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River basin management plans developed in Greece, based on the WFD 2000/60/EC guidelines

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ABSTRACT

The Water Framework Directive 2000/60/EC (WFD) sets an overall framework for water management in Europe. The main instrument for its implementation is the river basin management plan (RBMP) and the accompanying programme of measures. As we are almost in the end of the WFD implementation cycle (in 2015), the paper presents the progress regarding the RBMPs developed by each EU27 member state (MS). A review of the conformity checks regarding the obligation and the quality of the RBMPs is provided for all EU27 MS. Special focus is given to Greece attempting a comparative analysis of its RBMPs. Although they comply with the context requirements set by the WFD, there have been problems occurring as consequences intense disputes. Special focus is given in the economic assessment. Different methodologies used and the lack of data are the main problems identified.

Keywords: River basin management plan; WFD; Comparative analysis; Greece; Cost recovery

1. Introduction

In 2000, the Water Framework Directive (WFD) 2000/60/EC has been introduced. Its main target is to protect and restore aquatic ecosystems to ensure the long-term sustainable use of water for people, business and nature [1]. The WFD has incorporated the key principles of integrated river basin management bringing together economic and ecological perspectives into water management [1]. The key objective of the WFD is to achieve good status for all water bodies by 2015. The main instrument for the implementation of the WFD is the river basin management plans (RBMPs) and the accompanying programme of measures (PoM). The RBMP is a comprehensive document describing the current status and the execution of water management, identifying all actions to be taken in the river basin district (RBD). RBMPs include: RBD's characterization (including the pressures and impacts analysis); economic analysis; delineation of water bodies; establishment of the typology and reference conditions for surface water bodies; status monitoring and assessment; objectives setting; PoMs and their implementation; summary of public consultation and list of the competent authorities. The general assessment analysis showed that good status for almost half of the water bodies cannot be achieved in

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2015 [1] as some countries are still behind in the implementation process, while others are good examples to be followed. Table 1 presents an overview of the reporting process for each one of the EU27 MS' RBMPs [1,2]. Some of the problems identified (Table 1) are: failure to comply with certain WFD Articles; differences noted in the number of competent authorities identified by each MS; delay of the consultation process; lack of validation of the typology of surface waters; least advanced economic analysis; little progress in transparent pricing policies implementation; general measures proposed in the RBMPs and lack of a timetable for the measures implementation [1,2].

The present paper is trying to review the progress made so far regarding the RBMPs focusing on Greece, as there is no official assessment made so far. The assessment performed included the analysis of all RBMPs as published by the Ministry of Environment, Energy and Climate Change.

As reported, Greece is still behind in the WFD implementation in many aspects. One of the drawbacks is that not all the RBMPs are complete so far. The authors try to pursue a conformity assessment of the Greek RBMPs and special focus is given to the economic analysis and the estimation of the full water cost. The main aim is to identify the major problems and drawbacks, and provide solutions to avoid them, as the second WFD implementation cycle will start in six months (2015) and end in 2021. More specifically, the first question the paper tries to answer is whether the Greek RBMPs followed the guidelines set by the EC and why there is such a delay in the implementation process. Secondly, to move a step further, the paper tries to specify the main problems faced during the RBMPs development and what solutions can be proposed since other, more advanced member states (MSs) concluded this step successfully. The paper aims at providing an assessment on the RBMPs since the first implementation period is almost over. The MSs should try harder during the second WFD implementation period and this paper could help the least advanced MSs. The research methods included the thorough study and analysis of all the Greek RBMPs and their comparative analysis. This analysis preformed comparisons not only among the Greek RBMPs but compared them to other MSs RBMPs (especially the UK ones). A thorough state-of-the-art has been also performed to take into account the work done by other researchers. Additionally, the authors used their experience in the implementation of the WFD in Greece as they are members of the committees set by the Special Water Secretariat (the authority responsible for the WFD in the country).

2. Greek RBMPS' implementation progress

In Greece, 14 RBDs have been assigned (Fig. 1) for each of which a RBMP must be prepared, according to the WFD [3]. So far, the RBMPs for 10 RBDs (GR01, GR02, GR03, GR04, GR05, GR06, GR07, GR08, GR11 and GR12) and the drafts for 2 RBDs (GR09 and GR10) have been completed, whereas for RBDs GR13 and GR14 the consultations for the development of the RBMPs just started (GR13) or have not started yet (GR14) (Table 2). Five RBDs are international (Table 2). Two court rulings have been issued against Greece during the WFD implementation. The first one refers to the failure to submit the reports required under Article 5 of the directive, on characterization of the RBD, review of the environmental impacts of human activity and economic analysis of water use. Greece has since complied and the cases are closed. The second one refers to the failure to adopt and report RBMPs for all of their respective RBD on time.

