornou (GR21)	Stereas (81.34%) Western Elladas (18.66%)		
	Lefkados (GR44)	Ionion Nison (99.98%) Western Elladas (0.02%)		

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 Western Sterea Ellada all surface water body types are identified (Annex I, Map 4: Types of Surface Water Bodies).

6.1.1 Rivers

In the River Basin District of Western Ellada ninety-five (95) rivers are identified, of the eight different types IgL0, IgL1, ImH1, ImL0, ImL1, IsH1, IsL0, IsL1.

Table 3: River water body typology

RW Typology	Description	Number of RW in RBD of GR04
IgL0	Great lowland and rivers with relatively smooth slope (< 1.2 ‰), which flow in the region of the Ionian Sea	2
IgL1	Great lowland rivers with relatively steep slope (> 1.2 ‰), which flow in the region of the Ionian Sea	3
ImH1	Medium mountainous rivers with steep slope, which flow in the region of the Ionian Sea	4
ImL0	Small lowland and semi-mountainous rivers with relatively steep slope (> 1.2 ‰), which flow in the region of the Ionian Sea	3
ImL1	Medium lowland rivers with steep slope which flow in the region of the Ionian Sea	21
IsH1	Small mountainous rivers with steep slope which flow in the region of the Ionian Sea	18
IsL0	Small lowland and semi-mountainous rivers with relatively steep slope (> 1.2 ‰), which flow in the region of the Ionian Sea	1
IsL1	Medium lowland rivers with steep slope which flow in the region of the Ionian Sea	43

Lakes

In the River Basin District of Western Ellada five (5) lakes (Techniti Limni Kastrakiou, Stratou, Taupou, Mornou, Evinou) are identified as L-M5/7W type (deep and large reservoirs, in “wet” siliceous areas, catchment area < 20.000 km²), one (1) (Techniti Limni Kremaston) as L-M8 type (deep and large reservoirs, in limestone areas, catchment area < 20.000 km²), one (1) (Limni Trichonida) as a D Type (medium- high, large surface, maximum value of depth >15 m, warm multi-

mixed type, of warm area) and five (5) lakes (Lake Lysimachia, Lake Ozeros, Lake Amvrakia, Lake Voulkaria, Lake Saltini) without specific Type definition.

6.1.2 Transitional waters

Four (4) transitional water bodies are identified in the River Basin District of Western Sterea Ellada, one (1) of them (Ekvoles Acheloou) belongs to the TW 1 type, and the rest three (3) (Limnothalassa Stenon Lefkadas, Limnothalassa Etolikou, Limnothalassa Mesolongiou) belong to the TW 2 type.

6.1.3 Coastal waters

All nine (9) coastal waters identified in the River Basin District of Western Sterea Ellada belong to the C1 type. The statistical characteristics of surface water bodies of RBD of Western Sterea Ellada (04), as these were identified per category, are presented in the table below.

Table 4: Statistical characteristics of surface water bodies of RBD of Western Sterea Ellada

Type of WB	Number	Characteristic size	Minimum	Mean	Maximum	Total
Rivers	95	Length (km)	2.38	10.55	39.80	1002.35
Lakes	12	Surface (km ²)	2.00	24.36	96.52	292.32
Transitional	4	Surface (km ²)	9.03	67.50	130.36	270.01
Coastal waters	9	Surface (km ²)	1.63	242.61	871.54	2183.51

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 objectives. (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 five (25) GWBs are designated at the RBD of Western Sterea Ellada (04) and for six (6) of them, “further characterization” was carried out.

The statistical characteristics of the groundwater bodies identified in the RBD of Western Sterea Ellada (04), are presented in the table below.

Table 5: Statistical characteristics of groundwater bodies of RBD of Western Sterea Ellada

Type of WB	Number	Minimum area (km ²)	Average area (km ²)	Maximum area (km ²)	Total area (km ²)
GWBs	25	24.98	410.24	3907.17	10256.1

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.

Nine-teen (19) heavily modified water bodies are identified from a total of one-hundred and twenty (120) surface water bodies (rivers, lakes, transitional and coastal waters) in RBD of Western Sterea Ellada (04), while no artificial water bodies were recognized

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 Western Sterea Ellada, 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 Evinos p1, Mpelesitsa r., Granitsoremma, Kokkinos, Mornos p3, Mornos p3 – Parapotamos Mega r., Klinovitis r., Kalogeriko r., Evinos r. – Parapotamos Kerassorema 1, Evinos r. - Parapotamos Kerassorema 2, Evinos p5, Evinos p4, natural lake Trichonida, artificial lake Kastrakiou, Tauropou, Mornou, Evinou and systems of Monastiraki, Arakynthos, Empesos – Valtos, Vardousia, 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 Western Sterea Ellada (04)(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 Western Sterea Ellada (04) the quality of bathing waters is monitored by eighty – five (85) monitoring sites, which are grouped in 60 bathing water profiles. Eleven (11) recreational waters were also identified in the RBD of Western Sterea Ellada (04)

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 Arta - Preveza plain and part of the Pineios - Thessaliko Pedio are officially designated as area vulnerable to nitrates in the RBD of Western Sterea Ellada(04). No Water Bodies of the Western Sterea Ellada belong to those areas

Areas designated as sensitive under Directive 91/271/EEC

According to Common Ministerial Decree 19661/1982/1999, Steno Lefkadas, Mesologgi – Etoliko lagoon, Amvrakikos kolpos, Acheloos river estuary, Karpenissiotis river, Mornos artificial lake and ditches that outflow to Mornos artificial lake have been identified as Nutrient sensitive areas Areas designated for the protection of habitats or species

Thirty-five (35) 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. Twenty (20) of them, are Special Areas of Conservation (SAC), thirteen (13) are Special Protection Areas (SPA) and two are protected as both SAC and SPA (Annex 1, Map 7.4: Protected areas: Habitats & Birds protection areas).

6.4.4 Areas designated for the protection of economically significant aquatic species

Nine (9) protected areas under this type were identified in the RBD of Western Sterea Ellada (04) (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 Western Sterea Ellada operate 13 Wastewater Treatment Plants (WWTP), which serve 122.000 habitants (almost 40% of total RBD of Western Sterea Ellada population). This number corresponds to almost 80% of the population in the Priority A, B and C agglomerations.

Industry

In the RBD of Western Sterea Ellada two hundred and ninety (290) industrial facilities have been recorded. Among these, two (2) are IPPC facilities according to the Directive 2001/8/EC, and six (6) are SEVESO according to the Directive 1996/82/EC. In the RBD of Western Sterea Ellada, there are the industrial sites of Ioannina and Preveza and the industrial park of Thesprotia.

The majority of the industries (39%) concern olive oil mills, a percentage of 10.7% belong to abattoirs and other facilities for meat process, while a high percentage (34.5%) belong to other type of food industry (milk industry, fruit and vegetables canning industry). 7.2% of the industries belong to the sector of non-metallic minerals industry and remaining are related to the Manufacture of Refined Petroleum Products, Production and Processing of Metals, Processing of Wood and Chemical industry.

Livestock Farming

In all Regional Units of the RBD of Western Sterea Ellada there is a significant number of cattle and pig farm units. Most of them have been registered in the Regional Unit of Etoloakarnania. Finally, collected data concern 21 cattle farm units, 17 pig farm units (3 are IPPC facilities) and 1 poultry farm unit.

Non Stabled Livestock

Significant activity has been monitored in the River Basins of Acheloos, Mornos, Evinos. 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 Western Sterea Ellada operate four (4) Sanitary Landfills, in the regions of Stratos, Mesologgi, Nafpaktos and Meganisi, while one (1) more landfill is planned to be constructed in Paleros.

According to the reported data of the Ministry of Environment, Energy and Climate Change (March 2012), there are forty - one (41) Uncontrolled Solid Waste Dumping Sites. Many of them are active and some of them are inactive but their rehabilitation is not done yet.

Mines – Quarry

In the RBD of Western Sterea Ellada there have been recorded 20 mining sites, 10 of which are marble and slate mining.

Aquacultures

In the RBD of Western Sterea Ellada there are 71 fish aquacultures (61 sea water and 10 freshwater aquaculture). Most of them have been registered in the River Basin of Acheloos (88%) and Mornos (10.7%)

Agriculture

In the River Basin District (RBD) of Western Sterea Ellada have been monitored high loads (more than 17 kg/ha/yr) with the exemption of three sub-basins where the utilized agricultural area is small.

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 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.

