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Present conditions and problems of the legislative and administrative framework of water resources management in Greece at the beginning of the 21st century

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1. BASIC PRINCIPLES AND TIME-CHART OF THE DIRECTIVE 2000/60

The combined management of surface and ground water on a River Basin District scale is enacted by the E.U. in a way that defines in every detail the necessary actions and methodologies on a national and regional level, along the main axes of the 2000/60 E.C. and 1998/83 Directives of the European Parliament. The administrative and practical difficulties of all organizations and public services involved in the water resources management are common knowledge. Today, the elementary area used in water resources management in Greece is the Water District and it is placed under the authority of the Local Administration. At the same time, the Ministry for the Environment and the Ministry of Development have taken the initiative of drafting water resources management Mater Plans for each Water District, while the Ministry of Health has apportioned the responsibility of the monitoring of drinking water quality among the three levels of Local Administration (Municipal, Prefecture and District). It is evident that Local Authorities have a crucial role to play and are required to develop new organization schemes and infrastructure in order to support their new pertinences. The experience of the research team has shown that Local Authorities, on a Water District level, even if they owned the necessary infrastructure, could not set up and update a reliable management model, without the involvement and cooperation of the first and second level of Local Administration (already institutionally and practically involved in the matter). It is always necessary to distinct between local and supra-local problems, in order to make the assignment of action fields and share of responsibility in the generation and solution of problems. Furthermore, there are hiatuses and obscurities either in the enactment (on a national level), or the implementation (on a local level) of the water resources management. Finally, the necessity of scientific and technological support of all levels of Local Administration is demonstrated.

2. THE ADMINISTRATIVE SCHEME OF WATER RESOURCES MANAGEMENT IN GREECE – CURRENT SITUATION

There is a complicated situation of contradictions within the relevant organizations in water resources management which, according to existing legislation, is coordinated only on a Ministerial level by the Ministers Committee (law 1739/87 Hellen. Rep.). So, in an attempt to implement the 2000/60 Dir. by the state, each organization interprets and tries to apply – usually, independently from each other – the Water Policy. According to the existing legislation, the Ministry of Development assumes the general responsibility of management planning, but the communication with the European Union is done through the Ministry for the Environment. At the same time, bulk consumers with vague dependence to various Ministries, (Public Power Corporation, Athens Water Supply & Sewerage Company, Thessaloniki Water Supply and Sewerage Company) including the Ministry of Agriculture, construct public works that are not necessarily included in the planning of other organizations (dams and ponds, streams diversion etc) (Figure 1).

As it is already pointed out, the result is that there is no state institution with a global view of the situation and the general responsibility of the final options. This, on a central level, has led local authorities to great impasses, since local authorities have to deal with the permanent or seasonal water shortage and the (justified) social pressure. Local authorities are bound to try with initiatives and actions of local range, which are not incorporated in any planning, with no infrastructure or scientific and technological background, to offer solutions and help the public. This results in further depletion of water reserves and conflicts between neighboring areas. Up to now, the

existing legislative framework was not successful in achieving a coordinated action on a central level, while the local authorities and their problems are isolated, with no possibility of orientation within a unified water resources management plan.

3. ACTIONS UP TO NOW

The implementation of 2000/60 is a unique opportunity to establish new foundations for the water resources management, since the problem in all possible dimensions, has been laid out and the way in which the member states can approach and specify their short-, middle and long-term actions has been adequately described [3]. Unfortunately, in Greece, the activity until today (2003) is based on the existing vague and insufficient structures (as demonstrated by the results) of the past. The result is that even in the implementation of 2000/60, which advances the coordination of actions and the multi-parametric approach [1], [2] of the problem for the whole European Union, the Greek reaction consists of inarticulate actions through institutions with no coordination between each other, with overlays or hiatuses, while in the new situation about to be formulated, it appears that there will be no unique institution with a global view and final responsibility, neither centrally, nor locally.

