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Introduction

Spanish water regime was created in the late XIXth century with the adoption of a regulatory framework that was consonant to the political, economic and social context of that time. However, while this regulatory framework remained almost unaltered until the mid eighties, the increase of the number and type of uses of water led the regime towards a high degree of complexity. By analysing the evolution of the regime along the last 130 years, the main concern of this chapter is to assess the extent to which water regime is currently moving towards more integrated schemes. The underlying hypothesis is that, while there have been some attempts to introduce integrated approaches to water regime by regulation and policies since the eighties, integration has to a large extent been frustrated due to a series of interrelated factors: policy inertia, intense territorial and social confrontations over the resource, and water scarcity. The chapter is structured into six sections. The first one briefly describes the political and administrative structure on Spanish water regime. Section two offers a general landscape of water resources and uses. The third section extensively analyses the evolution of property rights, while the forth one examines the evolution of policy design on water. Finally, section five closes the chapter with some concluding remarks assessing the extent to which Spanish water regime moves towards integrated approaches.

1. Political and administrative structure

The democratisation of the Spanish political system starting with the adoption of the Constitution in 1978 brought about deep transformations of the political and administrative structure. In brief, it did not only constructed a democratic and pluralistic political life by the institutionalisation of a parliamentary regime and a multi-party system, but also opened the doors for a territorially decentralised structure by the creation of the State of Autonomies. This institutional structure attributes certain exclusive powers to the State —for instance foreign policy or the direction of economic policy— while others are shared between the State administration and the Autonomous Communities, including education, health or environmental protection —to mention but a few. In the field of water policy, territory and interest are the two main criteria used to distribute powers on water. To this respect, State administration holds exclusive powers on the declaration of continental waters (surface and ground renewable) as public domain, which implies the State ownership of this natural good, the separation of water from private legal trade and its subjection to public law, and a State control of its access. The State administration is also responsible for: legislation, planning and granting for administrative concessions and authorisations when waters flow through more than one Autonomous Community; projection of hydraulic works when they are declared of general interest or when they affect more than one Autonomous Community; and legislation and planning on environmental protection. In turn, Autonomous Communities are responsible for: the projection, construction and exploitation of hydraulic resources, channels and irrigation infrastructures that are of regional interest; legislation and management of mineral waters, thermal springs, shellfishing, aquaculture and fluvial fishing; and execution and, in certain Autonomous Communities, adoption of legislation on environmental protection. To sum up, the Spanish Constitution assumes the organisational criteria resulting by a complex social, economic and territorial reality and attributes most powers on water administration, legislation and concession to the State administration, without permitting regional administrations to take charge of water resource powers in case of inter-Community river basins. Apart from State and regional levels of government, municipalities (about 8,000) hold powers on water supply, sewage and wastewater system, with strong inter-municipal variations according to population criteria.

While the Autonomous Communities having powers on water policy and management have their own agencies, the main institutions dealing with water are directly or indirectly attached to the State administration. These include the river basin administrations (*Confederaciones Hidrográficas*), the users communities and the Water National Council. The *Confederaciones Hidrográficas*, created in the twenties, are attached to the Ministry of Environment and hold responsibilities of planning, water management and hydraulic works when the river basin flows through more than one Autonomous Community. Users communities are public entities attached to the river basin administrations and are in charge of the management of a shared administrative concession or of a shared water taking (more than one user). Finally, the Water National Council is the highest consultative body on water policy and brings together representatives of the State, regional and local administrations, *Confederaciones Hidrográficas* and professional and economic organisations having an interest on water.

2. Water resources and uses

Compared to other European national regimes, Spanish water resource availability would not necessarily be considered as a problem if the available water were considered as an indicator, which is estimated around 40,000 Hm3/year. However, it is the Spanish irregularity in water resources distribution, both in terms of space and time, what makes the difference. The reasons of such irregular patterns include the geographic situation of the country, its strong climatic contrasts and the important cross-regional variations. In relation to the spatial irregularity, two main Spanish realities can be identified according to the renewable water resources available in each river basin[1]. On the one hand, the Southern and Central Mediterranean river basins (Guadiana, Guadalquivir, Sur, Segura and Júcar) represent 41% of Spanish territory and concentrate 37% of the population, but only take advantage of a 19 per cent of the total water resources. On the other hand, 81% of water resources flow through the rest of Spanish river basins, which represent more of the half of the territory (59%) (MOPTMA, 1995). This strong contrast accounts for the traditional distinction between a *wet* and a *dry* Spain. Apart from that, another territorial distinction divides the water landscape into three areas. The first one includes those territories where water resources availability is superior to the national average (Galicia-Costa, Norte I, II and III river basins). The second one refers to those areas were resources availability is similar to the national average (Duero, Tajo and Ebro river basins), while the third one includes the rest of Spanish river basins and its resource availability is lower to the national average. It must be pointed out that inequalities do not exist among different river basins but also within their own territories.

Map 1.- Rivers in Spain

[1] This disctinction does not consider insular river basins.

Source: www.mma.es

1.- Miño	5.- Ebro	9.- Júcar
2.- Nalón	6.- Llobregat	10.- Guadalquivir
3.- Nervión	7.- Tajo	11.- Segura
4.- Duero	8.- Guadiana	

Climate irregularity is, comparatively, more intense in Spain than in other European countries. This is so mainly for two reasons. On the one hand, annual irregularity is mostly due to the high variations in rainfalls and, consequently, river bed volumes, from one season to another. On the other hand, the year-on-year irregularity in rainfall water regime is a significant characteristic of most of the Spanish regions (specially the coastal ones) and results in high differences in river volumes (up to a proportion of 1 to 50) between rainy and dry years. In addition, rainfalls and water demands (specially in irrigation) are not coincident along the year (rainfalls and, thus, provision levels take place in autumn, winter and spring, while the largest demands are concentrated in summertime).