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 pressure analysis elements identified in 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 in eighteen (18) in the Western Sterea Ellada RBD from a total of one-hundred and twenty (120) (Annex 1, Map 8: Ecological status & ecological potential of Surface Water Bodies). Specifically:

- The ecological status of two (81) rivers, with total length of 821.06 km, which corresponds to 81.91% 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 86.72km, which corresponds to 8.65% 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 eight (8) rivers was not determined.
- The ecological status of four (4) lakes, with surface 144.01 km², which corresponds to 49.26% 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 four (4) lakes was not determined.
- The ecological status of three (3) transitional water bodies, with total surface 252.98 km², which corresponds to 93.70% of total surface of all transitional waters of RBD, is classified as “moderate ecological status”, when the ecological status of one (1) transitional water body, with total surface 17.02 km², which corresponds to 6.30% of surface of all transitional waters of RBD is classified as “poor ecological status”.
- The ecological status of three (3) coastal water bodies, with total surface 125.16 km², which corresponds to 5.73% of total surface of all coastal water bodies of RBD, is classified as “high ecological status”, the ecological status of four (4) coastal water bodies, with total surface 1426.25 km², which corresponds to 65.32% of surface of all coastal waters of RBD is classified as “good ecological status” and the ecological status of two (2) coastal water bodies, with total surface 632.11 km², which corresponds to 28.95% of total surface of all transitional water bodies of RBD, is classified as “poor 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 Western Sterea Ellada, the chemical status of many WBs is characterized as “unknown”. Specifically:

- The chemical status of seventy - four (74) rivers, with total length 760.58 km, which means 75.88% of total length of all rivers of RBD, is classified as “good chemical status”. Due to the lack of data, chemical status of nineteen (19) rivers is not classified in any of the two classes.
- The chemical status of seven (7) lakes, with total surface 236.76 km², which means 80.99% of total surface of all lakes of RBD, is classified as “good chemical status”. The chemical status of two (2) lakes, with surface 31.38 km², which means 10.74% of total surface of all lakes of RBD, is classified as “failing to achieve good”. Due to the lack of data, chemical status of three (3) lakes 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.

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Table 6: Classification of surface water bodies status of the RBD of Western Sterea Ellada

WB category	WB code	WB name	Ecological Status	Chemical Status	Total Status
C	GR0415C0002N	Thalassa Mesolongiou	Moderate	Unknown	Moderate
C	GR0415C0003N	Anat. Esoteriko archipelagos Ioniou (Echinades)	Good	Unknown	Unknown
C	GR0415C0008N	Ormos Dermata	High	Unknown	Unknown
C	GR0415C0009N	Notios Amvrakikos kolpos	Moderate	Unknown	Moderate
L	GR0415L000000001H	TECHNITI LIMNI TAVROPOU	Moderate	Failing to achieve good	Moderate
L	GR0415L000000004N	LIMNI TRICHONIDA	Moderate	Good	Moderate
L	GR0415L000000005H	LIMNI LYSIMACHIA	Unknown	Unknown	Unknown
L	GR0415L000000006N	LIMNI OZEROS	Moderate	Good	Moderate
L	GR0415L000000007H	TECHNITI LIMNI STRATOU	Unknown	Failing to achieve good	Unknown
L	GR0415L000000008N	LIMNI AMVRAKIA	Moderate	Good	Moderate
L	GR0415L000000009N	LIMNI VOULKARIA	Unknown	Unknown	Unknown
L	GR0415L000000010N	LIMNI SALTINI	Unknown	Unknown	Unknown
L	GR0415L000000011H	TECHNITI LIMNI KASTRAKIOU	Good	Good	Good
L	GR0415L000000012H	TECHNITI LIMNI KREMASTON	Good	Good	Good
R	GR0415R000000008N	PLATANIAS R.	Good	Good	Good
R	GR0415R000101001N	AGRILIAS R.	Good	Unknown	Unknown
R	GR0415R000200003H	ACHELOOS P. 2	Moderate	Failing to achieve good	Moderate
R	GR0415R000200004H	ACHELOOS P. 3	Unknown	Unknown	Unknown
R	GR0415R000200009H	ACHELOOS P. 4	Unknown	Unknown	Unknown
R	GR0415R000200011H	ACHELOOS P. 5	Unknown	Unknown	Unknown
R	GR0415R000200039N	ACHELOOS P. 6	Good	Good	Good
R	GR0415R000200044N	ACHELOOS P. 7	Good	Good	Good
R	GR0415R000200049N	ACHELOOS P. 8	Good	Good	Good
R	GR0415R000200052N	ACHELOOS P. 9	Good	Good	Good
R	GR0415R000200054N	ACHELOOS P. 10	Good	Good	Good
R	GR0415R000200058N	ACHELOOS P. 11	Good	Good	Good
R	GR0415R000200059N	ACHELOOS P. 12	Good	Good	Good
R	GR0415R000200060N	ACHELOOS P. 13	Good	Good	Good
R	GR0415R000200062N	ACHELOOS P. 14	Good	Good	Good
R	GR0415R000201002H	ACHELOOS P. 1	Unknown	Good	Unknown
R	GR0415R000202005H	DIMIKOS P.	Unknown	Good	Unknown
R	GR0415R000202007H	ENOTIKI TAFROS	Unknown	Failing to achieve good	Unknown
R	GR0415R000202106N	ERMITSAS R.	Good	Unknown	Unknown
R	GR0415R000204010H	TAFROS YPERCHEILISIS OZEROU	Unknown	Unknown	Unknown
R	GR0415R000206012N	ZERVAS R.	Good	Unknown	Unknown
R	GR0415R000208013N	INACHOS P. 1	Good	Good	Good
R	GR0415R000208014N	INACHOS P. 2	Good	Good	Good
R	GR0415R000210015N	KRIKELIOTIS R. 1	Good	Good	Good
R	GR0415R000210019N	KRIKELIOTIS R. 2	Good	Good	Good
R	GR0415R000210020N	KRIKELIOTIS R. 3	Good	Unknown	Unknown
R	GR0415R000210116N	KORIKISTIANO R.	Good	Good	Good
R	GR0415R000210217N	KARPENISIOTIS R. 1	Good	Good	Good
R	GR0415R000210218N	KARPENISIOTIS R. 2	Moderate	Good	Moderate
R	GR0415R000212021N	TAVROPOS P. 1	Good	Good	Good
R	GR0415R000212029H	TAVROPOS P. 2	Good	Good	Good
R	GR0415R000212122N	GAVRENITIS	Good	Good	Good
R	GR0415R000212223N	AGIOTRIADITIKO R.	Good	Good	Good
R	GR0415R000212324N	TAVROPOS P. - PARAPOTAMOS MEGA R. 1	Good	Good	Good
R	GR0415R000212325N	TAVROPOS P. - PARAPOTAMOS MEGA R. 2	Good	Good	Good

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WB category	WB code	WB name	Ecological Status	Chemical Status	Total Status
R	GR0415R000212426N	KAROULAS R.	Good	Good	Good
R	GR0415R000212527N	SARANTAPOROU R. 1	Good	Good	Good
R	GR0415R000212528N	SARANTAPOROU R. 2	Good	Good	Good
R	GR0415R000212630N	ASPROS R.	Good	Good	Good
R	GR0415R000212731N	KARITSIOTIS R.	Moderate	Good	Moderate
R	GR0415R000212832N	MEGALO P.	Moderate	Good	Moderate
R	GR0415R000214033N	FRANGISTANOREMMA	Good	Good	Good
R	GR0415R000216034N	AGRAFIOTIS P. 1	Good	Good	Good
R	GR0415R000216035N	AGRAFIOTIS P. 2	Good	Good	Good
R	GR0415R000216036N	AGRAFIOTIS P. 3	Good	Good	Good
R	GR0415R000218037N	GRANITSIOTIS R.	Good	Good	Good
R	GR0415R000220038N	LEPIANITIS R.	Good	Good	Good
R	GR0415R000222040N	PRASIAS R.	Good	Good	Good
R	GR0415R000224041N	ACHELOOS P. - PARAPOTAMOS PLATANIAS R. 1	Good	Unknown	Unknown
R	GR0415R000224042N	ACHELOOS P. - PARAPOTAMOS PLATANIAS R. 2	Good	Good	Good
R	GR0415R000226043N	VATANIADA R.	Good	Good	Good
R	GR0415R000228045N	KOUMPOURGIANITIKO R. 1	Moderate	Good	Moderate
R	GR0415R000228048N	KOUMPOURGIANITIKO R. 2	Good	Good	Good
R	GR0415R000228146N	KOUMPOURGIANITIKO R. - PARAPOTAMOS PLATANIAS R. 1	Good	Good	Good
R	GR0415R000228147N	KOUMPOURGIANITIKO R. - PARAPOTAMOS PLATANIAS R. 2	Good	Good	Good
R	GR0415R000230050N	ARENTAS R. 1	Good	Good	Good
R	GR0415R000230051N	ARENTAS R. 2	Good	Good	Good
R	GR0415R000232053N	GKOURA R.	Good	Good	Good
R	GR0415R000234055N	VATHYRREVMATOS R.	Good	Good	Good
R	GR0415R000236056N	KAMNAITIKO P.	Good	Good	Good
R	GR0415R000238057N	MOUSARITIKO R.	Good	Good	Good
R	GR0415R000240061N	LEPENITSIS R.	Good	Good	Good
R	GR0415R000301063N	TAFROS VALTI	Good	Unknown	Unknown
R	GR0415R000501064N	XIROPOTAMOS R.	Good	Unknown	Unknown
R	GR0415R000701065N	MYTIKA R.	Good	Good	Good
R	GR0415R000901066N	VOUTOUMIAS R.	Good	Unknown	Unknown
R	GR0415R001101067N	NISSIS R.	Good	Unknown	Unknown
R	GR0415R001301068N	AMFILOCHIAS R.	Good	Unknown	Unknown
T	GR0415T0001N	Limnothalassa Aitolikou	Poor	Unknown	Poor
T	GR0415T0002N	Limnothalassa Mesolongiou (Kentriki, Kleisova)	Moderate	Unknown	Moderate
T	GR0415T0003N	Ekvoles Acheloou	Moderate	Unknown	Moderate
L	GR0420L000000002H	TECHNITI LIMNI EVINOY	Good	Good	Good
R	GR0420R000200070N	EVINOS P. 2	Moderate	Unknown	Moderate
R	GR0420R000200073H	EVINOS P. 3	Unknown	Good	Unknown
R	GR0420R000200078N	EVINOS P. 4	Good	Good	Good
R	GR0420R000200081N	EVINOS P. 5	Good	Good	Good
R	GR0420R000201069N	EVINOS P. 1	Good	Good	Good
R	GR0420R000202071N	PORIAS R.	Good	Good	Good
R	GR0420R000204072N	KOTSALOS R.	Good	Good	Good
R	GR0420R000206074N	CHALIKIOTIKO R.	Good	Good	Good
R	GR0420R000208075N	GIDRMANDITIS R.	Good	Good	Good
R	GR0420R000210076N	DIPLATANOU R.	Good	Good	Good
R	GR0420R000212077N	KLINOVITIS R.	Good	Good	Good
R	GR0420R000214079N	EVINOS P. - PARAPOTAMOS KERASORREMA 1	Good	Good	Good
R	GR0420R000214080N	EVINOS P. - PARAPOTAMOS KERASORREMA 2	Good	Good	Good
R	GR0420R000216082N	KALOGERIKO R.	Good	Good	Good