More specifically, to the direction of the implementation of 2000/60, as shown in the table below, at least four Ministries are independently moving and with no coordination with actions that could be complimentary, if they were coordinated (Figure 2). Directions of Ministries, Institutes and Organizations are trying to draw up and apply projects and works with the information and the infrastructure they own, while at the same time Universities research teams are working, also independently. All these efforts are financed by European Union funding, i.e. the 2000-2006 Community Support Framework for Greece, the 5th and 6th Framework program, or the Cohesion Fund of the E.U.. Regardless of the results of the above-mentioned actions, it is certain that additional funding will be required for the accumulation and compatibility of the data, in order for them to be exploitable (in the case that a central organization undertakes the task). At the same time, an unspecified amount of money would have been spent in overlaying actions; on the other hand, some sides of the problem would not have been investigated. For example, water resources management studies, on a District Scale, are being carried out or are intended to be carried out by District Administration, the Ministry of Development, and the Ministry of Agriculture. A pessimistic perspective would be that the respective studies could be competitive regarding the criteria of E.U. funding.

An important issue in developing a monitoring and management system for water resources is data storage and exchange specifications. The future use of the collected data, future extensions and updates of the system rely on the successful specification of the data base structure. The specified structure should not be software depended, and care should be taken for the ease of data exchange between separate groups of users of the system (e.g. central and local authorities, planners etc.). A very important point is also the clear separation of original and interpreted data in the database. This way, a future reinterpretation of the collected data is ensured. In the current planning, no attention is given to this aspect. Specifications are limited to the database and GIS software definition and hardware specifications, which will probably be already outdated by the delivery of the projects results. No specification is given for the database and GIS internal organization. This lack of specifications could end up in several database incompatible to each other, and hence to a situation not much different from what we have today. The problem of the definition of the database organization concerns both computer science and water resources science. The defined database should be consistent and portable between different computer systems, allowing the communication between different users and the integration of future technical developments. From the water science point of view, the stored data should have a spatial and temporal resolution reflecting the hydrological processes under consideration.

We should point out that all actions (especially research and planning) taken by ministries, institutions and organizations, do not and will not take into account neither local problems and conflicts of interest, nor actions planned and implemented by local authorities or private enterprise. Water District Master Plans are not meant to embody local scale information, nor set up a modus of

communication and data exchange among local authorities and Water District authorities. These studies are only going to gather all “available” (which is a concept very far from “existing”) research products and data concerning each Water District. It is quite expected that, these studies will not be able to present a realistic view of the facts, especially in the fields of water needs and consumption, once the local users and distributors could only provide these in a relatively reliable basis. Furthermore, local users are planning and taking, often conflicting actions in the direction of development of each area. The consequences on the neighbouring areas are seldom estimated, or underestimated by planners, and overestimated by opposing neighbours. At the same time, municipal authorities are obliged to recognize, monitor, distribute and safeguard drinking water resources, not to mention the solutions they have to provide on a daily basis, especially in agricultural areas, in order to continue irrigation water supply to farmers, to keep them from abandoning their land. Of course, a first attempt to implement a Water District Master Plan could not possibly be timely updated with all the information of that kind, if based only on the infrastructure and personnel of the composing team. This is the exact reason why a primary task for any such attempt should be the setting up of a data exchange mode among **all parties involved in water issues, from municipality to national scale**. This is in fact the only way for a management system to be up to date at all times, and be based on data that are not obsolete, so that reliable scenarios would be built up and tested before put into action.