2.1. Competent authorities

At the national level, the Ministry of the Environment, Energy and Climate Change, through its Special Water Secretariat is responsible for the WFD implementation. At decentralized level, the 7 Decentralized Administrations and the 13 self-governed Regions are identified as competent authorities. Following the new Local Administration/Governance reformation plan applied in Greece called "Kallikratis" (Law 3852/2010, after the famous architecture), the responsibilities are shared. The RBDs management is complex and many problems arise. Only five RBMPs (RBDs GR01;02;03;06 and 07) have been approved by the Minister of the Environment so far. In all the RBMPs, information regarding the competent authorities for the implementation of the RBMPs is given, as well as the identity, main responsibilities, geographical area and competent authorities for trans-boundary water systems (Table 3). The Special Water Secretariat invited tenders to elaborate the RBMPs for groups of RBDs. Thus, one group included GR01, GR02 and GR03; another group included GR04, GR05 and GR08; another one GR06 and GR07; another group included GR09 and GR10 and finally another group elaborated the RBMPs of GR11 and GR12.

2.2. Public consultation

The public consultation is described in all RBMPs, including the timeline, the stakeholders, the statistics and the consultation procedures (Table 3). There was a small participation noted in the questionnaire

Table 1
Overview of timing of adoption and completeness of the reported each EU27 MS' RBMPs [1,2]

					RDB's characterization									
MS	Time of adoption	Bad application infringements	Designation of competent authorities	Public consultation	Identification of water categories	SWs' typology	Reference conditions	SWBs' delineation	Significant pressures	Protected areas	Water pricing policies	Monitoring	Environmental objectives–exemptions	PoM
AT	03/2010		Yes	Yes	Yes	Yes	Yes	Partly	Yes	Yes	Partly	Partly	Partly	Partly
BE	Not adopted	Court ruling 2012	Yes	Yes	Yes	Unclear/ no info	Yes	Yes	Not assessed	Yes	Partly	Partly	Partly	Partly
BG	03/2010		Yes	No	Yes	Partly	Partly	Yes	Yes	Yes	Partly	Partly	Partly	Partly
CY	06/2011	Closed 2011	Yes	Yes	Partly	No	No	Partly	Yes	Yes	Partly	Partly	Partly	Partly
CZ	12/2009		Yes	No	Yes	Unclear/ no info	Partly	Partly	Yes	Yes	Partly	Partly	Partly	Partly
DE	12/2009		Yes	Yes	Yes	Partly	Partly	Yes	Yes	Yes	Partly	Yes	Partly	Partly
DK	12/2011	Closed 2012	Yes	Yes	Partly	No	Partly	Partly	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
EE	04/2010		Yes	Yes	Partly	Yes	Partly	Partly	Yes	Yes	Partly	Partly	Partly	Partly
EL	Not adopted	Court ruling 2012	Yes	No	Yes	Not assessed	Not assessed	Partly	Not assessed	Yes	No	Yes	Not assessed	Not assessed
ES	Not adopted	Court ruling 2012	Yes	Yes	Yes	Unclear/ no info	Yes	Partly	Not assessed	Yes	Partly	Yes	Not assessed	Not assessed
FI	12/2009		Yes	Yes	Partly	Yes	Yes	Partly	Yes	Yes	Partly	Partly	Partly	Partly
FR	12/2009		Yes	Yes	Yes	Partly	Partly	Yes	Yes	Yes	Partly	Yes	Partly	Partly
HU	05/2010		Yes	Unclear	Yes	No	Yes	Partly	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
IE	07/2010		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
IT	03/2010		Yes	Unclear	Yes	Unclear/ no info	Unclear/ no info	Yes	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
LT	11/2010	Closed 2011	Yes	Yes	Yes	Unclear/ no info	Yes	Yes	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
LU	12/2009		Yes	Yes	Partly	Unclear/ no info	Partly	No	Yes	Yes	Partly	Partly	Partly	Partly
LV	05/2010		Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
MT	03/2011	Closed 2011	Yes	Yes	No	Unclear/ no info	Partly	Partly	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
NL	11/2009		Yes	Yes	Yes	Unclear/ no info	Yes	Yes	Yes	Yes	Partly	Partly	Partly	Partly
PL	02/2011	Closed 2011	Yes	No info	Yes	Unclear/ no info	Partly	Yes	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
PT	Not adopted	Court ruling 2012	Yes	Unclear	Yes	Not assessed	Not assessed	Partly	Not assessed	Yes	No	Yes	Not assessed	Not assessed
RO	01/2011		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partly	Yes	Partly	Partly
SE	12/2009		Yes	Yes	Yes	Unclear/ no info	Partly	Yes	Yes	Yes	Partly	Partly	Partly	Partly
SI	07/2011	Closed 2011	Yes	Yes	Partly	Partly	Partly	Partly	Yes	Yes	Partly	Partly	Partly	Partly
SK	12/2009		Yes	Yes	Partly	Unclear/ no info	Yes	Partly	Yes	Yes	Partly	Unclear/ no info	Partly	Partly
UK	12/2009		Yes	Yes	Yes	Unclear/ no info	Partly	Yes	Yes	Yes	Partly	Partly	Partly	Partly
NO	06/2010													