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WB category	WB code	WB name	Ecological Status	Chemical Status	Total Status
C	GR0421C0001N	Korinthiakos kolpos - Aktes Aitolokarnanias	Good	Unknown	Unknown
L	GR0421L000000003H	TECHNITI LIMNI MORNOUN	Good	Good	Good
R	GR0421R000101083N	ERATEINIS R.	Good	Unknown	Unknown
R	GR0421R000200085H	MORNOS P. 2	Good	Good	Good
R	GR0421R000200091N	MORNOS P. 3	Good	Good	Good
R	GR0421R000201084N	MORNOS P. 1	Good	Unknown	Unknown
R	GR0421R000202086N	LIMNITSIANO R.	Good	Good	Good
R	GR0421R000204087N	MORNOS P. - PARAPOTAMOS KERASORREMA	Good	Good	Good
R	GR0421R000206088N	KOKKINOS R.	Good	Good	Good
R	GR0421R000208089N	GRANITSORREMA	Good	Good	Good
R	GR0421R000210090N	BELESITSA R.	Good	Good	Good
R	GR0421R000212092N	MORNOS P. - PARAPOTAMOS MEGA R.	Good	Good	Good
R	GR0421R000301093N	LONGIES R.	Good	Good	Good
R	GR0421R000501094N	KATO VASILIKIS R.	Good	Unknown	Unknown
C	GR0444C0004N	Dyt. Esoteriko archipelagos Ioniou (Echinades) kai Ormos Vasilikis	Good	Unknown	Unknown
C	GR0444C0005N	Dyt. Aktes Lefkadas	High	Unknown	Unknown
C	GR0444C0006N	Ormos Lefkadas	High	Unknown	Unknown
C	GR0444C0007H	Stena Lefkadas	Good	Unknown	Unknown
R	GR0444R000101095N	KAROUCAS P.	Good	Unknown	Unknown
T	GR0444T0004N	Limnothalassa Stenon (Lefkadas)	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 two (2) GWBs is classified as “bad”. The surface of these WBs covers about 117.2 km², corresponding to 1.14% of the total groundwater surface of the RBD of Western Sterea Ellada (Annex 1, Map 6.1: Quantitative Status of Ground Water Bodies) .

8.2.2 Groundwater bodies chemical status

The chemical status of one (1) GWB is classified as “bad”. The surface of these WBs covers about 25 km², corresponding to 0.24% of the total groundwater surface of the RBD of Western Sterea Ellada (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.

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

RB code	WB code	WB name	Quantitative status	Chemical status
GR15	GR0400010	Systima Monastirakiou	Good	Good
GR15	GR0400020	Systima Akarnanikon oreon	Good	Good
GR15	GR0400030	Systima Kandilas	Good	Good
GR15	GR0400040	Systima Anoixiatikou-Loutrou Amfilochias	Bad	Bad
GR15	GR0400050	Systima Katounas-Lesiniou	Good	Good
GR15	GR0400060	Systima Agriniou	Good	Good
GR15	GR0400070	Systima Arakynthou	Good	Good
GR15	GR0400080	Systima Delta Achelooou-Oiniadon	Good	Good
GR20	GR0400090	Systima Mesolongiou-Efinou	Good	Good
GR20	GR0400100	Systima Mornou	Good	Good
GR20	GR0400110	Systima Vardousion	Good	Good
GR20	GR0400120	Systima Iekanis Mornou	Good	Good
GR15	GR0400130	Systima Olonou-Pindou	Good	Good
GR16	GR0400140	Systima Amfilochias	Good	Good
GR17	GR0400150	Systima Valtou Empesou	Good	Good
GR44	GR0400160	Systima Lefkadas	Good	Good
GR45	GR0400170	Systima Vasilikis-Nydriou-Lefkadas	Bad	Good
GR15	GR0400180	Systima Vonitsas-Voulkaria	Good	Good
GR15	GR0400190	Systima ydroforion Iekanis Achelooou	Good	Good
GR15	GR0400200	Systima ydroforion anatolikou tmimatos Iekanis Achelooou	Good	Good
GR20	GR0400210	Systima ydroforion ano rou Iekanis Efinou	Good	Good
GR21	GR0400220	Systima ydroforion Iekanis ano rou Mornou	Good	Good
GR21	GR0400230	Systima ydroforion Iekanis kato rou Mornou	Good	Good
GR20	GR0400240	Systima ydroforion kato rou Iekanis Efinou	Good	Good
GR15	GR0400250	Systima ydroforion kato rou Achelooou	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 Western Sterea Ellada

WB category	WB code	WB name	Ecological status	Chemical Status	Total status
L	GR0415L000000001H	TECHNITI LIMNI TAVROPOU	Moderate	Failing to achieve Good	Moderate
L	GR0415L000000005H	LIMNI LYSIMACHIA	Unknown	Unknown	Unknown
L	GR0415L000000007H	TECHNITI LIMNI STRATOU	Unknown	Failing to achieve Good	Unknown
L	GR0415L000000011H	TECHNITI LIMNI KASTRAKIOU	Good	Good	Good
L	GR0415L000000012H	TECHNITI LIMNI KREMASTON	Good	Good	Good
R	GR0415R000200003H	ACHELOOS P. 2	Moderate	Failing to achieve Good	Moderate
R	GR0415R000200004H	ACHELOOS P. 3	Unknown	Unknown	Unknown
R	GR0415R000200009H	ACHELOOS P. 4	Unknown	Unknown	Unknown
R	GR0415R000200011H	ACHELOOS P. 5	Unknown	Unknown	Unknown
R	GR0415R000201002H	ACHELOOS P. 1	Unknown	Good	Unknown
R	GR0415R000202005H	DIMIKOS P.	Unknown	Good	Unknown
R	GR0415R000202007H	ENOTIKI TAFROS	Unknown	Failing to achieve Good	Unknown
R	GR0415R000204010H	TAFROS YPERCHEILISIS OZEROU	Unknown	Unknown	Unknown
R	GR0415R000212029H	TAVROPOS P. 2	Good	Good	Good
L	GR0420L000000002H	TECHNITI LIMNI EVINOI	Good	Good	Good
R	GR0420R000200073H	EVINOS P. 3	Unknown	Good	Unknown
L	GR0421L000000003H	TECHNITI LIMNI MORNIOU	Good	Good	Good
R	GR0421R000200085H	MORNOS P. 2	Good	Good	Good
C	GR0444C0007H	Stena Lefkadas	Good	Unknown	Unknown

8.4 Classification results of WBs status of the RBD of Western Sterea Ellada

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 Western Sterea Ellada

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	67	6	22	71%	6%	23%	66,68%	8,65%	24,67%
Lakes	4	4	4	33%	33%	33%	39,79%	49,26%	10,95%
Transitional waters	0	4	0	0%	100%	0%	0,00%	100,00%	0,00%
Coastal Waters	0	2	7	0%	22%	78%	0,00%	28,95%	71,05%
Groundwaters	23	2	0	92%	8%	0%	98,86%	1,14%	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 sixty (60) monitoring sites; thirty - four (34) for surveillance and twenty – six (26) for operational monitoring, for the surface waters of the RBD of Western Sterea Ellada. (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.

