

Evolution of the Greek national regime for water resources

Eleftheria Kampa^{a,b} and Hans Bressers^c

^a*Corresponding author. Institute for Environmental and Landscape Planning, Technical University Berlin, EB 4-2,
Straße des 17. Juni 145, D-10623, Berlin, Germany*

^b*Currently at: Institute for International and European Environmental Policy, Pfalzburger Strasse 43/44, D - 10717, Berlin,
Germany. E-mail: ekampa@web.de*

^c*Center for Clean Technology and Environmental Policy, University of Twente, PO Box 217, 7500 AE
Enschede, The Netherlands*

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Abstract

This paper characterizes and explains the development of the Greek national water regime, based on a framework from institutional resource regime theory. The specific framework combines public resource policies with property rights and operationalizes the concept of integration for resource regimes. The paper concentrates on attempts at more integrated water management in Greece (via important national water laws), which were mainly driven by increasing water resource degradation and EU water policies. It is argued that national attempts since the 1980s (especially the 1987 Water Law) were unsuccessful also under the influence of an unfavourable institutional context which prevailed at the time of the attempts. The outcome of a new 2003 Water Law in practice remains to be seen. The path to integration must involve significant efforts to overcome institutional obstacles which hindered integrated water management in the past.

Keywords: Greece; Institutions; Integrated water management; Water policy; Water regime; Water rights

1. Introduction

The European Union's (EU) Water Framework Directive (WFD) 2000/60/EC acts as a driver for integrated water management in EU member states. The WFD promotes water management at basin level, public participation, the expansion of water policy to include all aspects of water resources, streamlining legislation and guaranteeing that all water policy measures work together coherently (EC, 2006). Integrated water management is a challenge especially to those member states with little experience in this respect until now, such as Greece.

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This paper uses a conceptual framework from institutional resource regime (IRR) theory (Knoepfel *et al.*, 2003; Bressers *et al.*, 2004; Kissling-Näf & Kuks, 2004) to characterize and explain the development of the Greek national water regime in terms of integration. The IRR framework also assists us in operationalizing the concept of integration for discussing attempts at integrated water management.

2. Theoretical background and approach

Resource regimes are defined as institutional systems combining two dimensions: a) the prominent programme elements of resource use and protection policies (public policy design); and b) property rights, which determine the accessibility of a resource to various users and uses. The policy design dimension concentrates on the effects of policies while the property rights dimension concentrates on the effects of bundles of rights on the management of natural resources. The central assumption in IRR theory is that the dimensions of public policies and property rights are complementary and both must be considered to achieve sustainable resource management (Kissling-Näf & Kuks, 2004).

For the purposes of this paper, property rights are differentiated into ownership and use rights to water, which can be both in one hand or can be separated. The public policy dimension involves both traditional elements of public policy, such as policy aims, instruments and implementation, as well as elements of public governance summarized as: levels of governance, actors in the policy network, perspectives and objectives, strategies and instruments, responsibilities and resources for policy implementation (see Bressers & Kuks, 2003).

Potential shifts of an IRR can be observed by diachronic assessment on the basis of two core variables: extent and coherence. The extent indicates the scope of uses recognized by the regime; coherence reflects the degree of consistency and coordination within and between public policies and property rights. The change of the extent and coherence in time also determines the change of an IRR through different phases, as described by Knoepfel *et al.* (2003) in the following regime typology: non-existent regime (low extent and coherence) → simple regime (low extent but high coherence) → complex regime (high extent but low coherence) → integrated regime (high extent and coherence). Therefore, integration of an IRR increases if its extent and coherence increase. This interpretation of integration in the IRR approach also largely reflects the main WFD principles for integrated water management, especially with respect to a more complete regime extent and more coherent public policy and governance. Table 1 illustrates the set of IRR change variables along with selected indicators to make each variable operational.

Regime changes are set in motion by external triggers, which may be problem-related (sudden or gradual water resource degradation) and institutions-related (e.g. new standards by supranational institutions) (Kissling-Näf & Kuks, 2004). The effect of change triggers on the regime is also influenced by the institutional context which prevails at the time of an attempt to initiate change. Kuks (2004) further specified the institutional context as a combination of power distribution, values and perceptions of water issues in a nation. These three variables have proved to be exceptionally useful in explaining the dynamics of social interaction processes (Bressers, 2004), such as resource regime changes. Table 2 lists selected institutional context indicators based on the integration-supportive indicators of Kuks (2004) and also on the decentralization-supportive indicators of Blomquist *et al.* (2005). The institutional context, thus, involves a mixture of conditions prevailing in the water sector as well as in the overall

Table 1. IRR change variables and selected indicators.

Change variables	Indicators for an integrated water resource regime*
Extent	For high extent All water uses recognized by the regime, including ecological values
Coherence within public policies	For high coherence
Levels of governance	Administrative levels of management fit with the natural scale of water basins (authority decentralization on the level of water basins)
Actors in the policy network	Coordination within each administrative level and between different levels Participatory arrangements for all actors with an interest in water resources, especially non-public actors
Perspectives and objectives	Open policy networks instead of closed policy communities Policy objectives (official visions and visions of stakeholders) recognize new water uses and administer justice to rivalries between different water uses Development of national water visions and river basin management plans incorporating multiple perspectives
Strategy and instruments	Recognition of relations with other policy fields as coordination topics Adoption of integrated water legislation
Responsibilities and resources for implementation	Adoption of flexible, procedural instruments (e.g. planning, pricing instruments) Implementation process is sufficiently concerted and equipped (sufficient authority, financial/time/human resources, information) Clear institutional arrangement for implementation of policy and measures (instead of fragmented arrangement of competence)
Coherence within property rights	For high coherence Coordination, instead of contradiction, of rights of different users and owners, when complex bundles of rights develop (for competing water uses)
Coherence between public policies and property rights	For high coherence Property rights holders recognized as target group of policy interventions, e.g. via restrictive regulations, establishment of permits for abstraction or pollution, restriction of private rights

* Indicators are exemplified for the phase of an integrated regime (high extent and high coherence).