Fig. 1. Greece's 14 RBDs.

completion by citizens and authorities. Generally, the process of public consultation is not very famous in Greece and many problems are encountered.

2.3. Water bodies' typology

For the development of the typology of the surface water bodies, system B (WFD Annex) has been adopted for all the RBDs in the country (Table 3). The classification of rivers, as far as biological quality elements is concerned, used benthic invertebrates, since for the rest (fish, macroalgae and phytobenthos) it was not feasible to determine the class boundary limits, whereas for lakes, phytoplankton was used. Furthermore, the reference conditions are described for every type of river based on benthic invertebrates, macroalgae, fish and physico-chemical parameters. For the classification of the ecological status of rivers, the Greek HES assessment system is being used. Subsequently, based on the available data, the physico-chemical, hydrological and morphological reference conditions are described for the types of rivers. The reference conditions for lake, transitional and coastal water bodies are also described. However, there are important gaps for many of the biological quality elements defined by the WFD, due to the lack of a database for all surface water types (Table 3). The delayed and fragmentary participation of Greece in the intercalibration programme, as well as similar shortcomings in most countries in the Mediterranean ecoregion, make the existing circumstances «immature», as far as the development of common ground and the finalization of type-specific characteristics for the different types of surface water bodies. For lakes (as with rivers), reference conditions have not been set for physico-chemical hydro-morphological characteristics (Table 3). In all RBMPs, the significant pressures from point sources, diffuse sources, water abstraction sources, groundwater abstractions, flow regulation and morphological alterations, saline intrusion, artificial recharge and other pressures are identified. The pressures are assessed and impacts are identified for surface and groundwater. The efficiency method of the RBMPs is quite clear (Table 3). However, there is lack of available data from the country, as far as the exact quantification of pollutant load is concerned, which essentially reaches the groundwater saturation zone. In all the RBMPs, the drinking water protected

Table 2
Name, size and neighbour countries for each RBD [4]

RBD	Name	Size (Km^2)	Countries sharing borders
GR01	Western Peloponnese	7,232	
GR02	Northern Peloponnese	7,426	
GR03	Eastern Peloponnese	8,420	
GR04	Western Sterea Ellada	10,432	
GR05	Epirus	10,007	AL, FYROM
GR06	Attica	3,139	
GR07	Eastern Sterea Ellada	12,268	
GR08	Thessaly	13,153	
GR09	Western Macedonia	13,585	AL, FYROM
GR010	Central Macedonia	10,147	FYROM
GR011	Eastern Macedonia	7,308	BG, FYROM
GR012	Thrace	11,159	BG, TR
GR013	Crete	8,301	
GR014	Aegean Islands	9,118	

areas as well as the protected areas for aquatic species, recreational waters and waters sensitive to the presence of nutrients and for ecosystems are noted (Table 3).

2.4. Monitoring

In general, only limited information and limited focus in monitoring has been given in the Greek RBMPs (Table 3). The monitoring programme was established depending on the ecological and chemical classification of the water body and the possibility to achieve the objectives. There was small coverage of river, transitional and coastal water bodies from monitoring stations with little information on ecological and chemical parameters. Several water bodies have been reported as having unknown status as far their ecological and/or chemical characteristics is concerned. According to the RBMPs, as far as the assessment and classification of the status (ecological and chemical) of the surface waters is concerned, there are no information or the information provided is insufficient for many of them. It also seems that for surface waters, for which there is available data, they mostly come from sampling sites that are different for the physico-chemical variables, special pollutants and biological variables. The small number of sampling sites for the identification of special pollutants and priority substances makes the quality characterization of coastal and transitional waters unreliable. In all the RBMPs, the initial and the final identification and delineation of heavily modified water bodies (HMWB) and artificial water bodies (AWB) is stated (Table 3). During the final delineation process for the HMWB and AWB, there is deficiency in information, measurements, adopted limits and reference conditions.