The updated monitoring program of the RBD of Western Sterea Ellada includes sixty - two (62) monitoring sites in total; thirty (30) for surveillance and thirty - two (32) for operational monitoring (Annex 1, Map 10.2: Updated Monitoring Network of Surface Water Bodies (Proposed By The R.B.M.P.) .

8.5.2 Monitoring of groundwaters

Officially established monitoring program for groundwaters

The monitoring programme of the Common Ministerial Decree 140384/2011 includes sixty - five (65) sites in total; twenty – three (23) for surveillance and forty - two (42) for operational monitoring, for the groundwaters of the RBD of Western Sterea Ellada (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 Western Sterea Ellada includes eighty – one (81) monitoring sites in total; thirty - nine (39) for surveillance and forty - two (42) 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:

$$CRR = \frac{TR - \text{Subsidy}}{TC} * 100\%$$
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 1,233 €/m³ consumed for refined water providers
2. Non-refined water providers face a much lower financial cost equal to 0,066 €/ m³ consumed.

Resource and environmental cost

1. On average, for the whole of the water department:
2. The environmental cost is zero for refined water for domestic use and equal to 0,094 €/ m³ consumed for irrigation purposes.

3. The resource cost is very low equal to 0,0003 €/ m³ for refined water for domestic use and irrigation purposes.

Total cost, average revenue and recovery rate

1. Total cost is 1,234 €/ m³ for refined water for domestic use and its recovery rate is 91,7%, with a corresponding average revenue of 1,132€/ m³.
2. For non-refined irrigation water total cost equals 0,161 €/ m³ consumed. Its recovery rate is low equaling 19,4 %

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 (e.g., 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 eighteen (18) surface WBs and two (2) GWBs from the total WBs of the RBD of Western Sterea Ellada 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

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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
GR0400040	Systima Anoixiatikou-Loutrou Amfilochias	Art. 4.4	Technical feasibility	2027	WD04B090, WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B130, WD04B140, WD04B160, WD04B170, WD04B190, WD04B200, WD04B210, WD04B220, WD04B230, WD04B240, WD04B280, WD04B300, WD04B310, WD04B320, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S100, WD04S110, WD04S160, WD04S210, WD04S230, WD04S290, WD04S300
GR0400170	Systima Vasilikis-Nydriou-Lefkadas	Art. 4.4	Technical feasibility	2027	WD04B090, WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B130, WD04B140, WD04B160, WD04B170, WD04B190, WD04B200, WD04B210, WD04B220, WD04B230, WD04B240, WD04B280, WD04B300, WD04B310, WD04B320, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S100, WD04S110, WD04S160, WD04S170, WD04S180, WD04S230, WD04S280, WD04S290, WD04S300, WD05S260

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415C0002N	Thalassa Mesolongiou	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300
GR0415C0009N	Notios Amvrakikos kolpos	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300, WD04S320

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415L000000001H	TECHNITI LIMNI TAVROPOU	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S240, WD04S290, WD04S300, WD04S310
GR0415L000000004N	LIMNI TRICHONIDA	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415L000000006N	LIMNI OZEROS	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300
GR0415L000000007H	TECHNITI LIMNI STRATOU	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415L000000008N	LIMNI AMVRAKIA	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S210, WD04S230, WD04S240, WD04S240, WD04S290, WD04S300
GR0415R000200003H	ACHELOOS P. 2	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S010, WD04S020, WD04S030, WD04S040, WD04S050, WD04S160, WD04S230, WD04S240, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415R000202007H	ENOTIKI TAFROS	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S240, WD04S260, WD04S290, WD04S300
GR0415R000210218N	KARPENISIOTIS R. 2	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415R000212731N	KARITSIOTIS R.	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300
GR0415R000212832N	MEGALO P.	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415R000228045N	KOUMPOURGIANTIKO R. 1	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300
GR0415T0001N	Limnothalassa Aitolikou	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S040, WD04S050, WD04S120, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0415T0002N	Limnothalassa Mesolongiou (Kentriki, Kleisova)	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S040, WD04S050, WD04S120, WD04S160, WD04S230, WD04S240, WD04S240, WD04S290, WD04S300, WD04S320
GR0415T0003N	Ekvoles Acheloou	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S040, WD04S050, WD04S120, WD04S160, WD04S230, WD04S240, WD04S240, WD04S290, WD04S300

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WB code	WB name	Type of exemption	Justification	Year of achievement	Basic measures	Supplementary measures
GR0420R000200070N	EVINOS P. 2	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S240, WD04S290, WD04S300
GR0444T0004N	Limnothalassa Stenon (Lefkadas)	Art. 4.4	Technical feasibility	2021	WD04B010, WD04B020, WD04B030, WD04B040, WD04B050, WD04B060, WD04B070, WD04B080, WD04B100, WD04B110, WD04B120, WD04B150, WD04B160, WD04B170, WD04B180, WD04B190, WD04B200, WD04B220, WD04B230, WD04B240, WD04B250, WD04B260, WD04B270, WD04B280, WD04B290, WD04B300, WD04B310, WD04B320, WD04B330, WD04B340, WD04B350, WD04B360, WD04B370, WD04B380	WD04S020, WD04S030, WD04S160, WD04S230, WD04S290, WD04S300

In conclusion, for eighteen (18) WBs the year of environmental objectives achievement is estimated the year 2021, while for two (2) the year 2027 (see Table 10).

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

WB category	Year of achievement of environmental objectives		
	2015	2021	2027
rivers	88	7	0
lakes	7	5	0
coastal	7	2	0
transitional	0	4	0
Ground WB	23	0	2

The results of the application of exemption, per WB category in RBD of Western Sterea Ellada, 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	8.9%	1) Technical infeasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical infeasibility 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	10%	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) 10% 2) 0%	

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Table 13: Lakes exemption

Type of Exemption	% percentage of WBs total surface	Justification	% percentage of WBs of each justification	Comments
Article 4.4	51.9%	1) Technical infeasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical infeasibility 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	10%	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) 10% 2) 0%	

Table 14: Transitional WBs exemption

Type of Exemption	% percentage of WBs total surface that consists exemption	Justification	% percentage of WBs of each justification	Comments
Article 4.4	100%	1) Technical infeasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical infeasibility 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	10%	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) 10% 2) 0%	

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Table 15: Coastal WBs exemption

Type of Exemption	% percentage of WBs total surface	Justification	% percentage of WBs of each justification	Comments
Article 4.4	28.95%	1) Technical infeasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical infeasibility 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	10%	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) 10% 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	1.14%	1) Technical infeasibility 2) disproportionate cost 3) natural conditions	1) 100% 2) 0% 3) 0%	
Article 4.5	0%	1) Technical infeasibility 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	10%	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) 10% 2) 0%	

In the River Basin Management Plan of Western Sterea Ellada, 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.

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 also examined during the Environmental Permitting procedure.

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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
Mesochora Dam in Trikala regional unit	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB/AWB Creation / Canalisation/ Reduction of groundwater flow	YES, VATHYRREVMATOS R.. (GR0415R000234055N), ACHELOOS P. 10 (GR0415R000200054N) and ACHELOOS P. 9 (GR0415R000200052N)
Sykia Dam in Karditsa regional unit	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB/AWB Creation / Canalisation/ Reduction of groundwater flow	YES, ACHELOOS P. 8 (GR0415R000200049N), ARENTAS R.1 (GR0415R000230050N), KOUμποURGIANITIKO R.1 (GR0415R000228045N) and KOUμποURGIANITIKO R. - PARAPOTAMOS PLATANIAS R.1 (GR0415R000228146N)
All projects for the transfer of 250hm ³ from Acheloos river to Pinios river basin	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB or AWB Creation / Canalisation/ Reduction of groundwater flow	YES, <u>SYKIA DAM</u> ACHELOOS P.8 (GR0415R000200049N) ARENTAS R.1 (GR0415R000230050N) KOUμποURGIANITIKO R.1 (GR0415R000228045N) KOUμποURGIANITIKO R. - PARAPOTAMOS PLATANIAS R.1 (GR0415R000228146N) <u>MOUZAKIOU REGULATORY DAM</u> Pamisos P. 2 (GR0816R000212049N)
Avlakiou Hydroelectrical Dam In Argithea – Georgiou Karaiskaki municipality of Karditsa and Arta regional units	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB or AWB Creation / Canalisation/ Reduction of groundwater flow	YES, ACHELOOS P. 7 (GR0415R000200044N), VATANIADA R.. (GR0415R000226043N) και ACHELOOS P. 6 (GR0415R000200039N)
Achiron Dam in Aitolokarnania regional unit	Flooding / River Discontinuity / Runoff Reduction or Flow Regulation / HMWB or AWB Creation / Canalisation/ Reduction of groundwater flow	YES, NISSAS P. (GR0415R001101067N)