The Spanish hydraulic resources are also determined by the amount of regulation works having been carried out along the XXth century in other to satisfy the increasing demands. Although water availability was only based on natural volumes (representing the 8 per cent of the total) for centuries, yet at the end of the XIXth century and the beginning of the XXth, the first dam and canalisation projects were developed. And, particularly from the fifties and sixties, both the construction of hydropower plants and the promotion of irrigation projects lead to an almost exponential increase in Spanish water dam capacity. As a result of this hydraulic works accumulation process, Spain has now more than a thousand dams representing a total capacity of 56,000 hm^3 and constitute the main instrument that guarantees water supply[2]. The existence of such hydraulic infrastructures allows the use of 5 times the water volumes that could be used naturally (without any regulation actuation).

Despite regulation, irregular distribution of water resources among regions causes serious deficit situations in an important part of the Spanish territory. These deficit situations arise

[2] Including dams under construction (Ministerio de Medio Ambiente, 2000)

both at a local (within the river basin) and global level (affecting the whole river basin) (MOPTMA, 1995). According to the White Book on Water (MMA, 2000), the Segura basin, the zone around the head of the Guadiana river, and some parts of the Júcar, Sur and Ebro basins present water deficit. Nevertheless, only the Segura basin has an structural deficit, as it is the only one whose potential resources cannot cover its water demands. The rest of the basins could solve their scarcity problems by the means of the implementation of hydraulic works, water reutilization, desalination and water save policies[3] (see table 1).

Table 1

Natural resources[4], available resources[5] and demands in each river basin (hm3/per year)

River Basin	Natural resources	Available resources (A)	Present demand (B)	Percentage (A/B)
Norte I	12.689	691	617	89.3
Norte II	13.881	587	589	100.3
Norte III	5.337	468	486	103.8
Duero	13.660	10229	3860	37.3
Tajo	10.883	5063	4065	80.3
Guadiana I	4.414	2591	2312	89.23
Guadiana II	1.061	345	219	63.5
Guadalquivir	8.601	3451	3760	108.9
Sur	2.351	1007	1350	134.1
Segura	803	1500	1834	122.3
Júcar	3432	3437	2962	86.2
Ebro	17.967	9898	10378	104.8
Catalonia	2.787	1587	1357	85.5
Galicia Costa	12.250	1.302[6]	819	62.9
Península	110.116	40854	34608	84.71
Baleares	661	300	288	96
Canary Islands	409	417	427	102.4
SPAIN	111.1	41571	35323	84.9

Source: own elaboration from Ministerio de Medio Ambiente (2000) and the Hydrological Basin Plans.

It has to be taken into account that frontiers with Portugal and France imply some natural transfers with this neighbouring countries. There are five hispano-portuguese basins: Miño, Limia, Duero, Tajo and Guadiana. These basins represent 41% of the Spanish territory and 62% of the Portuguese one. Then, some Spanish rivers (Manzanas, Tuela, Támega, Ardila, Múrtigas) cross the Portuguese frontier and some Portuguese rivers (Gévora and Bubal) cross the Spanish one. As regards to France, the most remarkable fact is that the head of

[3] Nowadays Spain gets about 230 Hm3/year using reutilization technique and about 220 Hm3/year using desalination technique.

[4] Resources from the hydrological point of view, not functional.

[5] Available resources are the result of the environmental, social, geopolitic, technical and management restrictions upon natural resources.

[6] Data from the HNP Memoire. MOPT. 1993.

the Garona river is placed in Spain. The sharing water with its neighbour countries is ruled by several conventions in both cases.

1.2.2. Water demands and water uses

An analysis of sectoral water demands in each river basin provides an explanation of most deficit situations. Those demands that use water as a production factor in several economic activities are clearly the most important ones. Particularly, beyond urban supply and industry, irrigation farming is the economic sector having highest levels of water demands (see table 2).

Table 2

Water demand in different uses (hm3/year) according to data in PHC					
River basin	**Urban**[7]	**Industrial**	**Agriculture**	**Cooling**	**Total**
Norte I	77	32	475	33	617
Norte II	214	280	55	40	589
Norte III	269	215	2	0	486
Duero	214	10	3603	33	3860
Tajo	768	25	1875	1397	4065
Guadiana I	119	31	2157	5	2312
Guadiana II	38	53	128	0	219
Guadalquivir	532	88	3140	0	3760
Sur	248	32	1070	0	1350
Segura	172	23	1639	0	1834
Júcar	563	80	2284	35	2962
Ebro	313	415	6310	3340	10378
Catalonia	682	296	371	8	1357
Galicia Costa	210	53	532	24	819
Peninsula	4419	1633	23641	4915	34608
Baleares	95	4	189	0	288
Canary Islands	153	10	264	0	427
SPAIN	4667	1647	24094	4915	35323
TOTAL (%)	13,2%	4,7%	68,2%	13,9%	100

Source: Ministerio de Medio Ambiente, 2000.

In addition, the persistent location process affecting both population and economic activities has led to an important rivalry between the increasing water demands (for urban and agricultural uses) and environmental protection. The Spanish legislation has recently specified the environmental demand, which is understood not as a use but as a previous restriction imposed to the productive utilisation systems. The general conditions of flow circulation for each river basin are included in table 3.

[7]It includes individual (also tourism), local (firemen, irrigation gardens, etc) and collective (public services as hospitals or schools) domestic utilization, industrial, trade and sometimes agricultural demands.

Table 3: General conditions of flow circulation for each river basin

River Basin	General Conditions
Norte	Minimum flow: 10%year-on-year average, with a minimum of 50 l/s
Duero	There are no minimum flows specified in general
Tajo	Environmental demand: monthly flow equivalent to the 50% of the monthly average during summer months
Guadiana	Minimum volume spilled from the dams: 1% of the natural contribution to them
Guadalquivir	The 35% of the daily average flow of the daily average of the natural flows or 50 l/s
Sur	Ecological flow: 10% of the year average contribution
Segura	Minimum flow. 10% of the year average contribution
Júcar	Maximum reserve: 1% of the total basin resources
Ebro	Minimum flow:10% of the year-on-year average contribution
C.I. Catalunya	Minimum flow: 5% of the average of 10 last years higher than 50 l/s
Galicia Costa	Minimum flow. 10% of the year average contribution

Source: Ministerio de Medio Ambiente, 2000.