2.5. Exemptions

The environmental objectives and exemptions are described in all the RBMPs. The assessment shows that progress is expected to be made towards the objective achievement, although good status will not be achieved in 2015 for part of the surface water systems. Furthermore, for some water systems, their ecological and/or chemical status is reported as unknown for the time being (Table 3). It is difficult to ascertain the percentage of the water bodies expected to achieve good status in 2021 and 2027. In all RBMPs, the programme of measures followed is described, which includes basic as well as

Table 3
Overview of implementation of the Greek RBMPs [3]

RBMP	Public consultation	Competent authorities	SW's characterization /typology	Reference conditions	Significant pressures	Protected areas	Water pricing policies	Monitoring	SW's ecological/ chemical status	HMWB/ AWB	Environmental objective–exemptions	PoM
GR01	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR02	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR03	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR04	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR05	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR06	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	
GR07	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	
GR08	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Yes
GR09	Drafts have been completed											
GR010	Drafts have been completed											
GR011	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Partly
GR012	Yes	Yes	Yes	Partly	Yes	Yes	Yes	Partly	Incomplete	Yes	Partly	Partly
GR013	Consultations just started											
GR014	Consultations have not yet started											

supplementary measures (Table 3). Information is given on the timeline for making the measures operational, on the financial commitment and the financial sources. Table 3 presents an overview of the Greek RBMPs implementation progress.

3. Greek RBMPS' economic analysis

Although all RBMPs include an economic analysis and water pricing policies (Table 3), the original information and the methods used to arrive to the full water cost are not clear. The water services for which water cost has been estimated include urban water supply (treated or clean water) and irrigation water supply. Water utilities providing the water supply are municipal enterprises in Greece, except of the water utility of Athens and the water utility of Thessaloniki being private enterprises where the state holds 51% of their stocks. Irrigation services are provided by the local and general organizations for land management and irrigation works. The three water cost components have been identified (direct; environmental and natural resource costs) [5].

The full water cost has been estimated in most cases in €/m^3 where in other RBMPs it is estimated in €. The results from the RBMPs analysis for drinking water full cost are given for RBDs GR01, 02, 03, 04, 05 and 08, while water for irrigation are given for RBDs GR01–06 and GR08 in €/m^3 (Figs. 2 and 3). The environmental cost is estimated to be zero for RBDs GR 04 and 05 for drinking water and for RBDs GR 01, 02 and 03 for water for irrigation. The resource cost is estimated to be zero for RBDs GR 01, 04 and 05 for drinking water and for RBDs GR 04 for water for irrigation. The highest total drinking water services cost is estimated in the RBD of Epirus (2.45 €/m^3) and the lowest in the RBD of Western Peloponnese (1.11 €/m^3). The highest water services cost for irrigation is estimated for the RBD of Epirus (0.21 €/m^3) and the lowest for the RBD of Eastern Peloponnese (0.04 €/m^3).

To value the direct cost, many methods can be used. The costs involved to estimate the direct cost are operating and maintenance costs, administration costs, management costs and other costs. To estimate of the assets' current value for the approved RBMPs, the historical value has been used (for two out of five approved RBMPs) and the current value for the remaining three. The environmental and the natural resource costs are estimated differently for each group of RBDs. In some cases the environmental cost is estimated based on the preventive behaviour by estimating the avoidance, cost establishing a wastewater treatment plant (tertiary treatment) and/or a wetland's construction cost while in other cases the environmental damage cost method is used. The natural resource cost is estimated based on the production cost of desalinated water in some cases, while in other cases, the opportunity cost of the alternative water uses when the abstraction rate is higher that the natural recharge rate is used.