Source: Based on Kissling-Näf & Kuks (2004).

socio-political structure of a nation. Figure 1 gives an overview of the main links between variables in the conceptual framework.

In this paper, it is argued that, in Greece, although national attempts at integrated water management have taken place since the 1980s, the national water regime still remains complex and fragmented. Failure of the integration attempts can be explained by the unfavourable institutional context which prevailed during the attempts.

The methodological approach used involved mainly a review of existing documentary material (laws and regulations, ministry reports, minutes of government meetings, parliament records, reports of NGOs, academic publications and press articles) in search of data on the main variables of the IRR framework, i.e. on property rights, public policies, triggers and the institutional context of main regime change attempts. The findings of the documentary analysis were further complemented and verified via informal discussions with seven water officials from the national administration (Ministry of Development (MDEV), Ministry of the Environment, Physical Planning and Public Works (MEPPW) and Ministry of the Interior, Public Administration and Decentralization (MIPAD)) and four water

Table 2. Institutional context and selected indicators.

Institutional context	Indicators favourable to integrated water resource regime
Power distribution (between levels of administration, between public and non-public actors)	Tradition of co-governance between central and regional/local authorities Mutually desired authority devolution (instead of top-down or bottom-up) Central government with sufficient resources committed to integration and decentralization Regional/local authorities with sufficient resources and experience in self-governance Tradition of public participation and debate
Set of dominant values	Strong position of green NGOs (supported by strong environmental policy sector) Cooperative policy style with participatory values (openness of water policy to rival interests) Strong environmental awareness in society Willingness to keep water in the public domain and restrict individual autonomy on water access rights
Perceptions of water issues	Adherence to polluter pays and full cost recovery principles Common, instead of isolated, understanding of water resource problems (favouring proactive instead of curative resource protection) Developed water planning and a supportive learning system (national statistics, science and research) Availability and dissemination of knowledge on increased risks from water degradation Openness of policy networks, scientific community and media to new problems, issues and paradigms for water protection

Source: Based on Kuks (2004) and Blomquist *et al.* (2005).

officials from regional and prefectural authorities. Discussions with water officials resembled an in-person semi-structured interview style (see O’Sullivan & Rassel, 1999). The flexibility of this interview style, based on a list of prepared questions whose content and order can be modified to adjust to the knowledge of the interviewee, is considered suitable for the kind of qualitative, explanatory approach followed in this research.

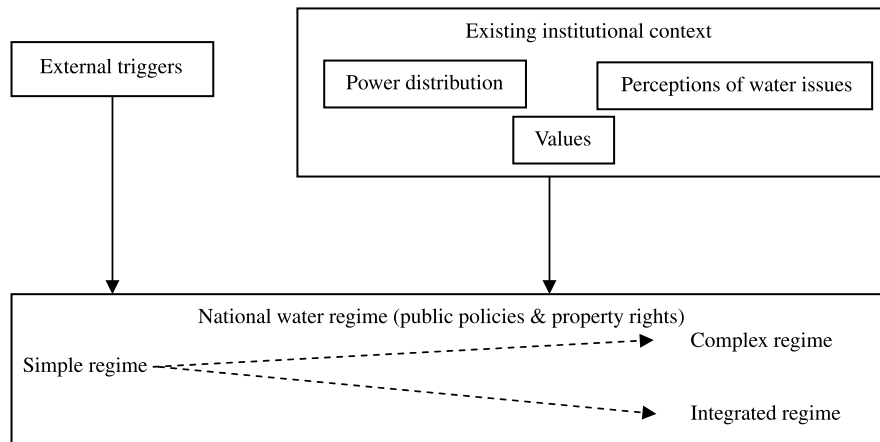


Fig. 1. Change process of a water resource regime.

In the following, this paper describes important historical changes in Greek water property rights and public policies. Subsequently, it characterizes the historical development of the Greek water regime on the basis of the change variables of extent and coherence and discusses the triggers and institutional context of the main regime change attempts towards a more integrated phase. To ensure that the IRR framework was correctly interpreted and applied, results from its previous application on the national water regimes of other European countries were used as reference, when evaluating the main IRR variables for the Greek regime development. Further details on this cross-country approach, however, exceed the purpose of this paper.

3. Evolution of water property rights

In the independent Greek state of the 19th century (previously occupied by the Ottoman Turks), water ownership and use rights were often unclear, partly because of a frequent lack of clarity on land ownership titles as explained in the following. During the Ottoman occupation, most land belonged to the Ottoman authorities, but reports also exist on acts of sale of private land. Water use rights were also often sold along with or without private land among private persons (Kallis, 2003). In Islamic theory, although water cannot be sold, the rights of water use can. Private land could, thus, be sold without water rights and vice versa, meaning that water rights were not necessarily annexed to land (Forni, 2003). The independent Greek state assumed public ownership of all land previously belonging to the Ottoman authorities, which covered the largest part of the state. Concerning any private land ownership under the Ottomans, the lack of a land register in the Greek state without a civil-law past rendered the control of previous land ownership titles very difficult, even more because most Ottoman records were destroyed (Kallis, 2003). This resulted in the frequent lack of clarity on actual land ownership titles mentioned above. Moreover, trespassing and “privatizing” public land at will occurred very often, leading to court conflicts between the state and private persons. At that stage, land owners (whether they were lawful or not) also implicitly claimed the right to use water on and below their land. Later, in 1920, a law introduced the possibility for the obligatory expropriation of private land by the state in order to facilitate the construction of public hydraulic works. This arrangement allowed the state to go ahead with several hydraulic works, which were previously difficult owing to conflicts over unclear or established private land ownership.

In 1940, a Greek Civil Code was finally introduced which defined “objects of common use” including therein waters of free and perpetual flow (rivers), the banks of navigable rivers, large lakes and their shores (article 967). Any person could use waters of common use and for cases of conflict among entitled users, an order of water use priority was set as follows: 1) most important use for the common benefit; 2) use promoting social economy at the most; 3) oldest use; 4) use for an enterprise connected to a certain location; 5) use for the benefit of the riparian (article 969). Groundwater was not included in “objects of common use”. The Civil Code (article 954) defined that groundwater (and springs), regardless of the amount of water, are inseparable elements of the overlying land and belong to the land owner. The owner can use groundwater at will, as long as he or she does not discontinue or significantly reduce water already used by any local village for its needs (article 1027).