To sum up, two historical tendencies have led to what is known as the "Spanish water problem". On the one hand, the traditional identification between agricultural production, which consumes more than 80% of the resource, and economic development. While the State has traditionally promoted and subsidised irrigation works, farmers have never assumed the real costs of water. This has allowed Spanish agriculture to be relatively competitive in European markets by offering its products at a low price. On the other hand, spatial location dynamics and, thus, water demand increase, have historically developed without considering the costs that would have been required in order to guarantee the spatial and temporary availability of water resources.

3. Development of Water Regime

The evolution of Spanish water regime along the last 130 years has been characterised by being reactive and incremental both regarding property rights and policy design. While water regime has evolved as a whole, both property rights and policy design have evolved in parallel but following different rhythms and dynamics. Regarding property rights, two main phases can be identified: the first one starts in 1866, when the first Water Act is adopted, and ends in 1985, with the adoption of a new water act modifying pre-existing property rights; the second phase starts with the 1985 Water Act and that hasn't finished yet. Regarding policy design, the period can be divided into six main phases in which general policy moves towards a change of regime can be identified. In brief, both the property rights and policy phases are interconnected as follows. The emergence of the regime dates back to the last third of the XIXth century, when the adoption of the first Water Act in 1866 and the second one in 1879, together with the provisions included in the 1889 Civil Code, create a regulatory regime that can be characterised as a simple one. This regulative framework will not be changed until the adoption of a new Water Act in 1985, so that property rights remain almost unaltered until the mid eighties. Meanwhile, some events at policy level lead to changes in the regime. At the turn of the XIXth century, the regime shows some signals of crisis, which are to be understood within a broader social and political context, and initiates a new phase in which a transition from a simple to a more complex regime along the first half of the XXth century takes place. From the fifties to the late seventies, national water regime undergoes a series of transformations, as new water demands and uses increase rivalries and complexity, and by this water regime enters a new period. The process of democratisation in the late

seventies, the institutional changes derived from both the process of supra and sub-nationalisation, and the inclusion of new issues the political agenda are some of the main factors increasing the level of complexity and altering the nature or water regime. This period corresponds to the fourth phase. The adoption of the Water Act in 1985 modifies the previous legal system, contained in the 1866 and 1879 Water Acts, marks a turning point in water regime as it clearly affects property rights, and opens a period in which a transition from a complex to an integrated regime is aimed at. In addition, along this period, several uses are regulated. Finally, a new period starting in 2000, in which there are both trends of integration and fragmentation, seems to initiate phase six (see table 4).

Table 4: Main phases in national water regime

<table>
<tr><th></th><th>PHASE 1

1866/1879 – 1898

SIMPLE</th><th>PHASE 2

1898 – 1953/59

SIMPLE → COMPLEX

(transition)</th><th>PHASE 3

1953/59 – 1978

COMPLEX

(low complexity)</th><th>PHASE 4

1978 – 1985/1986

COMPLEX

(high complexity)</th><th>PHASE 5

1985/1986 – 1999/2001

COMPLEX → INTEGRATED

(transition)</th><th>PHASE 6

1999/2001 →

INTEGRATED vs. FRAGMENTED ??</th></tr>
<tr><td rowspan="2">Property Rights</td><td colspan="4" rowspan="2">Water as a private and public property natural resource</td><td colspan="2">Water as State property</td></tr>
<tr><td>Rigid regime</td><td>Flexible regime</td></tr>
<tr><td>Policy Design</td><td>Low policy profile</td><td>Failed attempts of planning</td><td>Extensive water-supply policy</td><td>High complexity and policy contradictions</td><td>Multi-sectoral perspective on water policy</td><td>Integration or fragmentation: unclear moves</td></tr>
</table>

Next sections will examine both the evolution of property rights and regulation of uses as well as the policy design according to the schema above.

3.1. Property rights and regulation of uses

3.1.1. Property rights on water

As it was stated before, changes in property rights take place very slowly and at very long term. This is the reason why the last 130 years cannot be divided into the six phases as the whole regime is, but just into two. Main changes in the regime leading to new phases are in many cases driven by changes at the policy level which, in turn, and in certain periods of time, put enormous pressure on property rights design to be changed. The two main property rights sub-periods are the one in which water is regulated as a both private and public property natural resource, and the other one in which water is regulated as public domain.

Phase 1 (PR): Water as a private and public property natural resource

The adoption of the 1866/1879 Water Acts, which shortly after is completed by the provisions on water included in the Civil Code (1889), gives rise to the formal emergence of a Spanish water regime. By virtue of the Water Act and the Civil Code, water use and property rights related to both surface and ground waters are regulated following two principles. On the one hand, both water acts consolidate the concept of hydraulic public domain. Waters falling in this category include rivers, raining waters, lakes, ground waters, springs and fountains all of them along public river beds and land, waters poured from public drains and waters flowing out from a private property. On the other hand, surface waters flowing along private lands are not considered hydraulic public domain but private waters. Moreover, both Water Acts and the Civil Code keep recognising private property of waters coming from irrigation channels, fountains and springs, which were private according to the previous legislation. Regarding groundwater, discovered and undiscovered waters are distinguished in the 1866/79 Water Act. In the first case, when groundwater is placed under a private terrain, it belongs to the landowner, while when placed under a public terrain, it belongs to the State. In the second case, undiscovered groundwater is considered *res nullius*, that is, belonging to anybody, so the one discovering it becomes its owner even though he is not the owner of the land where water is placed. This is valid for both private and public terrains.

As regards private uses of waters, the 1866/1879 Water Act recognises five ways of obtaining them. First, waters emanating or flowing through non State nor province and village lands are “property” of landowners, which means that landowners can have a private use. Second, landowners located below or beside the original land have an eventual private use right (even though they have some qualitative and quantitative limits in their use right). Third, if landowners located below or beside the original land maintain the use for one year and one day, their eventual use rights are consolidated (with their limits). Fourth, by acquisitive prescription, that is, by allowing landowners maintaining use rights on waters for twenty years to get them definitive. And finally, by administrative concession when waters are included in the hydraulic public domain. These include: population supply, trains supply, land irrigation, navigation channels, water mills, ferries and bridges and, lastly, fishponds. This uses are listed according to the priority order at the moment of granting administrative concessions.