The exact estimation of the cost recovery for water services was not possible individually for uses regarding the primary sector, industry, services and domestic use. Cost recovery has been estimated for each supplier and each water service (urban water supply and irrigation). The cost recovery level is a function of the water provider's revenues and can be calculated using the following formula [6]:

$$\mathrm{CRR} = \frac{\mathrm{TR} - \mathrm{Subsidy}}{\mathrm{TC}} \cdot 100\% \quad (1)$$

where CRR is the cost recovery (%); TR is the total revenues from the water services users and TC is the total economic cost of the water services (for the provider). The full water cost recovery has been estimated for drinking water services and irrigation water services (Fig. 4). The highest cost recovery for drinking water services is estimated for the RBD of Eastern Macedonia (103.6%) and the lowest for the RBD of Western Peloponnese (49.8%). The highest cost

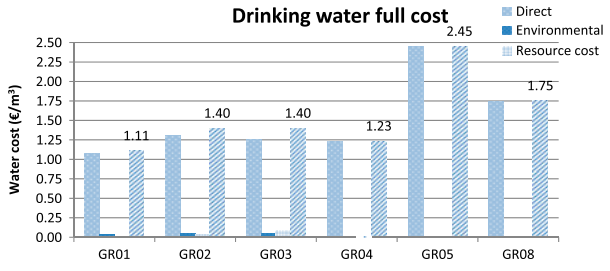

Fig. 2. Estimated drinking water services cost (RBDs: GR01-05 & 08) (based on [6,7]).

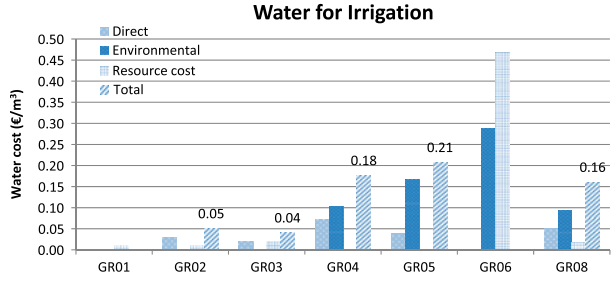

Fig. 3. Estimated irrigation water services cost (RBDs: GR01-06 and 08) (based on [6,7]).

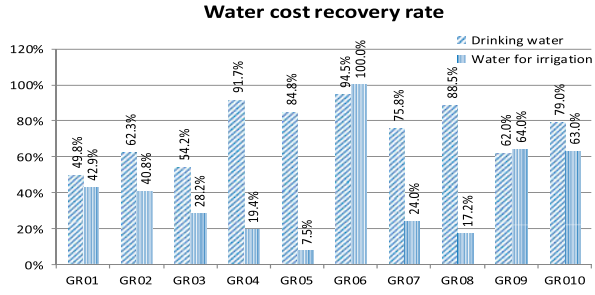

Fig. 4. Estimated full water cost recovery rate for drinking and irrigation water services (based on [6,7]).

recovery for irrigation water services is estimated for the RBD of Attica (100%) and the lowest for the RBD of Epirus (7.1%). The deviation in cost recovery for irrigation water is very big among the RBDs.

The methods used are widely accepted and do not demand huge amount of data. The problems identified are that these methods do not differentiate between regions with different problems and do not mention the already downgraded water bodies. There are studies estimating the water cost of water bodies already downgraded [8]. Finally, reference is given to incentive pricing.

4. Discussion

WFD introduces environmental, ethical and economic issues in water management defining the RB as the reporting unit [9]. The WFD is an important piece of policy for the European water resources. It takes into consideration the changing conditions in water management as they are more international and complex, many stakeholders are involved, and there is a growing concern and sensitivity towards environmental protection [9–11].

As the second WFD implementation cycle is about to end (2015), the WFD implementation process assessment will allow the recording of problems and drawbacks. This procedure will identify the real cause and try to find solutions to any problems. The fundamental principle is that water resources are extremely important to life and well-being of people and the environment. Nevertheless, there are differences among the MSs. A major difference met in the WFD implementation is that the EU Northern countries face water quality problems where EU Southern countries face water quantity problems. Another difference noted is that there are MSs familiar with water resources management tools while others are no familiar at all and face many problems to implement those tools [12,13]. The assessment process showed that there are MSs implementing the WFD with success while other MSs faced many problems.

The implementation assessment of the first RBMPs has been completed with mixed results. The MSs have approved and submitted their RBMPs with some exceptions. Large efforts have been put into the preparation and adoption of the RBMPs. However, the commission assessment showed that a more decisive effort needs to be made in order to ascertain the achievement of the WFD objectives during the 2015, 2021 and 2027 cycles. There are some good examples of implementing all aspects of the WFD. Some RBMPs took into consideration the climate change conditions. Most problems and inconsistencies were dealt with in the monitoring of surface and groundwater, in the setting of environmental objectives and exemptions and in the adoption and implementation of the programmes of measures.