In 1965, a Sanitary Regulation was issued, which regulated rights to pollute water by introducing a system of disposal permits for urban and industrial effluents (to be issued by the prefectures).

Concerning water abstractions, until the 1980s, there was restricted state control, mainly by the Ministry of Agriculture (MINAGR). Law 608/1948 (on water management for irrigation) defined that

the use of public waters (mainly surface water) for irrigation by any private or public entity could be conceded only by the MINAGR, while for other water uses, the decision of the Minister of Public Works was also necessary. The MINAGR Service for Land Reclamation, set up in 1959 with central and regional branches, had a Water Administration Department with competence for public water use concessions and expropriation of existing private rights. Concerning groundwater, a licence had to be acquired from the MINAGR services to drill wells for irrigation (Law 1988/1952). For wells serving other uses (e.g. water supply and industry), other ministries were also involved in their planning. All in all, at that stage, only the right to drill a well was linked to an official permission, but not the right to abstract groundwater.

In 1987, the first framework Water Law (MDEV, L. 1739) characterized water as a “natural good” and “means for meeting the needs of society”. The law introduced a permit system for the use of surface and groundwater, by private and public users. Exceptions were personal and domestic water uses, where no water supply network existed to cover these needs and consumption was less than 3 m³ per day (these exceptions were not reinstated by a new Water Law in 2003). The permit system, in essence, brought abstractions for all important water uses into the public domain. For groundwater, this meant that the right to use it was detached from private land ownership and transferred to public law, since an administrative permit was needed for abstraction. The 1987 Water Law also introduced a permit system for the construction of water works by entities outside the public sector. The construction of water works by the public sector was to be regulated separately in the context of national water resource development programmes (which were, however, never drafted, as illustrated later in this paper). A Common Ministerial Decision (in December 2005), complementing the 2003 Water Law, finally obliged public sector entities to apply for water works’ permits.

The 1987 law defined various permit-issuing authorities, depending on the water use. For agricultural and industrial use, permits were issued by the prefectures; for water supply, by the unions of communities and municipalities; and for multiple water use and energy production, by the regions. Additionally, all permits had to be approved and registered by the regions, before being issued. The 2003 Water Law later defined the regions as the only permit-issuing authorities, aiming at better coordination of the permit-issuing process.

Permits have a temporary nature and are issued for a period of 10 years. Water use permits should define the water quantity to be abstracted (maximum and minimum), the appropriate water quality, the water source, the mode of abstraction, the duration of the permit, the time of the year in which water can be used and any other terms for the use of water. In particular, permits for wells are issued only for locations on private land or lawfully rented land. Permits to use surface water are not related to land ownership or rental.

A Presidential Decree (256/1989) defined that a permit should be issued, bearing in mind the quantities of water available in a specific location and for a specific use, any water use restrictions valid in the specific prefecture and the relevant water development programme. The 1987 Water Law had also defined that use permits should be issued for water quantities not exceeding the highest limit of permit holders’ real needs, leaving surplus water at the disposal of the state for possible allocation to other uses. During parliamentary discussions on the draft 1987 Water Law, it became clear that the definition of “the highest limit of real needs” was highly controversial. In an effort to clarify “real needs”, the MDEV issued Common Ministerial Decisions (CMDs) in 1989 and 1991, which defined lowest and highest limits of water quantities for rational water use in irrigation, water supply and tourism. For instance, in the case of irrigation wells, permits define the maximum discharge of abstracted

water, depending on the kind of crop and irrigated surface. Since 2002, permits also need to determine the maximum annual water consumption. The usefulness of this requirement, however, is questionable, considering that no water meters are installed nation-wide. Moreover, to date, permits are still issued without taking account of the interconnection between surface and groundwater or of water ecosystem issues.

The Civil Code and the 1987 Water Law also included some clauses for the resolution of differences between water users (due to over-abstraction or other reason). Specifically, the 1987 Water Law referred private differences on water ownership, use and disposal rights to political courts. The Civil Code defined that, in case of impairment of the public benefit character of water or of any private water use right, the affected user(s) is entitled to request the discontinuation of impairment as well as compensation.

All in all, although the water permit system was gradually established nation-wide throughout the 1990s, water overexploitation remained commonplace. In particular, groundwater underneath private land is still used at will by land owners (Delithanasi, 2004). The unsustainable groundwater consumption behaviour of private users could be encouraged by the retained link of groundwater to land ownership (groundwater remains an inseparable element of private land in the Civil Code). Given the importance of groundwater as a resource in Greece, Karakostas (2000) proposed to define it by law as an “object of common use” similar to running surface waters.

There are also additional factors related to the regulation of property rights, which contribute to the unsustainable use of groundwater and water in general. A first factor is the omission of current public law to deal with pre-1987 abstraction rights. Up to date, permits are issued only for new water uses, while pre-1987 abstraction rights based on law or custom are maintained without being subject to the permit system. Secondly, there is inadequate control of illegal water use and water works. According to expert estimations, an extra 30% of illegal wells should be added to each official figure for legal wells (Delithanasi, 2004). Additionally, the requirement to issue permits for water use by public bodies (e.g. municipalities) was often ignored in practice. Thirdly, there is inadequate inspection of terms defined in permits. Relevant compliance-check responsibility was until recently in the hands of the local self-administration and rural police forces (assisted by the various permit-issuing authorities: prefectures, regions and unions of communities and municipalities). This competence allocation was considered ineffective since most local self-administrations did not have organised technical services for this task (Papalimnaïou, 1994). In practice, water users could abstract uncontrolled large amounts of water, which were often tolerated by the local authorities (MDEV, 1996). The 2003 Water Law concentrated permit compliance-check responsibility to the regions, whose effectiveness remains to be seen.