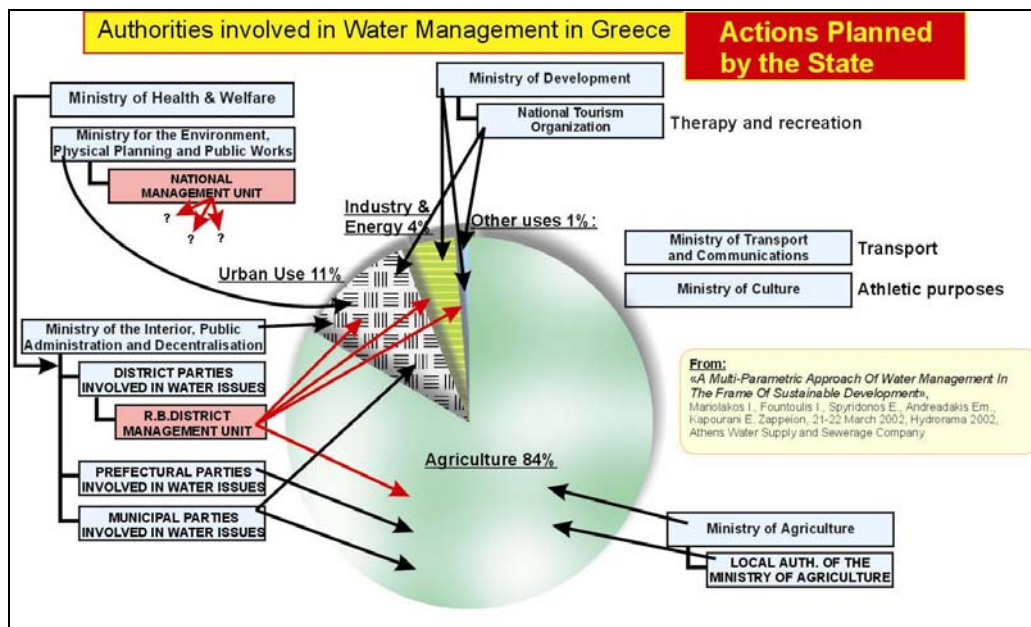


FIGURE 1: Present water management scheme in Greece by Ministry. Arrows show access to water use by category and actions of the State being planned so far.

It is very important to have in mind that the great majority of non-metropolitan municipalities all over Greece, consist of scattered and sparsely settlements in areas near or far from a larger “village”, that has very recently undertaken the role of the municipal center and headquarters. It is noted that these areas are usually very distant to any kind of well organized urban-type infrastructure (including efficient road network, drainage, water supply and sewerage systems, etc). In fact, the municipal centers are practically the only accessible State representation to these areas, and in this way, municipal authorities have to deal with all kinds of citizen – public problems. The profile of these municipalities is usually a low development, hardly organized, agricultural economy. Heavy or light tourist development (which in fact intensifies water shortage at the same season when irrigation needs it the most) contributes to local development with a greatly variable percentage. In this framework, local authorities are currently handling a complex of problems that exceeds their powers of intervention, and do not seem to be capable of overcoming this situation, unless they are supported by all means by the State (including guidelines, funding, infrastructure, staffing etc).

4. DRAWBACKS OF THE PRESENT WATER MANAGEMENT SYSTEM

A fundamental weakness of the current transitional structure (as well as of the previous one) is that the district and local administration authorities are not capable of fulfilling their obligations as far as water resources management is concerned, because of the lack of facile communication with central administration, once there is no clear and effective administration framework. In this way, inertia of the local authorities is added to the time lag of central administration. In the meanwhile, wherever any kind of activity is present, it is fragmented, not subsumed in a general planning, and more than that, it is not monitored as far as its results, continuity and completion are concerned.