During the WFD implementation process, certain bottlenecks are met:

(1) The WFD implementation itself and the measures that need to be taken cause many reactions causing a certain political cost.
(2) The authorities and the users have a certain mentality which is difficult to change.
(3) The consultants met lot of problems including the interference of political interests.
(4) There are many weaknesses in the public sector and there are even corruption phenomena.
(5) There is a huge lack of data or the data are outdated. The consultants had to elaborate the data but they do not provide any information about that in their plans.
(6) The rules are not followed and the time table is loose.

Focusing on Greece, the WFD implementation delayed a lot during all phases from 2010 and onwards. The state was not ready to adopt such an integrated policy for water resources. The legislative framework changed many times. The institutional change brought by Kallikratis project diversified the responsibilities between the decentralized regional authority (which sets out the strategy for the protection and management of water resources) and the elected one (implements the strategic planning). Law 4117/2013 modified the previous L. 3199/2003. Main issues responsible for the delay in WFD implementation are: (a) the centralized and hierarchical administrative context; (b) the lack of resources (including financial ones) and infrastructures in water management and (c) the inexperience in participatory procedures of both the authorities and the public [9–14].

Public participation is one of the WFD's innovations but also key issues. In Greece, the administrative structures are centralized and more hierarchical, not allowing public participation [9–15]. According to Demetropoulou et al. [9], the environment in Greece is unfriendly to introduce participatory arrangements required by many European policies. A research by Zikos [13] showed that new stakeholders such as private companies, non-governmental organizations and university institutions are willing to play a decisive role in water management. This study also revealed that the theory of participation and the WFD guidance documents are very different from the organisation process of a participatory process [13]. It is a common suggestion that the country should go beyond the hierarchical and centralized practices of the past and plan and implement participation strategies [9]. To improve the participation process, a learning process should be initiated and a basis for the involvement of local communities should be set [13]. As Zikos [13] stated, learning could be used as a tool to cultivate the understanding of participation instead of applying top-down measures to fulfil the requirements.

The economic analysis results showed that different methodologies are used to estimate the environmental and the natural resource costs in the Greek WDs. Generally, the consultants faced the major problem of lack of data. Questionings exist regarding the data adequacy for the costs quantifications and the recovery rate. To arrive to safe conclusions, a common methodology must be established to estimate the full water cost determining the necessary data to be provided by the authorities involved.

5. Conclusions

It is a common knowledge that the WFD is one of the most integrated and innovative legislative tools used for water resources management. Since water has no borders, collaboration between the European countries is necessary to protect water resources, especially today, where both climate change conditions and the financial conditions put a lot of stress in them. The WFD implementation assessment showed from the first report that there are substantial differences among the MSs, as some of them apply water resources management tools for many years and others don't. RBMPs must fulfil their roles and finally propose measures that the MSs should take to protect their water resources. The commission assessment showed that a more decisive effort needs to be made in order to ascertain the achievement of the WFD objectives during the 2015, 2021 and 2027 cycles. There are some good examples of implementing all aspects of the WFD. The advanced MSs can be good examples for the least advanced ones.

As far as Greece is concerned, fast preparation and adoption of the RBMPs is vital. The contents of the RBMPs that have been adopted so far are quite close to what the WFD dictates. There are still problems in the implementation process, but big steps have been made towards the adoption of a national policy for water. One of the most important drawbacks is the lack of data. The analysis for Greece showed that there are many missing data (especially in monitoring) to identify the present situation and in some cases, data are missing to correlate the water bodies situation with the causes of downgrading. All stakeholders must do their best to develop and update their databases. Another problem is the centralized and hierarchical administrative public structures not allowing public participation and consultation. A small participation rate was noted in the questionnaire completion by citizens and authorities. Several proposals exist including the learning process [13] towards the planning and implementation of participation strategies. Only when all stakeholders are actually involved in decision-making, they will participate in the measures implementation. Finally, the economics analysis showed that there are different methodologies used and there is a huge lack of data. The aim is the full water cost recovery for drinking water by establishing policies to meter all water volumes used. Special care must be given in the socially fair water pricing and the use of the fixed charge in water bills [16]. Irrigation water must be metered and pricing policies should be applied taking into account how important agriculture is for the development of the country. It is important to differentiate between full water cost and water price. The estimation of the full water cost is important, but it does not mean that the consumers have to pay for all of it. Water pricing should respect water's economic and social aspects.

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