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 Western Sterea Ellada River Basin District, **it is proposed to be implemented by 2027, seventy-five (75) measures, thirty-nine (39) basic and thirty-six (36) supplementary.**

Proposed Basic Measures for Western Sterea Ellada RBD are presented in the table below:

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Table 18: Basic measures of Western Sterea Ellada RBD

CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B010	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.	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.
WD04B020	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 Agrinio, Messologi and Lefkada)	<p>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.</p> <p>It is proposed to implement the Water Safety Plans in big Municipal Enterprises for Water Supply and Sewerage, such as these of Agrinio, Messologi and Lefkada, 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.</p>
WD04B030	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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B040	Measures to promote an efficient and sustainable water use	Development of the legislative framework and of Program of Measures for residential water saving	<p>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.</p> <p>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 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 examining the development of an Institutional Framework and Program of Measures for residential water savings.</p> <p>The measures promoted are of institutional, regulatory, financial and 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.</p>
WD04B050	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.	<p>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.</p> <p>The measure refers to the formulation of proposals and institutional changes associated with the upgrade of operation and the update of the institutional 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.</p> <p>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.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B060	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 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 should be intensified. It is proposed that the controls are conducted by the Body that supervises the Local Land Reclamation Organizations.
WD04B070	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.
WD04B080	Measures to meet the requirements of Article 7 (drinking water)	Conduction / Update of the Water Supply Masterplan by the Municipal Enterprises for Water Supply and Sewerage.	Conduction of the Masterplans regarding water supply, where the water resources are going to be determined. Those water resources are going to cover the water supply needs in a medium/long term basis. The appropriate protection measures are going to be implemented in time and the necessary external aqueducts are going to be designed in primary level. It is proposed that the Masterplans are going to be conducted by the Municipal Enterprises for Water and Sewerage, as the most pertinent body to this subject. The Masterplans must be conducted according to the RBMPs concerning the water bodies status and the rest program of measures. For this reason it must be assented by the competent Water Directorate.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B090	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 m ³ per year	Detailed delineation of protection zones of groundwater abstraction points (springs, drillings) for drinking water abstractions > 1.000.000 m ³ per year (Municipalities of Karpenisi, Thermos, Iera Poli of Messologi and Nafpaktos). The elaboration of special hydrogeological studies, after the completion of which the detailed delineation will be feasible, is a prerequisite.
WD04B100	Measures to meet the requirements of Article 7 (drinking water)	Projects for restoration / reinforcement of external water supply network	<p>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.</p> <p>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.</p> <p>Indicatively, such projects for the areas of Lepenous, Myticas, Kalloni, Vigla, Ag. Dimitrio and Municipality of Aktio Vonitsa are integrated in OPESD. The competent authorities are held responsible for the promotion of them as well as of all similar projects.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B110	Measures to meet the requirements of Article 7 (drinking water)	Actions for the modernization of the water supply network operation for big urban agglomerations of the water district. Leakages control.	<p>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 “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.</p> <p>Indicatively, such projects for the Municipal Enterprises for Water Supply and Sewerage of Municipality of Messologi and Municipal Enterprises for Water Supply of Agrinio 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.</p>
WD04B115	Measures to meet the requirements of Article 7 (drinking water)	Protection of water abstraction areas from surface water bodies for water supply	<p>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.</p> <p>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.</p> <p>For the WBs that are designated for the 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:</p> <ul style="list-style-type: none"> • Detailed plan of the areas designated for the protection of water, • Regulatory framework of the abovementioned designation and of the permitted activities

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B120	Measures to meet the requirements of Article 7 (drinking water)	Delineation of protection zones for drinking water abstraction works	<p>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:</p> <ul style="list-style-type: none"> ❖ <u>Zone of absolute protection I</u>: 10-20 m around the abstraction site. ❖ <u>Zone of controlled protection II</u>: defined depending on the type of aquifer as follows: <ul style="list-style-type: none"> • 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 <p>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.</p> <ul style="list-style-type: none"> ❖ <u>Zone of protection III</u>: It refers to the recharge basin of the abstraction site and can be determined only by the aforementioned hydrogeological study. <p>Activities in principle prohibited by zone:</p> <ul style="list-style-type: none"> ❖ <u>Protection zone I (absolute protection)</u>: 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. ❖ <u>Protection zone II (controlled)</u>: 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, (as the first category of article 3 of the L.1650/1986 (FEK A 160/16.10.1986) 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. ❖ <u>Protection zone III (supervised)</u>: It surrounds the zones I and II and develops throughout the recharge basin that feeds the underground aquifer from which the abstraction is supplied. In Zone III the existing legislation on water protection applies. <p>The specifications for the aforementioned hydrogeological studies will be determined by the competent authorities, under the coordination of the General Secretariat for Water.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B130	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 from the Special Secretariat of Water..
WD04B140	Measures to control surface and groundwater abstractions	Installation of recording systems regarding water abstraction from surface water bodies	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.
WD04B150	Measures to control surface and groundwater abstractions	Installation of recording systems regarding water abstraction from surface water bodies	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 will be communicated to the Water Directorate during the first ten days of October of each year.
WD04B160	Measures to control surface and groundwater abstractions	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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B170	Measures to control surface and groundwater abstractions	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.
WD04B180	Measures to control surface and groundwater abstractions	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.
WD04B190	Measures to control surface and groundwater abstractions	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.
WD04B200	Measures to control surface and groundwater abstractions	Prohibition of constructing new water abstraction works (boreholes, wells, etc.) for new water uses and for extending existing water use licenses within: <ul style="list-style-type: none"> • Groundwater bodies with quantitative status classified as "poor" • Areas serviced by collective irrigation networks • Protection zones (zones I and II) of potable water abstraction works. 	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 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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B210	Measures to control the artificial recharge of groundwater aquifers	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.	<p>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.</p> <p>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.</p> <p>Technical specifications for these Hydrogeological Studies of artificial recharge will be determined by the Special Secretariat for Water (SSW).</p>
WD04B220	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.
WD04B230	Measures for point source pollution	Defining terms and conditions for connection of industries to sewerage networks / acceptance 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 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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B240	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.	<p>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:</p> <ul style="list-style-type: none"> 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. <p>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.</p> <p>Originally the Water Directorates should determine the rivers basins that are priority for their regions and then to price the activitiw that are essential in order to be implemented the appropriate researches and surveys in the next managing period.</p>
WD04B250	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
WD04B260	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 operation without any license. 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.
WD04B270	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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B280	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.
WD04B290	Measures for point source pollution	Development of a regulatory framework / guidelines for monitoring water quality in aquaculture units	<p>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.</p> <p>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.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B300	Measures for point source pollution	Creation of an institutional framework for the licensing of tanker trucks transporting sewage	<p>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 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.</p> <p>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 .</p> <p>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.</p>
WD04B310	Measures for diffuse source pollution	Gradual, selective conversion of conventional crops to organic	<p>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.</p>
WD04B320	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.	<p>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.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B330	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.	<p>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.</p> <p>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.</p> <p>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.</p>
WD04B340	Measures to confront the negative effects on water status	Determination of selected areas suitable for material abstraction for technical project needs.	<p>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</p> <p>The conduction of a special study in every RB of the RBD is proposed, with the following main subjects:</p> <p>A) Determination of sediment concentration areas along the broad riverbed of the stream.</p> <p>B) Estimation of the available quantities in every region.</p> <p>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.</p> <p>D) Hierarchy of the concentration areas regarding the potential of material extraction taking into account the abovementioned.</p> <p>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.</p> <p>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.</p> <p>Especially for the river water bodies of Acheloos downstream of the artificial lake of Stratos, where aggregate abstractions occur, a more specific complementary measure is proposed (measure code: WD04S010), while for the part of Evinos river downstream of Evinos artificial lake, according to JMD 22306/2006 the extraction of sediment is allowed after a specific management study. This measure covers</p>

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			the water bodies of EVINOS P.1 (GR0420R000201069N), EVINOS P.2 (GR0420R000200070N) and EVINOS P.3 (GR0420R000200073H).
WD04B350	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.