4. Evolution of water policies

4.1. Increasing but uncoordinated water policy until mid-1980s

The development of modern Greek water legislation started in 1852 with legal acts on land reclamation, flood protection and hydraulic works to protect public health and gain farmland. Until the mid-1960s, legislation was dominated by irrigation and land reclamation acts and the MINAGR was the main actor in water management (Bodiguel *et al.*, 1996). The narrow scope of water policies was enriched with only a few additional acts on hydropower production and on water services (water supply and sanitation) for a growing urban population.

From the mid-1960s onwards, the complexity of the water policy system gradually increased with the entrance of new actors and the regulation of new uses. In 1965, the national Sanitary Regulation on urban and industrial effluents emphasized “public health” and the role of the Ministry of Health. Nonetheless, efforts to treat wastewater were, until the early 1980s, very limited. On the other hand, domestic water supply was significantly extended thanks to heavy investments until the 1980s. In 1961, 38% of the population was connected to public water supply; by 1982 this had reached 90% (OECD, 1983). In 1980, a national law was also issued to support the creation of municipal and communal enterprises for water supply and sewerage.

To deal with the increasing water sector complexity, the first discussions to coordinate water management and administration took place in 1976–1982 within an Interministerial Water Resources Committee (under the leadership of the Ministry of Coordination). In 1977, a Directorate for Water Potential and Natural Resources was set up, which was transferred in 1983 to the MDEV (MDEV, 2003).

Environmental considerations in water policy were at that stage very limited. In the 1970s, Greece was still an associate EU member and no limits were placed upon the exploitation of natural resources in order to promote economic growth (Kousis, 1994). In 1986, a national framework Law on the Protection of the Environment (MEPPW, L. 1650) required water quality monitoring and introduced environmental impact assessment for water-related projects. Additionally, after joining the EU in 1981, important EU water quality legislation was transposed into Greek law in the 1980s and 1990s (EU directives on bathing, drinking, fish and shellfish water, nitrate pollution and urban waste water treatment).

All in all, due to the addition of new acts, especially for water quality regulation to protect human health and the environment from the mid-1960s till the mid-1980s, water policy developed into a fragmented mosaic of often overlapping regulations on specific aspects of water management and/or specific geographical areas (OECD, 1983; MDEV, 2003). To overcome this complexity, in the early 1980s, the Greek government announced plans for a framework water law to coordinate legislation and institutional arrangements (OECD, 1983).

4.2. First attempt at partial integration: The 1987 Water Law

The 1987 framework Water Law (MDEV, L. 1739) was the first to define coherent water management principles following an intersectoral approach. The law concerned water quantity (but not quality) management and indicated the state’s intention to coordinate national water policy and to institutionalize water management bodies on a regional level. In practice, however, this law was only partially activated and implemented.

4.2.1. Administrative organisation for water management. The 1987 Water Law defined competent ministries for each water use. It, thus, achieved clearer competence allocation, largely overcoming the overlap of responsibilities of the previous water policy phase. The law, however, did not eliminate competence fragmentation among multiple ministries. According to the law, the MDEV maintained its competence for water use in industry and energy production, and the MINAGR in agriculture. The MIPAD was defined as competent for the supervision of municipal water supply and sewerage, the MEPPW, for water protection, the Ministry of Health, for drinking water quality and the Ministry of

Foreign Affairs, for transboundary water issues. A key innovation of the law in competence allocation was the definition of the MDEV Directorate for Water Potential and Natural Resources as national authority for water management coordination, the elaboration of national water policy and national water development programmes, water allocation to different uses, the organisation of regional water management authorities, the coordination of research and the establishment of national monitoring and a central hydrological database to collect and register information for water development programmes.

Greece was also divided into 14 water districts (groups of water basins with similar hydrological–hydrogeological conditions) for the purpose of monitoring and managing water resources regionally. The law required setting up one Regional Water Management Department (RWMD) in each district, as a regional service of the MDEV, to adjust national water policy to regional conditions, collect and assess data for calculating water balances for each river basin, determine the water district supply–demand balance, develop a mid-term water district development programme and carry out or assign any studies necessary to fulfil its role. RWMDs were also given competence to issue water permits (for energy production and multiple water uses) as well as to approve and register permits issued by other authorities.

The 1987 Water Law also established advisory bodies on a national and regional level. A Joint Interministerial Water Committee (of the Ministry of Economy, MIPAD, MINAGR, MEPPW and MDEV) was set up to give its expert opinion on legal acts for the full activation of the law, the formulation of national water policy and national water development programmes. On a regional level, the law required setting up Regional Water Committees (one in each district) to consult over issues such as the water district development programmes. Their participants included representatives of the relevant regions and prefectures, farmers' unions, local self-administration and the Technical Chamber of Greece (RWMD official, personal communication, 2005).

Unfortunately, the practical reality of policy implementation was rather distant from these planned innovations in water administration.

Although the MDEV Central Water Directorate existed prior to the 1987 Water Law, it was not further equipped with sufficient personnel to fulfil its role according to the law. In fact, over time, its personnel, instead of increasing as planned, was reduced from 17 to 6 employees (MDEV, personal communication, 2003). The limited human resources of the directorate were one of the reasons why many legal acts needed for the full activation of the 1987 Water Law were delayed or not issued at all. Specifically, c. 40 complementary Presidential Decrees and 33 CMDs needed to be drafted and issued. This is not unusual in the Greek law-making system, where the operation of framework laws is supported by numerous Presidential Decrees, CMDs and other legal tools. An additional reason for delays in the full activation of the 1987 Water Law by the MDEV was that other co-responsible ministries were often unwilling to sign certain complementary acts (MDEV, personal communication, 2004). This was related to the general unwillingness of certain sectoral public actors to accept some of the principles of the law and the MDEV water coordination competence, losing thereby part of their own power and control over water. Signs of this unwillingness were made obvious during discussions on the draft law at Parliament (Parliament records, 12–19 October 1987). During the law's implementation, the main ministries, which co-managed (and competed over) water, continued acting in a sphere of mistrust in order to safeguard sectoral interests.