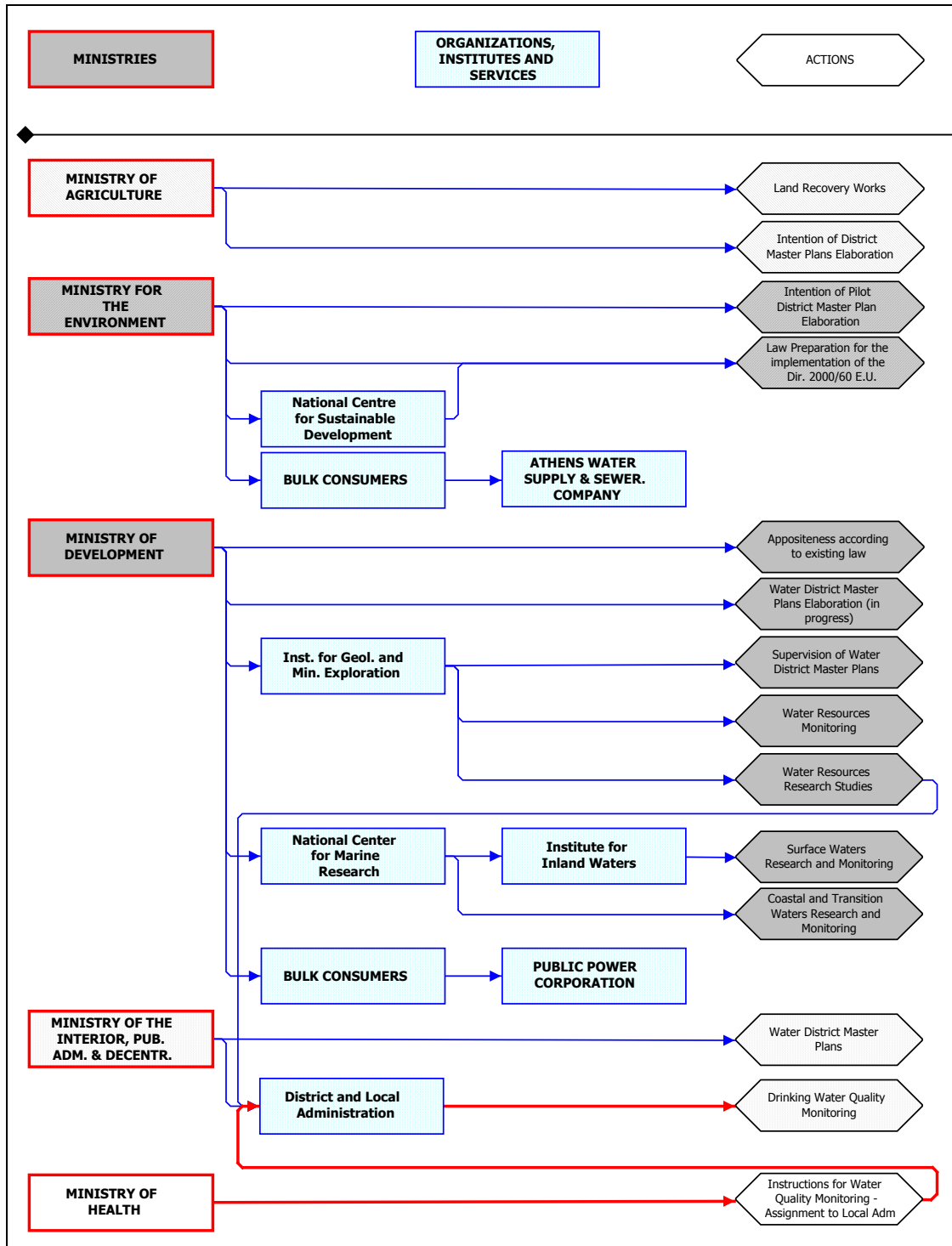


FIGURE 2: Research and other actions taken by ministries and dependent institutions for the implementation of the Directive 2000/60 E.U..

A rough description of setbacks and possible solutions of the current management framework is presented in Table 1.

TABLE 1
Problems and propositions concerning water management on national scale

Administration Level	Problem	Proposition
Central Administration (Ministries)	Not clear and contradictory assignments and actions	Independent, autonomous administration authority under the oversight of a Ministry (of Environment, according to the political decisions of the government).
	Fragmented information and data, departments with respective assignments and lack of total estimation of the current actions and works through several services and their sectors.	Subsuming of all respective sectors under the central authority, along with their infrastructures and personnel.
Organizations, Institutes, Foundations, Bulk Users	Independent programmes with overlaps, lack of coordination and unified platform of data concentration.	Coordination of actions by the central authority.
District Level	Lack of initiative, lack of knowledge of the present situation, lack of infrastructure and personnel.	Activation of the district divisions of the central authority, with subsuming of the current district sectors of apposite services, in the same organization plan as the central authority.
Local Level	Lack of infrastructure and personnel, actions without planning and monitoring, with doubtful results.	Staffing, development of infrastructure and actions according to the district water management plans.

On a local scale, problems of such nature can be detected (Table 2), but they are enhanced under the local social pressure that faces the water shortage directly. The recent experience of the research team in the Municipality of Therapnes of Laconia Prefecture (as well as in other areas of the country (Messinia prefecture, Laconia prefecture, Aitolocarnania prefecture etc) has shown a wide variety of setbacks, as shown in the following table, with respective propositions for their confrontation, always in combination with the actions taken, as described in the previous table.