Apart from surface and ground waters, coastal waters were regulated firstly in the 1866 Water Act and secondly in the 1880 Harbour Act. In both acts the maritime area between the high sea and the territory is declared public domain and affects public uses. The idea of state property upon coastal sea was not pacifically admitted as the sea could not be appropriated but object of sovereignty (Calero, 1995). Nevertheless, the Spanish legislation, including the 1978 Constitution, opted for this regulation of public domain, and nowadays the coastal sea can be an object of public domain and of sovereignty at the same time, but understanding public domain not as a technique of appropriation but as a technique to exclude that good from private legal trade.

While property rights on water do not formally change until the adoption of a new Water Act in 1985, along the fifties and sixties, they start being brought in question as there are frequent situations of abusive uses of public waters. The need to make the new interests of the community compatible with a wide range of traditional situations, established several years ago and firmly rooted in both the regulatory framework and the country social conscience, starts to be debated. Some of the ideas suggested include the utilisation of registers and the suppression of acquisitive prescription as a means of acquiring public waters use rights. A few marginal changes, however, are introduced. One of the most outstanding one is the 1964 State Wealth Act (*Ley de Patrimonio del Estado*), which prohibits

both concessions for more than ninety nine years and indefinite concessions. But those aspects hardly imply a modification of the property and use rights structure.

Phase 2 (PR)- Water as a state property

Subperiod 2.1. The configuration of a new regime

The 1866/1879 Water Act is still in force until the mid eighties, so the applicable water use and property rights continue almost unchanged until then. However, as mentioned before, from the sixties and particularly along the seventies, the need for a legal revision of water use and property regime is increasingly perceived. Situations of abusive uses and problems of water pollution in many Spanish rivers and aquifer overexploitation become alarmingly frequent during this period, and the prevailing water regulation becomes more and more unable to deal with them in an efficient way. This situation leads to an ambitious reform of the national water regulatory regime based on a reinforcement of State intervention according to a global and systematic perspective that emphasises the planning approach. Considering water as a production factor and a consumption good, as 1866/79 Water Act does, becomes a less valid criteria and new approaches and new are taken into account, i.e. sanity, water resources quality preservation, civil protection, environmental values and territorial planning, among other items.

These considerations determine the adoption of a new water regulatory regime to be established in 1985. The 29/1985 Water Act partially modifies the pre-existing water use and property rights regime. It establishes that all water resources, surface and discovered or undiscovered ground waters, are public goods, but at the same time it respects traditional situations and historically and socially deep-rooted by giving the option to water owners to keep on their private property. The assumption of the public character of all waters implies that the hydraulic administration has to assume the responsibility of water direct management in a variety of functions. In short, the 1985 Water Act main points include: the consideration of all continental waters (superficial and underground renewable ones) as hydraulic public domain; the suppression of acquisitive prescription as a means to obtain private uses, except for the temporary basis; the choice given to traditional water owners to change or maintain their water use/property regime; the maintenance of the distinction between common and privative uses[8], previously existing in the 1879 Water Act; and the foresight of a maximum of 75 years for the length of the administrative concession. In addition, the Water Act also regulates the obtention of privative uses upon public waters by legal disposition or by administrative concession. The first case only occurs when the object of the exploitation are rain waters or stagnant waters flowing through the lands of the landowners or waters coming from springs located in their lands and ground waters no exceeding, in both cases, of 7.000m3 per year (unless the aquifer has been declared as overexploited; then an authorisation is required). In all of the other cases it is necessary to apply for an administrative concession. According to the 1985 Water Act (the same as with the 1879 Water Act), it is necessary to follow a priority order for granting administrative concessions. Table 5 lists the order of preference for granting concessions according to both the1866/79 and 1985 water acts.

Table 5: Order of preference for granting concessions

1879 Water Act	1985 Water Act
1. Population supply	1. Population supply

[8] Privative uses refers to private uses upon public waters.

2. Trains supply	2. Land irrigation and agricultural uses
3. Land irrigation	3. Industrial uses for power production
4. Navigation channels	4. Other industrial uses
5. Water mills, ferries, bridges floating	5. Aquaculture
6. Fishponds	6. Leisure uses
	7. Navigation and aquatic transport
	8. Other exploitation

As table 5 shows, the 1985 Water Act updates preferences to the new social and economic order, for instance, the explicit inclusion of hydropower production, the relegation of navigation and the absence the environmental demand or ecological flow. Nonetheless, the Royal Decree developing the 1985 Water Act includes the respect of a minimum flow, which aim is to assure the availability of common uses and ecological and sanitary needs. Apart from that, two other aspects limit the utilisation of waters. Firstly, water uses become determined by the regulation of aquifer overexploitation, critical drought conditions or other limitations in the general use of water public domain. And secondly, the new regime is based on the correct description of previous water use regime, so that the existence and actualisation of a Water Register becomes more and more important.

As it has been pointed out, the 1985 Water Act introduces some important changes on the pre-existing water use and property regime. In relation to private uses upon private surface and ground waters, it respects those vested rights recognised by the previous Act in two ways. First, by offering a choice to the traditional owners. On the one hand, they can transform their rights into temporary private use rights (they must prove the tenancy and conditions of this use before the Hydrographical Basin Confederations). This regime will be respected for a period of 50 years at the end of which users will have a preference to obtain the corresponding administrative concession to their use. On the other hand, users can maintain their use rights in the way established by the previous regulation. However, if they modify the exploitation conditions, they have to apply for an administrative concession and loose their property right. The latter has been called “water use freeze” (Sánchez Morón, 1985). The second way the 1985 Water Act respects vested rights, related, in this case, to the use rights upon the hydraulic public domain, is fixing the length of those perpetual or ninety nine years administrative concessions in 75 years from the January 1st 1986 on. Those rights obtained by prescription (20 years) are also subjected to this regulation.