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B360	Special measures for Priority Substances and other pollutants.	Register of pollution sources (emissions, discharges and leaks).	<p>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.»</p> <p>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:</p> <ul style="list-style-type: none"> 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. <p>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. 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.</p>
WD04B370	Measures for pollution from accidents and extreme natural events	Design and implementation of a central warning and management system against pollution from accidents / natural events.	<p>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.</p>

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CODE OF MEASURE	CATEGORY	NAME OF MEASURE	DESCRIPTION
WD04B380	Measures for pollution from accidents and extreme 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.	<p>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:</p> <ul style="list-style-type: none"> 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. <p>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 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.</p>

Note: In measures where it is stated that specifications should be developed (mainly from SSW) it is noted that until the adaptation of the specifications, these studies can be implemented under the consent of the Special Secretariat for Water (SSW) regarding their content and specifications.

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Proposed Supplementary Measures for Western Sterea Ellada RBD are presented in the table below:

Table 19: Supplementary measures of Western Sterea Ellada RBD

CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S010	Administrative measures	Prohibition of sand extraction from river WBs of Acheloos downstreams of the Artificial lake of Stratos until a special study is conducted per River Basin regarding the designation of areas appropriate for sand extraction.	<p>This measure aims to deal with the arbitrary sand extraction in river WBs of Acheloos downstream of artificial lake of Stratos until a special study is conducted per River Basin regarding the designation of areas appropriate for sand extraction. The main topics of the abovementioned study are the following:</p> <p>A) Designation of areas where the river sediment is being gathered along the river bed.</p> <p>B) Assessment of the available quantity of sediment per region.</p> <p>C) Ecological evaluation per region with emphasis on natural habitats (structure, conservation status), flora species (herbaceous, bushy and arboreal with special emphasis on the arboreal in good conservation status) and fauna habitat.</p> <p>D) Hierarchy of regions regarding the possibility of sand extraction, taking into account the abovementioned.</p> <p>This study will be aiming at the regulation of sand extraction from the stream and river bed, in a way that will be guaranteeing the sustainable exploitation of this resource and the maximum possible protection of the ecosystems of the relevant water bodies.</p>
WD04S020	Economic or tax measures	Adaptation of accounting systems of water providers	<p>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.</p>
WD04S030	Economic or tax measures	Introduction of systems benchmarking cost data by provider to a common standard in order to pinpoint areas of lagging performance	<p>Disclosure of water cost data to promote awareness by the public. Data should include comparative cost standing of providers</p>

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S040	Environmental agreements after negotiations	Initiatives on making an environmental agreement between the Management Authority of the protected areas of Mesologgi lagoon-Achelooos estuary and the agricultural sector in order to reduce the negative effects of farming on the wetland habitats.	<p>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</p> <p>Individual tools for achieving the final goal could be the following:</p> <p>A) Registration of the quantity and types of the fertilizers and pesticides that are being used per cultivation</p> <p>B) Measurement or assumption of the water used per cultivation from the source until the final application.</p> <p>C) Implementation of a program for measuring the water quality before and after using it for agricultural purposes.</p> <p>D) Promotion of biological cultivations and biological livestock practices.</p> <p>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.</p> <p>F) Promotion of measures regarding the amplification of fresh water supply in lagoons and brackish areas especially during the summer period.</p> <p>G) Settlement of areas adjacent to the lagoons, that can be left unused for a period that will be commonly agreed.</p> <p>All the abovementioned could be part of a Program Agreement whose implementation could be funded from the European Union.</p> <p>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).</p>
WD04S050	Environmental agreements after negotiations	Initiatives on making an environmental agreement between the Management Authority of the protected area of the National Park of Mesologgi lagoons 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.	<p>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.</p> <p>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.</p>

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S060	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 (>300.000m ³ /year) and pollute Groundwater Bodies in order to adopt specific initiatives and Code of Conduct.
WD04S070	Emission control	Establishing sinkhole protection rules	Establishing standards for the protection of existing active or inactive sinkholes with prohibition for polluting activities and especially any activities that dispose wastewater directly to sinks. The sinkholes 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.
WD04S080	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. 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.
WD04S090	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.

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S100	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.	<p>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.</p> <p>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:</p> <p>For karstic systems: 300 m.</p> <p>For granular unconfined aquifers: 200m.</p> <p>For granular confined or semi-confined aquifers: 100m.</p> <p>The abovementioned distances are being measured from the coast.</p> <p>In special cases (e.g. 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.</p> <p>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.</p> <p>The zones with restrictions or prohibitions for drilling projects will be defined by a specific hydrogeological study.</p> <p>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 hydrogeological study which will be examined and approved by the relevant Water Directorate.</p> <p>The specifications for the aforementioned hydrogeological studies will be determined by the contact authorities under the coordination of Special Secretariat for Water.</p>

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S110	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.
WD04S120	Recreation and restoration of wetlands.	Projects for the improvement of the hydraulic connection between some parts of the Mesologgi-Etoliko lagoons and Acheloos estuary system, which faces problems of insufficient fresh or saltwater supply.	This measure applies to lagoons 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.
WD04S130	Abstractions Control	In-situ inspections to licensed abstractions (large consumers) at least 2 times per year.	Periodic inspections (at least 2 per year) by the Water Division to licensed abstractions (especially large consumers) for control of abstractions and installed recording system pumped volumes.
WD04S140	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.
WD04S150	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 (e.g. 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.
WD04S160	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.).

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S170	Construction Projects	Construction of Vasiliki Reservoir, Regional Unit of Lefkada Island	Construction of the reservoir for the collection of winter runoffs and their transfer during the summer period for drinking water and irrigation use in replacement of the water abstraction from the groundwater water bodies. Reservoir Storage Volume is equal to 140,000 m ³ .
WD04S180	Construction Projects	Construction of Karya Reservoir, Regional Unit of Lefkada Island	The project refers to the construction and operation of a reservoir with total capacity of 400,000 m ³ .
WD04S190	Construction Projects	Irrigation Works near Mornos Reservoir, Fokida and Aetoloakarnania Regional Units	Development of new irrigation schemes (closed piped systems) over an area of 2320 ha (523 ha in Aetoloakarnania Regional Unit and 1797 ha in Fokida Regional Unit). The project comprises of two phases: the Phase A (1992-1996) was subsidized by the 2 nd European Support Framework for the irrigation of about 550 ha area in Fokida Regional Unit. The Phase B is subsidized by the 3 rd European Support Framework (2003-2009) and today constitutes the continuation of the previous phase for 1000 ha in Fokida Regional Unit.
WD04S200	Construction Projects	Irrigation system works in Elaiona Amfissas of Fokida Regional Unit.	The project refers to the systematic irrigation of 31.000 acres of Amfissa's olive trees, with abstraction of 12.000.000 m ³ of water annually during the irrigation season from April to September, from Mornos aqueduct. The authorization for the above quantity of water was given by EYDAP Assets with the 570/17-05-06 decision of the Minister of Environment and Public Works. The irrigation network has a total length of about 166.900m and includes underground PVC pipes (DN110 - DN400) and steel pipes (DN450-DN1000). From the 166.900m of the irrigation network, 146.900m follow existing roads, while 20.000m will be placed in existing physical or property boundaries and by no means no new roads will be excavated, according to YPPO/GDAPK//ARCH/A1/F10/99220/4869 p.e/21.11.2008 decision of the Minister of Culture, since the area of Elaiona Amfissas has been declared an archaeological site, historic site and landscape of outstanding natural beauty with the characterization "Delphic Landscape". The project is expected to relief the quantitative status of the underlying groundwater water body in the River Basin District of Anatoliki Sterea Ellada (GR07).
WD04S210	Construction Projects	Irrigation Water and Drinking Water Supply Network of Valtos area / Expansion of Irrigation Canal D1	Reconstruction of irrigation canal D1, expansion of irrigation Amvrakia – Amfilochia canal and construction of a refinery. Irrigated area of 10,250 ha and drinking water supply of the villages of the Valtos area, Aetoloakarnania Regional Unit.
WD04S220	Construction Projects	Achira Dam, Aetoloakarnania Regional Unit	Dam for irrigation use of an area of 2600ha at the Ksiromeros area. Earthfill dam , 36.5 m high and reservoir storage volume of 41.7 MCM. Environmental flow of 80 l/s.
WD04S230	Emission control	Efficient management of wastewater from agglomerations with a population peak <2000.	Implementation of guidelines of Special Secretariat for Water on proper wastewater management practices for agglomerations with equivalent population <2,000. Indicative agglomerations are Stratos of Agrinio Municipality, Menidi of Menidi Municipality, Agios Thomas of Mesologgi Municipality and Mauroolithari of Delfi Municipality.