As regards the Regional Water Management Departments (RWMDs), until 1994–95, only six of them could be set up. In 1997, RWMDs for all water districts were set up (as departments of the Regions' Directorates for Planning and Development), when they were transferred from the jurisdiction of the

MDEV to the 13 administrative regions of the country. This occurred in the context of a national decentralization reform taking place in the mid-1990s¹, which affected most governmental sectors (MDEV, personal communication, 2004). The 13 established RWMDs were given administrative competence for specific water districts. Most RWMDs had different territories of competence from those of the regions, because the 14 water districts did not coincide in all cases with the boundaries of the 13 regions.

To date, despite their establishment nation-wide, the RWMDs have had only a marginal role in water management. Their competence for water planning and programming never became operational; in practice, their main role was bureaucratic and restricted to their involvement in the water permit procedure and the formulation of guidelines for measures on surface and groundwater quantitative use (prohibitions, restrictions on the distance between wells and other regulations) to be issued by the prefectures. The latter measures, which aimed at water conservation and protection, also set out the specific terms for approving water abstractions and issuing water permits in each prefecture (RWMD official, personal communication, 2005).

Moreover, RWMDs lacked adequate personnel resources both in number and qualifications of staff (Delithanasi, 2004). Most RWMDs were equipped with only 1–3 employees, despite plans for c.10–15 employees in each RWMD (MDEV, personal communication, 2003). Some RWMDs did not even employ hydrogeologists, who should carry out tasks such as the calculation of water balances and supply–demand balances (Delithanasi, 2004). Additionally, the RWMDs were unable to collect the necessary data for carrying out their water management tasks (e.g. hydrological and water consumption data). The main data in their hands were restricted to the registers of permits for water use and works issued in their territory of competence. As far as financial resources are concerned, the RWMDs were placed under the administrative and financial mandate of the General Secretaries of the Regions. Therefore, resources allocated to them depended on the financial capacity and thematic priorities of the regional administrations (MDEV, personal communication, 2003). The RWMDs had no income sources of their own (e.g. through water charges), and neither did they manage funds for projects on water supply, wastewater treatment or irrigation.

As concerns the Regional Water Committees, these were set up with delay, considering that the first ministerial decisions for their establishment were issued in 2000. Only a few of the established committees were activated and actually met on some occasions, but no substantial water management issues were brought up for discussion. The limited activation of these committees was related to the absence of water district development programmes to consult upon (see below) and to the limited human resources of the RWMDs which were responsible for providing organisational and secretarial support to the committees (MDEV, personal communication, 2003).

The Joint Interministerial Water Committee convened rarely and only a few important decisions were based on its opinion (e.g. decision to share reservoir water of the Public Power Corporation with irrigation users) (MDEV, 2003). Overall, there was a lack of willingness of the participating ministries to bring up substantial issues for joint discussion (MDEV, personal communication, 2003).

¹ Driven by a strengthening of regionalism on a European level, the Greek Law 2218/1994 converted existing prefectures to a second level of local self-administration and organized the Greek territory into 13 administrative regions that correspond to the target-regions of the European structural funds. The regions do not constitute a third level of self-administration but are administered by non-elected officials which are directly appointed by the central government (Kapsi, 2000).

4.2.2. Water planning and water pricing. The 1987 Water Law introduced the concept of intersectoral water planning through its requirement for national and water district development programmes for the protection and development of water and for the support of development policy. These programmes should be coordinated with national programmes for social and economic development. The law also introduced the concept of water pricing. The price of water should be set by the MDEV and the co-responsible minister depending on the water use and following the opinion of the Joint Interministerial Water Committee. In the following, the implementation of these planning and pricing requirements is briefly reviewed.

Shortly after adopting the 1987 Water Law, the MDEV carried out two pilot water management studies in western Greece, one on a river basin and one on a water district level, which calculated water balances and produced management modelling tools for the specific water systems. These pilot studies were a preparatory exercise for calculating water balances and producing management modelling tools nation-wide to support the drafting of water district development programmes (MDEV, personal communication, 2004). Throughout the 1990s, however, there was no further progress in this respect, except for the Water District of Crete whose RWMD—on its own initiative and engagement—secured funds for a study on the integrated management of Crete's water resources as a basis for a water district management plan. Due to the non-activation of the water programming procedure, there continued to be little coordination in the construction of water works by different users and public bodies all over the country (MDEV, personal communication, 2004). Finally, in 2003 and still under the legal framework of the 1987 Water Law, the MDEV hired consultants to develop water resource management systems and tools for all water districts. The hiring of consultants was considered necessary due to the lack of adequate personnel in the RWMDs—both in number and qualifications—to draft such studies. Consultants should—in cooperation with the RWMDs—collect and analyse data to determine water balances, record current and future water needs, record the present state of the water environment, define environmental terms for managing water and develop management systems for planning water works. It is now considered important to harmonize the water management systems and tools developed for the MDEV with the new national water policy framework (2003 Water Law of the MEPPW) and to use their results also for the EU WFD reporting requirements.

In 2003, the MDEV also issued a National Water Master Plan, which attempted to assess the quantitative and qualitative status of water resources nation-wide and to propose solutions for the main water problems. Its ultimate aim was the approximation of the required national water development programme (MDEV, 2003). However, except for assessing the water balance and supply–demand balance of the 14 water districts, the National Master Plan did not provide complete information on different sectoral water works and, thus, did not contribute to the coordination of water use, development, protection and research. Therefore, despite some attempts, the required national water development programme to harmonize water sectoral policies and coordinate sectoral water works could not be formulated by the MDEV.

As far as water pricing is concerned, no effective pricing policy has been defined so far. In particular, water used in agriculture is not priced at all (Karageorgou, 2003).

4.3. Further integration attempts under the influence of the EU WFD

In December 2003, Greece transposed the EU WFD by adopting a new Law on the Protection and Management of Water (MEPPW, L.3199). Due for the most part to the WFD emphasis on the

environment and water quality, the inner cabinet and prime minister decided to transfer national water coordination competence from the MDEV to the MEPPW. A Working Group of MEPPW representatives, the National Centre for Environment and Sustainable Development as well as academic and legal experts worked on a draft bill to transpose the WFD. The first draft was then revised internally by the MEPPW. Before being sent to Parliament, comments were invited from other ministries, different experts (public scientific institutions, water-related corporations and research centres, technical professional chambers) and NGOs (MEPPW, personal communication, 2005).