Sub-period 2.2. Towards a more flexible regime

The 1985 Water Act was partially modified in 1999 by the 46/99 Act[9], which introduces changes on property and use rights. The act combines a more stringent control by the State upon the natural resources with a more flexible use of water, by establishing legal techniques for promoting efficiency and for increasing available resources in order to satisfy water demands. It does so in five ways. Firstly, the 46/99 Act extends the concept of hydraulic public domain to the desalinated waters once they flow out of the plant and incorporate to another hydraulic public good. In this way, this act implies an extension of the public domain upon hydraulic natural goods. Secondly, it introduces two types of disposition rights that, to some extent, are innovative in Spanish water legislation. On the one hand, it admits the contracts for the cession of use rights, giving more flexibility to the concession holders to reach a higher level of efficiency in the use of this natural resource. In that way, surplus

[9] Both acts have been formally abolished by the Royal Decree Legislative 1/2001, a codifying legislation of the different modifications, above all the 46/99 Water Act, upon the 29/1985 Water Act.

water can be sold to other concession holders. Contracts have to be celebrated between two concession holders having the same level of priority (according to the table above) and an authorisation of the Hydraulic Administration is necessary to close the operation. On the other hand, the 46/99 Act introduces the figure of banks of use rights exchange, by which the hydraulic administration purchases water and sells it at the price it decides. Before the 1999 reform, water flow was given according to calculations upon the water needs of concrete hectares and waters could not be destined to other soils. Fourth, the new legislation imposes a new restriction to the exploitation system: the ecological flow or environmental demand (Spanish legislation identifies both concepts). This demand has a priority over all of water uses listed above except for population supply. And finally, the act requests an administrative concession for re-using treated waters previously used in the frame of a different administrative concession in order promote and control the use of all the available resources (see Embid Irujo, 2000).

3.1.2. Regulation of uses

Along the XXth century, Spanish water regime has evolved in a number of ways trying to adapt reactively to the emergence of new uses and rivalries. While at the time the first water regulation was adopted (1866/1879) the main uses were land irrigation and population supply, the enormous social and economical transformations undergone along the XXth century have increased not only water demands but also water uses. Currently, water uses include living environment (landscape and nature conservation), land irrigation, fishing, farm production, population supply, navigation and aquatic transport, strategic reserves, industry, production of mineral water, energy (hydropower production and water cooling), water treatment, water cures, leisure, landscape and nature conservation. Table 6 contains the main water uses in each of the phases identified in the Spanish water regime.

Table 6: Type of uses along different phases

PHASE 1 1866/1879 – 1898	PHASE 2 1898-1953/1959	PHASE 3 1953/1959-1978	PHASE 4 1978- 1985/1986	PHASE 5 + 6 1985/1986 onwards
Land irrigation	Land irrigation	Land irrigation	Land irrigation	Land irrigation
Fishing	Fishing	Fishing	Fishing	Fishing
Farm production	Farm production	Farm production	Farm production	Farm production
Population supply	Population supply	Population supply	Population supply	Population supply
Navigation	Navigation	Navigation	Navigation and aquatic transport	Navigation and aquatic transport
Trains supply				
Water mills, ferries and bridges floating				
		Strategic reserve	Strategic reserve	Strategic reserves
	Industrial water	Industrial water	Industrial water	Industrial water
		Production of mineral water	Production of mineral water	Production of mineral water
		Hydropower production	Energy (hydropower production and cooling)	Energy (hydropower production and cooling)
		Water treatment	Water treatment	Water treatment
		Water cures	Water cures	Water cures
			Leisure	Leisure
				Landscape and nature conservation

Among the several types of water uses currently identified, six have been selected as the most significant ones: living environment (landscape and nature conservation), fishing, irrigation, drinking water, water treatment and hydraulic works. While the latter cannot properly be considered as a specific water use, the introduction of two financing instruments (the regulation tax and the water use rate) represents an important change in use rights. National regulation is described for each of the selected uses.

In analysing water uses regarding living environment a distinction must be made between nature conservation and hydraulic public domain. Regarding the former, the 1985 Water Act regulates for the first time the types of activities affecting wetlands, while the RD 928/1995 establishes a promoting regime of farm production techniques to make them compatible with nature areas and wild birds protection. This regulation gives economic facilities to rationalisation in fertilisers and water use in wetland areas, as well as the maintenance of traditional flooded crops. In 1999, the approval of the Strategic Plan for the Conservation and Rational Use of Spanish Wetlands attempts at becoming a planning instrument establishing environmental measures on water pollution reduction and seeking the reinforcement of the role of wetlands in water resources, soil and biodiversity protection planning.

The 1985 also regulates Hydraulic Public Domain (HPD) by defining the areas included in the HPD and introduces the concepts of HPD pollution and degradation. It also introduces a tax based on the utilisation of HPD goods and services which is to be paid by users holding concessions or authorisations enabling them to use territories or goods included in the HPD. First attempts towards integration in HPD management are introduced by the 1999 Water Act by both broadening the previous protection aims and the HPD definition (it includes desalinisation waters) in response to the new techniques available for water supply. In this sense, the 1999 Water Act introduces territory and environmental protection s new dimensions into the principles that will guide the HPD management. The 1999 Water Act also establishes that the Hydrographic Confederations are in charge of making HPD uses compatible with environmental preservation and river minimal flow guarantee. Apart from that, the National Hydrological Plan, adopted in 2001, has introduced a new ecological tax, called the diversion tax, that aims at covering the economic and environmental costs of water diversions assumed by the basin donors.

In relation to fishing uses, few regulation has been approved since the adoption of the 1942 Fluvial Fishing Act. This act mainly aims at protecting some fish species without affecting industrial uses and adjusting fishing periods to the characteristics of each river and each species. Later, during the fifties, conservation issues start being introduced into the legislative agenda. As a matter of fact, several State regulation which is adopted along this period focuses on species and water volumes protection. Along the nineties, such regulative approach is also transferred to the regional level and several protection regulations are adopted in most of the Autonomous Communities.