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S240	Projects of Infrastructure Rehabilitation	Study at River Basin level about the adverse effects of dams at the upstream and downstream transport of fish population along rivers and about implementing the best possible methods and practices for dealing with the adverse effects.	<p>The study should take into account the relevant literature for the fish population and the derived data for the National Monitoring Programme that will due at the end of this management cycle. Also the study should include all the necessary supplementary samplings and field observations for the compilation of a catalogue of the fish species, their ecology and their transportation.</p> <p>This supplementary measure is considered of high priority because it is related directly with the BQE of fish fauna, which, according to the Directive 2000/60, constitutes one of the factors for the assessment of the ecological status of river water bodies and which, at the present assessment phase, was not included due to inefficient scientific and technical maturity.</p> <p>It is expected that the implementation of this measure should encourage the close cooperation among experts of other countries of the Mediterranean ecoregion so that a common methodology and technology transfer could be accomplished to confront the problem.</p> <p>The aim of this measure is to investigate the adverse effects of interrupting the flow continuity of the river water bodies on the fish upstream and downstream populations in order to contribute to the development of an index for the assessment of the ecological status of the river water bodies with BQE the fish fauna.</p>
WD04S250	Projects of Infrastructure Rehabilitation	Enhancement of Drinking Water Supply System from Kastraki Reservoir to Agrinio municipality	The project refers to the enhancement of the drinking water supply system from Kastraki Reservoir to the municipality of Agrinio city
WD04S260	Projects of Infrastructure Rehabilitation	Rehabilitation of the operation of the connecting ditch between Trichonida Lake and Lisimachi Lake	The regulating gates of the connecting ditch between Trichonida Lake and Lisimachia Lake do not work properly, they have a permanent position and therefore a by-pass canal has been opened.
WD04S270	Projects of Infrastructure Rehabilitation	Cleaning Dimikos Ditch and reestablishment of its operation.	The Dimikos Ditch, which connects Lisimachia Lake with Acheloos River in order to convey the excess runoff of Lisimachia Lake to Acheloos River, does not operate anymore because it has not been cleaned since 1983. As a result, the excess runoff is conveyed to irrigation canals that although they have been constructed for irrigation purpose they are used for flood protection of the surrounding areas. Moreover the water supply of these irrigation canals during the whole year hinders their maintenance during the winter time period.
WD04S280	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 Lefkada and the need for the measures taken at the time.

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
WD04S290	Educational measures	Organization of one day events regarding new technologies, modern agricultural techniques, environmental protection issues, fertility of agricultural soils etc.	The organization 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.
WD04S300	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 various financial programmes etc., aiming at the mobilisation of the rest of the producers in order to adopt and apply the same procedures and methods.
WD04S310	Research, development & demonstration programmes	Control of the allocation of the population of the bivalve <i>Dreissena polymorpha</i> in Plastira lake, which affects the taste and smell of the water originating from the lake.	For the Artificial lake of Plastiras, it is proposed that a further investigation of the allocation and of the abundance of bivalve <i>Dreissena polymorpha</i> takes place. Those bivalves were mostly found close to concrete structures, such as the dam and the water intake, as it is also mentioned in the research named "Environmental monitoring of the N. Plastiras reservoir " (HCMR, September 2010).
WD04S320	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 3 points (one per water system) twice yearly, during April and July. The duration of the programme is three years. It is proposed that monitoring should be carried out in Acheloos estuary, in Kleisova lagoon and in Southern Amvrakikos.
WD04S330	Research, development & demonstration programmes	Application of Special Research Programme in a) certain rivers of the WS for ascertaining 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	<p>It is proposed that during the current planning period a targeted examination based on a special research programme should be initiated for the following:</p> <p>A) For planned projects</p> <p>These projects concern Achiron dam in Nissas river (GR0415R001101067N), which has no monitoring station according to the Joint Ministerial Decision 140384/2011. More specifically it is proposed that a monitoring station is going to be settled on that water body. The river flow is going to be monitored especially during the first years of the operation of the project, in order to examine if the calculated flow is sufficient for the</p>

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		mainly control of supply.	<p>achievement of a good ecological status.</p> <p>B) For existing projects:</p> <p>These projects concern sections of rivers (HMWB) which are found downstream of 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:</p> <p>1) In the part of Acheloos river which is located directly downstream of the tailrace of Stratos I Hydroelectric Dam (Acheloos P.5, GR0415R000200011H) a minimum ecological flow equal to 21,3 m³/s is proposed (JMD 131957/15-03-2003 concerning the environmental terms and conditions). According to the same JMD, the abovementioned flow will result from a special study which is going to be conducted by the Public Electricity Company. This study will co evaluate the new hydrological and rest data of the region. Until the revision of the ecological flow is done, it is proposed that the Water Directorate is going to ensure that the ecological flow will be equal to 21.3 m³/s (according to the JMD 131957/ 15-03-2003).</p> <p>2) In the part of Mornos river which is located directly downstream of Mornos reservoir (Mornos P.2, GR0421R000200085H)-the reservoir was built in 1979 without the provision of an ecological flow- it is estimated that the flow in the HMWB downstream of the dam equals to approximately 1,2 m³/s (39,22 hm³/year). Moreover according to the data of the Water and Sewerage Company regarding the 1979-2010 period, the groundwater leaks from the bottom and the sidewalls of the reservoir are estimated to 10 hm³/year. According to the abovementioned, the flow of the river WB is primarily considered as insufficient for the retainment of a good ecological status. However it is proposed that the status of the HMWB is going to be reevaluated in the terms of a special investigative program.</p> <p>3) In the part of Tavropos river directly downstream of Tavropos reservoir (Tavropos P. 2, GR0415R000212029H)- the reservoir was built in 1959 without the provision of an ecological flow- it is estimated that the flow in the HMWB downstream of the dam until the junction with Aspros r. (GR0415R000212630N) equals to approximately 0,7 m³/s (22 hm³/year). The river flow is primarily considered as insufficient for the retainment of a good ecological status. However it is proposed that the status of the HMWB is going to be reevaluated in the terms of a special investigative program.</p> <p>C) 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</p>

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CODE OF MEASURE:	CATEGORY:	NAME OF MEASURE:	DESCRIPTION:
			<p>reasons except pollution) and therefore a definite answer to the question of whether the specific WBs are Highly Modified.</p> <p>The HMWBs that are proposed to be included in a targeted research program concern to a) HMWBs whose hydromorphological alteration doesn't refer to morphological alteration but mostly to main flow regulation, b) HMWBs that don't have a monitoring station according to the JMD 140384/2011</p> <p>Those highly modified water bodies are:</p> <p>1) Acheloos P.3 (GR0415R000200004H) – river HMWB which is part of Acheloos river downstream of Stratos dam.</p> <p>2) Evinos P.3 (GR0420R000200073H) – river HMWB which is part of Evinos river directly downstream of Agios Dimitrios Evinou reservoir.</p> <p>It is necessary that a sampling campaign takes place in 6 different points (one point per WB) twice a year. The total duration of the program will be three years.</p>
WD04S340	Administrative Measures	Incorporation of small coastal basins from Kato Vassiliki until Nafpaktos in Evinos managing basin.	<p>The small coastal basins from Kato Vassiliki until Nafpaktos will be incorporated in Evinos instead of Mornos managing basin.</p> <p>This will transfer the managing responsibilities in the Water Directorate of Western Sterea Ellada improving the customer services, which until then was done from Lamia or Athens.</p>
WD04S350	Construction Projects	Completion of the conveyance system for water transfer of 250hm ³ from Acheloos river to the Pinios River Basin	The measure involves the Petrotou-Drakotripas tunnel for water transfer and the low regulating Mouzaki dam located at the river basin of Pamisos River
WD04S360	Construction Projects	Development of new irrigation schemes for the replacement of water abstraction via boreholes for irrigation use within Pinios River Basin	The measure refers to the required conveyance and irrigation distribution system for the usage of the transferred water of 250hm ³ from Acheloos river.

Additionally, in the Western Sterea Ellada 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 **256,7 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 27 of 36 supplementary measures have zero or low cost of implementation. 6 supplementary measures have cost below 100.000€ and 1 of them costs between 100 and 250 thousands €.

ADDITIONAL MEASURES TO ACHIEVE THE OBJECTIVES OF THE DIRECTIVE IN SURFACE AND UNDERGROUND WATER BODIES IN PINIOS RIVER BASIN

In order to achieve the objectives of the Directive regarding the status of the surface and ground water bodies of Pinios River Basin some additional complementary measures are required.

From the analysis made in the individual deliverables that make up the Management plan of the River Basins of Western Sterea Ellada and Thessalia River Basin Districts, the following conclusions for both Pinios and Acheloos River Basins were made:

A. River Basin of Acheloos

- The Ground Water Bodies (GWBs) do not confront overexploitation problems. There is not recorded pumping of non-renewable quantities in GWB.
- The Surface Water Bodies (SWBs) do not also face overexploitation problems, although irrigation is done primarily with surface waters.
- The river system of Acheloos, especially in the middle basin, is set for the production of hydropower (Kremasta, Kastaki Stratos) .
- The river, transitional and coastal water bodies in the lower basin – in the estuary of Acheloos, is a broad area of high ecological importance (Natura, Ramsar).
- The same system is also an important resource of wealth – for both extensive and intensive fish farming.