In terms of its principles, the 2003 Water Law emphasizes the environmental dimension of water resources and explicitly requires water pricing and cost recovery. The law is also important in bringing together the management of water quantity and quality both in policy and in the administrative structure. In terms of planning, it requires the development of 6-year river basin district management plans for water protection and management (according to the WFD). These plans should include programmes of measures, monitoring and specific measures to control groundwater pollution.

In administrative terms, the 2003 Water Law required setting up several administrative and advisory bodies, with similarities and differences to those set up by the 1987 Water Law.

On a national level, the law required setting up a Ministerial National Water Committee (MEPPW, Ministry of Economy, MIPAD, MDEV, Ministry of Health, MINAGR). This committee should determine the overall policy for water protection and management, monitor policy implementation, approve national water programmes and define river basins, river basin districts and their competent authorities.

A National Water Council, headed by the MEPPW, should also be set up to assess and give its expert opinion on water policy and law implementation. Apart from the six ministries involved in the National Water Committee, participants in the council include the main parliamentary parties, representatives of local self-administration, water and sewerage utilities, associations of agricultural and industrial water users, the Public Power Corporation, the Central Trade Union Association, national research institutes, the Technical and Geotechnical chambers, the Consumers Chamber and two environmental NGOs.

The law also required the establishment of a Central Water Agency at the MEPPW as the principal national competent authority for water protection and management. The agency should draw up national water programmes and prepare annual reports on water status, law implementation and EU compliance. The Central Water Agency was established in December 2005.

On a regional level, the law required setting up one Regional Water Directorate (RWD) in each administrative region with competence for the protection and management of all river basins within the region's boundaries. The law defined a river basin according to the EU WFD, as "the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta". In case of river basins crossing the boundaries of two or more regions, the RWDs' competence should be exercised in common, but the National Water Committee can also determine a single competent RWD. Each RWD should develop and implement a management plan for all river basins of its competence, programmes of measures, monitoring and a register of protected areas. It should also report annually to the Central Water Agency. Moreover, RWDs should concentrate permit-issuing competence for all water uses and works. Contrary to the RWMDs of the 1987 Water Law, the new RWDs have competence for both water quality and quantity management issues. In this context, the RWDs are responsible for collecting and assessing data on water quantity and quality to fulfil their role. Nevertheless, despite the concentration of competence for the management of all water uses to the RWDs (in cooperation with the Central Agency), fears were still expressed that the lack of clear text in the 2003 Water Law might encourage the continuation of overlap in competence and activities of different public

bodies (CSEH, 2003; UMEWS, 2003). The RWDs were established via a CMD in December 2005, by restructuring the existing RWMDs. The RWDs were again placed under the administrative and financial mandate of the Secretaries General of the Regions and were given no additional income sources of their own (e.g. through water charges). In terms of human resources, it is planned to have a staff of 23 in each RWD, which is slightly higher than the c. 10–15 planned RWMD employees under the 1987 Water Law.

Finally, the 2003 Water Law also required setting up Regional Water Councils to run consultations on the river basin management plans. Compared to the Regional Committees of the 1987 Water Law, a broader group of stakeholders can participate, including representatives of the regions, local self-administration, municipal water supply and sewerage utilities, farmers' unions and land reclamation organisations, environmental NGOs and management bodies of nature protection areas.

The European Commission (EC) monitors the implementation progress of the EU WFD, which was transposed in Greece by the 2003 Water Law. In 2005, the EC initiated legal action against Greece for inadequacy in transposing and implementing the WFD. In terms of inadequate transposition, Greece was accused of delay in adopting all complementary legal acts for the full transposition of the WFD, of not transposing important definitions and the environmental objectives of the WFD and of not providing details on the public information and consultation process for preparing the river basin management plans (EC, 2005b). Greece also delayed in providing complete information on the definition of its river basin districts and their competent authorities and in submitting reports on the current state of its river basin districts (EC, 2005a).

5. Water regime development

The IRR framework is used, in the following, to characterize the development of the Greek water regime (see different phases in Table 3). The regime development is discussed mainly on the basis of the regime change variables of extent and coherence (the indicators from Table 1 are used in the following discussions).

5.1. Extent

The regime extent gradually increased as more water uses were regulated by public policies. In particular, in the 1980s and 1990s, the addition of water quality and environmental policies (for both health and environmental protection) onto the agenda led to the regulation of almost all water uses. The 1987 Water Law even defined aquatic ecosystem protection as a water use and required the determination of minimum constant vital flows for rivers (and levels for lakes). Nonetheless, this quantitative right of the environment to water, spelled out in policy, was not implemented by any specific decisions in practice nation-wide.

5.2. Coherence within property rights

Before the 1987 Water Law was introduced, continuous water use rivalries indicated that rights of different users and owners of water were not coordinated. The system of water permits of the 1987 Water

Table 3. Water regime phases in Greece.

Regime phases	Regime change variables	Description
I. Simple to low complex regime (1852–1965)	Low to medium extent	Few water uses regulated and few actors involved
	Medium coherence	General sanitation rules for certain water uses (health) Introduction of private property expropriation (facilitating public hydraulic works) Definition of public domain for surface water (Civil Code)
II. Complex regime (1965–1987)	Higher extent	Increase of water uses regulated and of actors involved
	Low coherence	1965 Sanitary Regulation for effluents and wastewater (health) Competence for water supply and sewerage to local self-administration (1980 law) Environmental/nature dimension of water and water quality (for health and environment) in the public domain
III. Complex regime after first failed attempt at partial integration (1987–2003)	High extent	Water scarcity recognized by policy (1987 water law) but quantity still considered separately from quality
	Low coherence	1987 Water Law introduces permits for water use and works, promotes water policy planning, combined management of surface and groundwater, river basin management, stakeholder participation, defines aquatic ecosystem protection as a water use, but is only partially implemented Transposition of EU directives bring groundwater protection and diffuse pollution control into public domain
IV. Second attempt at integration (phase in development) (2003 >)	Attempt to achieve: High extent, High coherence	2003 Water Law integrates water quality and quantity, emphasizes water environmental protection, cost recovery, makes renewed attempt at holistic policy planning, river basin management and public participation

Law marked an attempt to overcome inconsistencies within the property rights system. However, the persistence of water use rivalries in several regions to date indicates failure to coordinate rights in practice. So far, the multiplicity of permit-issuing authorities, the lack of intersectoral water planning and lack of real water consumption data made it very difficult to coordinate the allocation of rights to competing water uses. Uncontrolled water use is also commonplace disregarding the terms set down in water permits. Rivalries involving the environment cannot be resolved as long as the quantitative rights of the environment to water are not defined. Also the system of rights to pollute water remains largely uncoordinated owing to the lack of well-functioning enforcement mechanisms for water quality standards.