Irrigation represents 80% of Spanish water consumption. However, until the late nineties not many modifications are introduced into the related regulative system. The regulations adopted after the 1932 Agricultural Reform Act have focused on the granting of loans, subsidies, benefits and credits to farmers in order to maintain and enlarge farm exploitations, at it is only in 1995 when the modernisation of farms is regulated. The nature of agricultural regulation principles also account for the prevalence of an hydraulic policy based on the promotion of irrigation development along the fifties and the sixties. New irrigation plans, subsidies and benefits are adopted in order to promote the creation of new irrigated lands. In 1996, the Government approves the first Irrigation Plan aiming at being an instrument for the consolidation of the Spanish farming system oriented towards an efficient use of water resources and cross-regional balance. The plan, however, is not a source of law but just a programmatic document with a temporal horizon fixed in 2005. In the short run it is to be modified by a second National Irrigation Plan. Apart from that, the Strategic Plan for the Conservation and Rational Use of Spanish Wetlands has introduced one of the first constraints to irrigation expansion as a way of protecting these natural areas from water drainage caused by farm uses.

Drinking water is regulated by the 1985 Water Act (and its developing regulation) as a private use of water that requires an administrative concession. In addition, the law establishes that

this use will generally be the prevailing one in case of drought periods. The adoption of EU environmental regulation on drinking water quality has been an important turning point.

Regarding water treatment, water waste disposals start to be regulated with the creation of the *Comisarías de Aguas* in 1959. From that moment, several regulations establish rules for waste disposals reutilization and measures oriented to reduce water pollution. Later, the 1985 Water Act represents a turning point relating water treatment as it is the first one at assuming water quality as a main objective and introducing several measures and instruments (waste concessions and taxes) in order to achieve this aim. As a matter of fact, this Act establishes a waste tax to be destined to the improvement of environmental conditions in each river basin, and introduces new management instruments including collaboration agreements between private enterprises and the river basin administration for waste disposals control and treatment. In addition, following 1985 Water Act principles, a National Plan for Waste Water Sewerage and Purification is approved in 1995. The plan focuses on reducing industrial waste disposals by strengthening pollution control tasks and by providing incentives to transform industrial production processes. More recently, the 1999 Water Act has strengthened the 1985 Water Act regulations in order to adequate them to the EU quality standards and legislation.

In addition to the uses already explained, hydraulic works also constitute a central instrument of water policy and planning in order to satisfy the increasing water demands and uses. Two Hydraulic works Plans are adopted in 1939 and 1961 and some regulation works adopted along the nineties have been declared of “general interest”. It is remarkable that the 1985 Water Act includes two financing instruments (the regulation tax and the water use rate) aiming at compensating the State for the investment on hydraulic works, and to pay for the exploitation and maintenance costs of such works. In practice, users who directly or indirectly benefit from the construction of regulation works and/or use water resources made available by such works, are the ones who have to pay these taxes. The 1999 Water Act modification includes a general regulation of hydraulic works of general interest, which was missing in the previous legislation.

4. Policy design and policy changes

4.1. Policy design

As it was pointed out bellow, along the 130 regime period policy design has undergone numerous and important transformations leading to changes to water regime as a whole. In brief, changes on property rights schemes lead to deep changes of water regime, while changes on policy design lead to incremental and progressive changes of intensity with which the main features or the regime appear. Six main phases in which policies introduce transformations in water regime can be identified.

Phase 1: Emergence of a simple water regime: low policy profile (1866-1898)

The 1866/1879 Water Acts formally regulates property rights and uses but attributes few policy powers to the State administration. Beyond administrative and policing tasks, water regime is not deployed at a policy or planning level. The lack of policy dimension, however, starts changing at the turn of the century as the newly created water regime shows some signals of crisis. The 1898 social and economic crisis precipitated by lost of the last of the Spanish colonies (Cuba, Puerto Rico and the Philippines), provokes a change in the perception of national problems. The crisis has devastating effects on agriculture, increases

poverty and raises water demand. As a result, governments, which are embedded of the influential ideas of the *regeneracionist* intellectual movement, become increasingly convinced of the need to promote State investment in hydraulic projects as a major strategy to play down the crisis and move towards the modernisation of the country.

Phase 2: Transition from simple to complex regime: failed attempts of planning (1898-1953/59)

In the context of the social and economic crisis of the turn of the XXth century, for a few decades the national government attempts to design the planning and exploitation of water resources as a way of generating important benefits on agriculture, farms, industry and forest exploitation were expected. Along the first decades of the XXth century, successive governments attempt to conduct hydraulic reforms, including: the Gasset hydraulic works plan; the parcelation policy in 1907; the creation of the Hydrographical Confederations in 1926 by giving a river basin focus to hydraulic policy; and the agricultural reform and the hydraulic works plan launched by the Republican government in 1931 and 1933 respectively, amongst others. In spite of the ambitions of these initiatives, they failed mainly due to the lack of financial investment, the difficulties of conducting complex agricultural reforms, and the uprising of the Civil War in 1936. Some other reforms addressed to improve the irrigation systems are designed by the Francoist regime in the forties and early fifties. While some improvements are achieved, the improvement of both hydrological and agricultural policies are mostly frustrated due to inertia inherent to the autarchic regime.

Phase 3: Evolution to a complex regime: extensive water-supply policy (1953/59-1978)

The 1953 economic reforms and, more particularly, the so-called 1959 Stabilisation Plan, allows for certain balance of the national economy (price stability, balanced exchange rate and foreign trade liberalisation) and puts an end to a fully autarchic economy. The resulting situation has direct consequences on the social and economic structures as leads to an increase of industrial development, an unprecedented push of tourism, a rise in consume, an increase of the standard of living and a demographic boom. These changes have important impacts on water regime. Water demands increase and become heterogeneous in their uses (agriculture, industry, tourism, population supply, energy production and recreation, amongst others), and water over-use along the sixties and seventies puts water scarcity higher and higher in the political agenda. In this sense, the problem definition stresses that an increase of water demands is legitimate and necessary for the modernisation of the country. State response consists of adopting strong supply-oriented policies through the promotion of subsidised large infrastructures. It can be put, then, that the increase of water demand, the heterogeneous over-uses and water scarcity, all of which take place in a context of authoritarian and paternalistic regime, partly account for the change of regime into a highly complex one in the seventies. The perception of a crisis in water regime at the end of this decade, together with the upcoming of democracy, push changes in the water regime.