B. River Basin of Pinios

- A significant number of Ground Water Bodies is under intense overexploitation which has contributed in many cases to quality deterioration.
- Many surface water bodies are also facing overexploitation. The exploitation is related to abstractions during the irrigation period, which mostly coincides with the period of low flow of the rivers. As a result, there are extremely low to almost zero in some cases, summer discharges in rivers bodies. To these low discharges contributes the overexploitation of groundwater, since the summer discharges in the river water bodies of Pinios basin stems from groundwater bodies. It is estimated that the average summer abstraction from all surface bodies of the basin is around 260 hm³ per year. In order not to prevent the achievement of good ecological status of the river water bodies, this amount must not exceed 160 hm³ per year. This means that the total summer overexploitation volume from surface water bodies was estimated to approximately 100 hm³ per year.
- The average annual volume of over-exploitation of GWBs was estimated on an annual basis, approximately to 120-150 hm³. Reduction of abstractions in the levels of 120-150 hm³ per year would theoretically stabilize the piezometric level at current levels. The gradual restoration of the groundwater aquifers includes the further reduction of the pumping volume to about 300 hm³ per year.
- It is estimated that the amount of groundwater that has been removed from the permanent underground water resources of the River basin of Pinios from the mid 1980s until nowadays, based

on existing measurement data level, is at least 3.000 hm³. It is estimated that in order to replenish the underground water resources, even if the over pumping of 300 million m³ per year stops today, 50-60 years from today will be needed.

Based on the above, the achievement of the environmental objectives of the Directive relating to good ecological status in surface and good quantitative status of groundwater bodies requires the reduction of the abstraction from surface water bodies during the summer months by about 100 hm³ per year and the reduction of the abstraction from groundwater bodies by 300 hm³ per year. These amounts are counterbalanced with the deficit of the current supply - demand equilibrium, to meet the irrigation demand in the basin of Pinios which is estimated at about 65 hm³ per year. Therefore it is estimated that if no other measure of quantitative management is implemented in the basin of Pinios, the average annual deficit will be approximately 465 hm³.

Agriculture scenarios

A special study on agricultural development policies over the next 20 years is conducted in the RBD's of Western Sterea Ellada and Thessalia.

This particular study considers the consequences of the agricultural development, which is consistent with the guidelines of the new Common Agricultural Policy (2013-2020). Two (2) basic scenarios are conducted. The first one includes the adaptation of the CAP and is in general characterized as realistic. The second one is a high growth scenario, which combines the restructuring of the crops of the irrigated areas in both RBD's and requires significant public and private investments. Taking into account the current conditions, the second scenario is estimated as ambitious and is not really possible to happen.

It is estimated that in the River Basin District of Western Sterea Ellada the water resources availability is sufficient to cover the needs according to both the first and the second scenarios. This volume of water is not expected to cause problems in the status of both surface and groundwater bodies provided that good agricultural practices in terms of fertilizing, plant protection and waste management will be implemented.

In Thessalia River Basin District under the current conditions of the water resources, it is not possible to cover the water needs that stem from the two alternative scenarios regarding agricultural development. The abstraction of water from surface and groundwater bodies seems necessary and this leads to the deterioration of the status of the water bodies and consequently to the failure of achievement of the environmental objectives of the Directive.

Regarding the quantitative management scenarios which were examined for Thessalia River Basin District, it is considered as more realistic that irrigated land is going to decrease. It should be noted that this option conflicts with the conclusions of the special study on agricultural policy, where it seems that there is a trend for further increase of the irrigated land and some benefits resulting from this. However, it appeared that more reliable conclusions will be exported in future updates of the management plan, when there will be experience from the implementation of the CAP.

Environmental requirements

Achieving sustainable exploitation of surface and groundwater bodies requires the identification of threshold values for the environmental requirements of these bodies. First of all, two levels of environmental requirements for surface and groundwater bodies are examined:

- Surface Water Bodies (SWBs)

(a) Average Environmental Requirements where the maximum acceptable abstraction of surface flow for the summer period equals to 50 % of the available flow.

(b) High Environmental Requirements where the maximum acceptable abstraction of surface flow for the summer period equals to 30 % of the available flow.

- Groundwater Bodies (GWBs)

(a) Average Environmental Requirements where the total abstraction from renewable resources of GWBs in the River Basin of Pinios must not exceed 300 hm³ per year, in order to achieve a slow and gradual restoration of the aquifers. This restoration is estimated to take place in about 60 years.

(b) High Environmental Requirements where abstraction from renewable resources of GWBs in the River Basin of Pinios must not exceed 200-250 hm³ per year aiming to the gradual restoration of the aquifers. This restoration is estimated to take place in about 50 years.

Alternative scenarios to encounter deficiency

Taking into account both the existing supply-demand equilibrium in the River Basins of Acheloos and Pinios and the scenarios for the development of agriculture in the respective River Basins, this report considers alternative water management approaches in order to encounter the deficiency in Pinios River Basin and to achieve the environmental objectives of the Directive. One of these alternative approaches is also the water transfer from the upper basin of Acheloos River.

The parameters involved in the composition of the different management scenarios are:

- Reduction of Irrigation Consumption per acre (common for all scenarios of water management)
- Construction of reservoirs in order to use the winter runoff water in Thessaly
- Water transportation from Acheloos basin or reduction of irrigated land

The restructuring of the crops following the guidelines of the Common Agricultural Policy and the national policy is an exogenous constant parameter.

The comparative evaluation of the potential management scenarios demonstrated three (3) management scenarios for further benchmarking, in order to implement them in the near future and to meet the average environmental requirements for surface and groundwater bodies in the Pinios River Basin. These are:

1) Scenario based (a) to reduced irrigation consumption per acre, equal to almost 450 m³/acre/year, (b) to the completion of the construction projects regarding reservoirs for winter runoff storage in Thessalia RB, and (c) to the reduction of the irrigated land from the current 2.5 million acres to about 550.000 acres, in order to supply sufficient water to cover the average environmental requirements of the water bodies.

2) Scenario based (a) to reduced irrigation consumption per acre, equal to almost 450 m³/acre/year, (b) to the completion of the construction projects regarding reservoirs for winter runoff storage in Thessalia RB and (c) to the reduction of the irrigated land from the current 2.5 million acres to about 270.000 acres, in order to supply sufficient water to cover the average environmental requirements of the water bodies.

3) Scenario based (a) to reduced irrigation consumption per acre, equal to 450 m³/acre/year, (b) to the completion of the construction projects regarding reservoirs for winter runoff storage in Thessalia RB and (c) to the water transfer of a quantity equal to 250 hm³ from Acheloos river to Pinios River Basin, in order to sufficiently cover the irrigation needs of the existing 2,500,000 acres as well as the average environmental requirements of the water bodies.

After the consultation of both the Management Plans and the Strategic Environmental Impact Assessments of the River Basin Districts of Western Sterea Ellada and Thessalia and taking into account the Joint Ministerial Decision approving the Strategic Environmental Impact Assessment of the Management plan of the River Basin District of Western Sterea Ellada, scenario 3 is chosen as the most suitable in order to achieve the environmental objectives of the Directive in Surface (SWBs) and Ground Water Bodies (GWBs). The scenario includes the reduction of the irrigation water consumption per acre at a target price of 450 cubic meters per year to maintain the same irrigated

land in Pinios River Basin as it is today, the completion of the construction projects, but not the additional projects regarding winter runoff storage and finally water transfer of 250 million cubic meters per year from Acheloos river. The alternative package of additional measures accompanying the selected scenario water management is included in the program of measures of Thessalia and Western Sterea Ellada. More specifically, the alternative package of additional measures is included in the program of supplementary measures of the Western Sterea Ellada River Basin District, through the measures WD04S350 and WD04S360 with names " Completion of the conveyance system for water transfer of 250 MCM from Acheloos river to the Pinios River Basin " and " Development of new irrigation schemes for the replacement of water abstraction via boreholes for irrigation use within Pinios River Basin " and in the program of supplementary measures of Thessalia River Basin District through the measures WD08S400 and WD08S410 with names " Completion of the conveyance system for water transfer of 250 MCM from Acheloos river to the Pinios River Basin " and " Development of new irrigation schemes for the replacement of water abstraction via boreholes for irrigation use within Pinios River Basin ". In the following table those two measures are being presented.

Table 20: Package of Additional Measures (Scenario 3 chosen) - Water transfer from Acheloos river

Measure Category	Measure Name	Measure Description
Construction projects	Completion of the conveyance system for water transfer of 250 MCM from Acheloos river to the Pinios River Basin	The measure involves the Petrotou-Drakotripas tunnel for water transfer and the low regulating Mouzaki dam located at the river basin of Pamisos River
Construction projects	Development of new irrigation schemes for the replacement of water abstraction via boreholes for irrigation use within Pinios River Basin	The measure refers to the required conveyance and irrigation distribution system for the usage of the transferred water of 250MCM from Acheloos river.

Annex I - Maps

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