5.3. Coherence within public policies

Until the mid-1960s, there were few water uses regulated by policy and a limited number of actors involved (mainly the MINAGR services). Therefore, coordination of policies and governance was not

too complex. Later, several additional actors entered the water policy arena (Ministry of Health, of Coordination, MEPPW, MDEV), thus decreasing the possibility for coordination. Attempts to increase coherence within the policy and governance system were then made by the 1987 Water Law and later by the 2003 Water Law. In the following, we describe the main effect of these attempts on policy and governance.

In terms of the levels of governance and especially the “fit” between administrative levels and natural boundaries, there was a rise of coherence with the creation of RWMDs competent for specific water districts in the 1990s. However, the RWMDs did not become fully operational. As a result, their role in coordinating water management across administrative levels and water uses was minimal, while water management remained largely centrally dominated (incomplete decentralization attempt). The 2003 Water Law recently delineated the competence of RWDs on the level of the regional administrative boundaries instead of river basins.

Secondly, although the actors involved in water management gradually increased, the policy arena has been mainly dominated by closed sectoral policy communities rather than interactive networks. Even the Interministerial Water Committee of the 1987 Water Law did not succeed in coordinating different sectoral ministries. The lack of coordination of sectoral authorities is also linked to and aggravated by the fact that no multi-perspective national water vision and no river basin management plans have been produced. Regional participation processes involving public and non-public actors are also still almost non-existent, despite attempts to create Regional Water Committees. The 2003 Water Law made a renewed attempt to promote participation nationally and regionally, recognizing more explicitly the interests of non-public actors and allowing for the first time the participation of environmental NGOs. Water policy making also seems to be becoming more open to the expert community. Although the making of the 1987 Water Law was criticized for not involving stakeholders, scientific and professional collective groups (Parliament records, 12–19 October 1987), comments from different experts (public scientific institutions, water-related corporations, research centres and technical professional chambers) were invited for the draft 2003 law (MEPPW, personal communication, 2005).

Regarding strategies and instruments in the policy system, progress in the adoption of integrated water legislation combining quantity, quality and ecological values was only made in the latest regime phase (2003 Water Law). As far as management instruments are concerned, so far these are mainly command-and-control tools (permits for water use, water works and effluents disposal). However, given the lack of intersectoral water planning and of effective enforcement of permits, even command-and-control tools have not really helped managers to avoid water use conflicts.

Finally, the implementation of water policy has so far relied on complex institutional arrangements with responsibilities and resources allocated to an array of institutions, making coordination difficult. Improvement is expected through the coordination of water management by the regions and the MEPPW as required by the 2003 Water Law. Moreover, the organisations responsible for policy implementation have been inadequately equipped with personnel, financial and authority resources. Regionally, the RWMDs were given neither financial autonomy nor competence for all substantial water management issues (e.g. they lacked competence for water quality). A positive development is that, via the 2003 Water Law, the new RWDs have competence for both water quantity and quality. However, it remains to be seen whether the RWDs (and the Central Water Agency of the MEPPW) will be equipped with adequate personnel and financial resources.

5.4. Coherence between property rights and public policies

This type of regime coherence gradually increased in the first half of the 20th century as public policy started to increase state control over water (e.g. 1920 law on the expropriation of private land for constructing public hydraulic works, 1940 Civil Code defining surface water as “object of common use”). Later on, systems of permits for pollution (1965 Sanitary Regulation) were also introduced. The 1987 Water Law significantly expanded the public domain on the use (but not ownership) of water by introducing permits for all new water uses. This showed that the state intended to limit uncontrolled water use and guarantee water access to all interested uses. However, the Civil Code linkage of groundwater to private land ownership has not been eliminated by public policy. Additionally, policy has not intervened yet in pre-1987 abstraction rights based on law or custom excluding them so far from the permit system.

6. Triggers and institutional context

The first attempt by the 1987 Water Law at a more integrated national water regime was largely triggered by the recognition at Greek policy level of the increased problem of water degradation, especially scarcity. The attempt was also triggered by the need to coordinate the complex national institutional arrangements for water management and “a feeling of obligation” to meet international and European standards. EU policies (mainly new water quality standards) were also strong triggers to establish water quality and the environment in the regime. The adoption of the 2003 Water Law was also the result of EU “pressure” to implement the WFD.

The following discusses the way in which the integration attempt by the 1987 Water Law was undermined by a non-supportive institutional context (see also institutional context indicators in [Table 2](#)). Given the very recent adoption of the 2003 Water Law, only a few preliminary remarks can be made on the institutional context of this latest regime change attempt.

6.1. Power distribution

When the 1987 Water Law was issued, power distribution was unbalanced between administrative levels. Affected by the strong character of Greece as a unitary state, the water management sector was highly centralized. Local and regional experience with self-governance was in general quite limited, since the national decentralization reform (setting up 13 regions and converting prefectures to a second level of local self-administration) was initiated later, in the mid-1990s. Even though Greece is still categorized as a unitary state, which has until now conferred a minimum level of powers to its periphery ([Kapsi, 2000](#)), the 1990s national decentralization reform was, in some ways, favourable to the attempted changes of the 1987 Water Law, e.g. it supported the creation of all RWMDs. Nonetheless, the human and financial resources committed by the administration were insufficient to adequately support the attempted changes. Moreover, the top-down character of the law implies that the attempt to integrate the water regime was rather imposed by the central government instead of being recognized as a priority issue also regionally and locally. Even the central administration, however, failed to support the law with

continuous political commitment. Commitment to the attempted integration and decentralization reform varied with time and through transitions in the political leadership of the central administration (former MDEV official, personal communication, 2004).