Phase 4.- Consolidation of a highly complex design: some policy contradictions (1978-1985/19866)

The democratisation of the Spanish political system has an important impact on water regime in terms of distribution of powers and regulation. The Constitution creates a decentralised model in which powers are distributed between the State, Autonomous Communities and, to a lesser extent, municipalities, being the former the one holding most powers. State powers

include legislation, administration and concession of water resources and hydraulic uses when waters flow through more than one Autonomous Community. The Constitution also establishes the need to promote the rational use of natural resources, protect and improve quality of life and defend and restore the environment. While the constitutional provisions have direct consequences on water management, for instance, by giving an environmental perspective to natural resources exploitation, water policy presents some contradictions as the new constitutional order co-exists with the 1866/1879 Water Act until 1986. This circumstance takes place within a context of increasing complexity, which was nurtured by the fragmentation of water regime, the increase of social participation, the increase of water demands and its heterogeneous over-use, and the deep economic crises along the seventies and early eighties. As a result, a process of revision of water regime is urged and the reform of water legislation is put high in the political agenda. The process gives rise to the adoption of the 29/1985 Water Act. In addition, the Spanish membership to the European Community in 1986 has a progressive impact on water policy design.

Phase 5.- Transition from a complex to an integrated regime: the path towards a multi-sectoral perspective on water policy? (1985/86-2001)

The adoption of the 29/1985 Water Act in 1985 and the Spanish entry to the European Community in 1986 represents a change in water regime, as both events transform the regulatory framework and introduce new elements of complexity. After 1985, water regime is characterised as one of transition from a complex into an integrated one. As in previous phase, the increase of water demands and the heterogeneous over-use of water, on the one hand, and the multilevel nature of the process —due in part to the Spanish membership to the European Community—, on the other, reinforce the complexity of water regime. The period in which these transformations occur coincides with some periods of strong drought, a fact that put the water issue higher in the national agenda.

The reform of water regulation is based on a reinforcement of State intervention according to a global and systematic perspective that emphasised the planning approach. In addition, some ideas and principles included in the 1866/1879 Water Act, which consider water as a production factor and a consumption good, become less applicable and valid. Apart from the traditional perspective on water regulation —the one focusing on the distribution of water (quantity) among different and sometimes conflicting uses— new approaches and criteria start to be taken into account: sanity, water resources quality preservation, civil protection, environmental values and territorial planning, among others. This was so as the 1985 Water Act aims at adapting the policy and legal regime to a new social, economic, technological and political context and moves towards a more integrated regime: it conceives water as a unitary resource, introduces the idea of hydrological planning, does not distinguish between surface and ground waters, extends the idea of public domain with the objective of guaranteeing the treatment of water as a unitary resource, introduces the need to adopt environmental protection measures and guaranteeing water quality, and promotes the participation of users and the affected interests in the process of policy formulation and management.

In spite of the objectives marked by the 1985 Water Act, the type of regime along the late eighties and nineties can be characterised as a transition one from a complex to an integrated regime. While the level of complexity increases, the move towards a more integrated regime is slow and troublesome. Two main reasons account for it: policy fragmentation and plurality of interests. The first reason relates to the politico-administrative fragmentation of water regime. On the one hand, it is horizontally fragmented as, given the

increasing complexity, new issues related to water policy (i.e. water quality) emerge and lead to the creation of new administrative units at the State level. The creation of the Ministry of Environment in 1996 could be interpreted as a signal of transition into a more integrated regime, as this department holds powers on both environmental protection and water policy. On the other hand, the policy is vertically fragmented due to the imbrication of both supra and sub-national actors and arenas. Even though the Autonomous Communities have limited formal powers on water policy, their presence as informal actors in the process is reinforced.

The failure to adopt a National Hydrological Plan along the nineties due to territorial, social and institutional conflict, together with the increasing perception of the need to reorient water policy towards more efficient approaches lead to the elaboration of the Water White Book in 1998. This document, which is widely consensual, has two main contributions. First, it offers a detailed description of the situation of the Spanish water problem and the causes of the crisis. And second, it establishes the principles for a new water policy and prepares political, bureaucratical and social agents for the changes coming from the project of Water Directive. As a direct consequence of the White Book, the Spanish Parliament modifies the 1985 Water Act in 1999.

Phase 6.- Integration or fragmentation: unclear moves (1999/2001 onwards)

After adopting the White Book, the government approved a National Hydrological Plan in 2001. The plan introduces some measures which tend to a policy of integration, prevailing the protection of the natural resources over the productive and social water uses. As example, the possibility for the Central Government to declare some rivers or water masses as reserved in order to keep their natural being, the compulsory elaboration of special droughts plans and an Action Plan for underground waters. However, the plan has been intensively contested for not respecting the ideas prescribed by the White Book and for being elaborated without integrating environmental groups, the scientific community and the Autonomous Communities having territorial interests. More particularly, the plan rests upon a water diversion policy, and in particular, it regulates the Ebro basin diversion of water to the Júcar (Valencia), Segura (Valencia and Murcia) and internal Catalonia basins. The plan has been very contested by environmental groups, the scientific community and governments of the Autonomous Communities of the basin donors (Catalonia and Aragón). There are several reasons argued against the plan. First, it is based on an old-fashioned water culture of the diversion. Second, it is contradictory with the 1999 Water Act as it has not waited for the results of contracts for the cession and the water exchange banks in terms of efficiency and increasing available resources, nor for the possibilities of water desalination, reutilization of sewerage water or the results of the implementation of a water saving policy. Third, it is based on an overvalued urban water demand of the Mediterranean area (Júcar, Segura and internal Catalonia basins). Fourth, it does not take into account prescriptions from the National Irrigation Plan and its recent modifications, which determine the real needs of agricultural uses of water. And finally, it does not respect the 2000/60/CE Directive idea of having the basin as the unit of the water management (see Arrojo, 2001; Gobierno de Aragon, 2001). As a conclusion, the National Hydrological Plan seems to move towards two different and contradictories directions. On the one hand, it goes further in the change of perspective by considering water not just for productive and social uses but also as a part of the ecosystem. On the other hand, this consideration seems to be applicable at a micro scale and not at a regime level, as diversion policies prevail over policies aiming at saving water or increasing water availability.