TABLE 2
Problems and propositions concerning water management on municipal scale

Problem	Current situation	Proposition
Seasonal water shortage on a local scale	Lack of data concerning consumption and resources	Recording and monitoring of water needs and consumption
	Private and public drilling without monitoring of piezometry and pumping	Recording and monitoring of all wells. Local strategic planning within the framework of the water district master plan. Management of distribution and conservation of water resources.
Water quality degradation	Absence of quality monitoring at the supply sources	Quality monitoring programmes
	Ignorance of pollution sources and respective consequences	Mapping of environmental pressure
	Ignorance of the boundaries of aquifers, as well as of the hydraulic connection conditions (among aquifers and surface waters)	Hydrogeological research and autographic monitoring, simulation in dynamic mathematical models
	Lack of monitoring infrastructure	Development of district or local public laboratories
	Pollution inflow from neighbouring areas	Intervention by district services

The drawbacks already shown by the brief description of the actions that have been hitherto set out are quite many and seem rather insurmountable, and have also been pointed out by relatively independent institutions (i.e. academic and other institutions), as much as by official consulting bodies of the State ([4], [5]). It is nevertheless true that, the activation degree of services, organizations and researchers is already high and uprising, and a growing number of people and infrastructures are involved in the issues and tasks of the Directive 2000/60 E.U.. Thus, the current situation shows two faces. The pessimistic one is a deterministic slough of all efforts within the current legislation and administration framework. The optimistic face is that a lot of work is really getting done, in many different sectors simultaneously, and quite intensively. It seems that, after all, establishment of an effective route in water management issues (Figure 3), is a matter of political will, at the highest government level, though the government committee after the prime minister's initiative, has already (since 2001) set the basis by defining the Water Service as "a central, counseling, executive and coordination body, in the form of an autonomous administration authority, overseen by the Minister for the Environment".

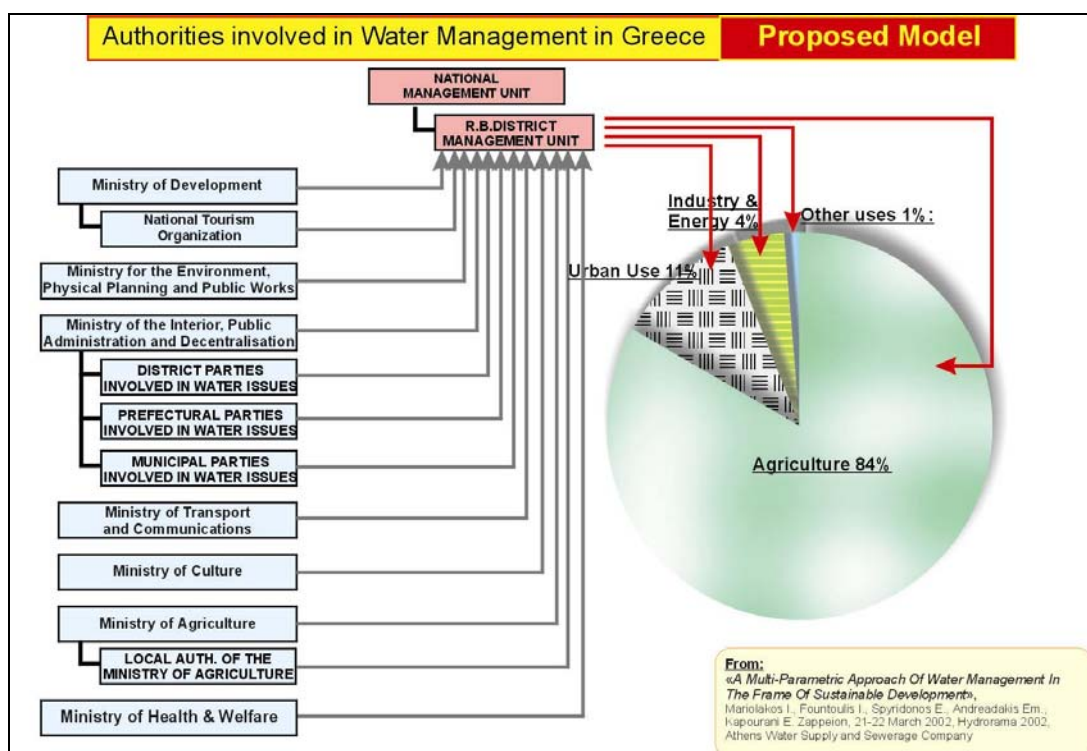


FIGURE 3: Proposed model of water management scheme for the implementation of the Directive 2000/60 E.U..

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