Power distribution was also unbalanced between public and non-public actors. When the 1987 Water Law was adopted, there were no operational forums for citizen and stakeholder participation in water management. Even now, participation is mainly restricted to formal consultation in environmental impact assessment procedures of water-related projects. The impact of environmental NGOs on water policy was until recently limited to nature and wetlands protection issues.

Regarding the prospects of the 2003 Water Law, significant institutional obstacles may continue to exist with respect to the lack of water management authorities with substantial power and resources at both the regional and the central level. Even though some water management structures, especially based on the RWMDs of the 1987 Water Law, are in place, continuous commitment of the central government and regional authorities is needed for successful decentralization. Secondly, the 2003 Water Law cannot rely on any participatory tradition in water issues. At least, there is now a stronger presence of environmental NGOs in the water policy arena, especially supported by the issuing of the EU WFD.

6.2. Set of values

The integration attempt of the 1987 Water Law was hindered by the lack of a traditionally cooperative policy style. The law's principles were, thus, undermined by the persistent lack of coordination in planning water works and water acts among sectoral institutions with water resources competence (MEPPW, MDEV, MIPAD, personal communication, 2003). This situation is typical of the horizontal fragmentation of policies in the Greek administration. The 2003 Water Law is also bound to suffer from the unfavourable condition of the, to date, non-cooperative policy style.

Low societal awareness of water resource problems and their environmental dimension was not supportive of an increase in integration either. According to Pridham (1994), the prevalence of consumerist values and financial insecurity in the recently modernized Mediterranean EU member states, including Greece, are not favourable to the spread of environmental and resource protection values.

6.3. Perceptions of water issues

The main paradigms and perceptions of water issues nation-wide have also been unfavourable to the integration effort of the 1987 Water Law. Water problems have been viewed, throughout the 1990s, mostly in isolation and from the perspective of different sectors. Several sectoral interpretations have also been linked to a dominant engineering paradigm in water management, so far supported also by a large part of the epistemic community and largely ignoring policy and economic management instruments. The lack of an intersectoral water planning tradition and of an adequate information basis to support sound management decisions acted as a further constraint to the integration attempt of the 1987 Water Law.

The "water perceptions" context is not very promising for the 2003 Water Law either, if one considers the continued lack of intersectoral water planning, the persistent single-issue understanding of water

problems and the lack of a solid, information basis on water resources, with some exceptions such as the pre-existing regional registers of water permits nation-wide. At least, there appears to be increased perception of the risks of water degradation and of the need to consider the environmental needs of water ecosystems by the scientific community, NGOs and mass media.

7. Conclusion

This paper characterized the development of the Greek national water regime as a combination of public policies and property rights, concluding thereby on the extent of the regime shifts towards more integration. The analysis showed that the first attempt at an integrated national water regime by the 1987 Water Law was unsuccessful. Integration was hampered by an unfavourable institutional context prevailing at the time of the attempt. The concentration of the Greek politico-administrative system combined with the lack of resources of the administration and the top-down style of the integration attempt, hindered the set-up of a coordinated, balanced network of central and decentralized water management authorities. Integration was also hindered by integration-unfavourable dominant values and perceptions of water issues, such as the absence of cooperative policy style and intersectoral planning, the fragmented understanding of water problems and the low societal awareness of the environmental dimension of water resources.

A further integration attempt took place with the transposition of the EU WFD (via the 2003 Water Law) whose effect in practice remains to be seen. Formal policies to achieve more integration now seem to be largely in place but a sufficiently favourable institutional context is still missing. Although institutional conditions are now somewhat more favourable than during the time of the 1987 Water Law integration attempt, the path to integration must involve significant efforts to overcome institutional conditions, which hindered integration in water resources management in the past.

Institutional resource regime (IRR) theory provided a framework for the interpretive explanation of the national water regime development on the basis of selected institutional variables linked with causal chains. The IRR framework was helpful in better understanding important institutional aspects of the Greek water management system, which up until now have not been considered as critically relevant for explaining Greek water management problems in the literature. Furthermore, the IRR framework was chosen for its close conceptual links to the EU WFD requirements for integral water management, thereby making the characterization of the Greek water regime development more relevant to current EU water policy.

The IRR framework provided an institutional analysis approach, integrating two narrower analytical approaches from classical property rights theory and from public policy analysis. We believe that the use of a purely property rights or a purely public policy-based approach could have overlooked certain institutional aspects, which are important for understanding the Greek national water management regime. For instance, a public-policy based approach could overlook the encouragement of unsustainable water consumption due to weaknesses in the regulation of property rights, such as the non-regulation of pre-1987 abstraction rights and the inefficient enforcement of terms linked to conceded water use rights (see Section 3 on the analysis of property rights). Conversely, important water institutional issues, such as actor coordination and resources available for policy implementation, could be overlooked by a property rights-based approach. The adopted IRR approach is, indeed, based on the

assumption that the (sustainable) use of water and the behaviour of actors involved in water use depend on institutional rules, which are anchored both in public policies and in property rights regulation.

The findings of this paper can be considered complementary to the findings of earlier applications of the IRR framework on the evolution of national water regimes in other European countries (see Kissling-Näf & Kuks, 2004). Considering the earlier application of the framework to European countries with quite well-developed water policy institutions (e.g. France, The Netherlands and Spain), its application in Greece demonstrates that it can also be applied with success to countries with less well-developed water policy institutions.

In this paper, the IRR framework was enriched with the explanatory institutional context variables (power distribution, values and perceptions) used by Kuks (2004), which were here further extended with the indicators of Blomquist *et al.* (2005) to reflect the top-down or bottom-up character of reform attempts towards more decentralization for integrated water management, as well as the level of resources committed by authorities for such reforms. The explicit emphasis on the commitment of resources makes the proposed set of institutional context indicators more suitable for less economically developed countries, where resources often act as a limiting factor to integration attempts in water management.

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