4.2. Policy changes

Some of the most outstanding changes undergone by Spanish water policy design along the last years include the involvement of multiple of levels of governance, the multiplication of the number and type of actors involved in the policy process and the redefinition of policy networks, the inclusion of various policy perspectives and objectives in the agenda, and the adoption of a mix of policy instruments.

4.2.1. Variety of levels and scales of governance

One of the factors having altered Spanish water policy along the eighties and nineties is the involvement of a variety of levels and scales of governance, including the European, the national, the regional and, to a lesser extent, the local ones, being their mutual interactions increasingly stronger. The most significant change of scale has probably resulted from the Spanish membership to the EU, which has had at least three kinds of impacts. First, the European Union has led to the transformation of the national regulatory framework by introducing *ex novo* standards on water quality, flora, fauna, habitats, and environmental impact assessment, among others. Second, the EU has become an institutional arena of discussion and negotiation on water policy, as it has been demonstrated when the actors opposed to the National Hydrological Plan have brought the issue to the European Commission and the European Parliament. And finally, the EU has become a resource available to national administrations in terms of financial resources (Structural Funds and Cohesion Fund) for constructing infrastructural and environmental projects (i.e. hydraulic works, purifying plants, and so on). In brief, the involvement of European, national, regional and local institutional and extra-institutional actors in the policy-making processes has reinforced actors' mutual dependencies and the multilevel structure of water policy.

4.2.2. Variety of actors in the policy network

Along the eighties and nineties, new actors having different interests and problem perceptions have entered the policy network. These actors operate at the institutional, territorial and social arenas. Regarding the institutional arena, the traditional central role played by the General Direction of Hydraulic Works (Ministry of Public Works), which used to be a privileged actor in the policy community, was weakened along the eighties for the fragmentation of its traditional powers into different units and ministries and a reverse process of concentration of powers at the Ministry of Environment, which was created in 1996. Apart from that, the traditional dominance of the General Direction of Hydraulic Works was weakened when the Ministry of Economy and Finance opposed the infrastructural plans proposed by the Ministry of Public Works in 1993 and 1994 for considering them as being economically unfeasible. Regarding the territorial arena, some Autonomous Communities have become important actors in the governance structure as they have firmly opposed the diversion of water from their river basins (i.e. Castilla-La Mancha and Aragon) while others have demanded it (Valencia, Murcia and Andalusia). The former argue they need what they consider their own water to promote social and economic development, while the latter have appealed to principles of interterritorial solidarity. Finally, irrigation communities and environmental groups are the main actors operating at the social arena. The former have traditionally had their interests represented thanks to a kind of alliance with the Ministry of Agriculture, while the latter have gained cohesion and certain saliency in the policy process, especially along the nineties. Environmental groups flatly opposed the 1993 and 1994 national hydrological plans drafts, as well as the plan adopted in 2001. This fragmented scenario, and the need to co-ordinate supranational, national and subnational interests, has stressed the tendency to a multilevel and multi-sectoral type of governance. This has been

particularly so since the nineties as a need to both cope with EU standards and integrate territorial and social interests in the policy processes.

4.2.3. Variety of policy perceptions and objectives

Along the eighties and nineties there has been a change in problem perceptions regarding water issue. Water scarcity has increasingly been perceived as a national problem, as it is reflected by the 1985 and successive water acts. In addition, water quality and environmental protection has increasingly become higher in the policy agenda. The factors leading to a change of problem perceptions and objectives include the Spanish membership to the EU, the subnationalisation process and the entrance of environmental NGOs in the policy arena. Changes in the problem perceptions become stronger partly as a result of the extremely drought periods in the mid nineties.

4.2.4. Variety of policy instruments

According to the new approaches to water management, a mix of policy strategies and instruments has recently been promoted: stringent regulation, water markets and investments in hydraulic works. The regulatory system becomes more stringent in the 1999 modification of the 1985 Water Act, but at the same time it is more flexible as it introduces market instruments (that is, the possibility to buy and sell water). In addition, the national hydrological plan proposes water transfers between river basins, implemented through large infrastructure projects, as the main strategy to deal with water scarcity. This strategy has to be completed both with compensations to those river basins ceding water and with an improvement of irrigation infrastructures.

5. Concluding remarks: moves towards integration?

Along the last 130 years, water regime has undergone deep transformations both regarding property rights and policy design. The emergence of the regime comes with the adoption of both the 1866/79 Water Act and the 1889 Civil Code, which regulates the status and uses of water. While this regulation is operating until 1985, uses of water have increased and the scope of uses regulated has expanded. To this respect, the main uses of water considered in the XIXth century legislation are mostly reduced to agriculture and population supply. Along the XXth century, and especially after the fifties, the number and type of uses dramatically increases due to the quick development of industry and the tourist sector, whereas along the eighties and nineties, environmental protection and nature conservation become new and important uses. The main consequence of the increase of the number and type of water uses is the over-exploitation of the resource, which reaches dramatical levels in periods of extreme scarcity. All these factors make the regime more complex and lead to an extension of the scope of regulated uses (for instance, irrigation, fluvial fishing, water treatment and wetland protection). However, as the scope of regulated uses extends, the policy coherence shows a tendency to decrease, at least until the adoption of the 1985 Water Act: regulations and policy decisions are adopted with low levels of policy co-ordination and by close policy communities (irrigation is the most significant example). Apart from that, the property rights structure allowed for the co-existence of public and private waters, the latter of which cover abusive practices. The 1985 Water Act it attempts to introduce some components of integration both regarding the uses regulated and property rights. Regarding the former, it integrates several uses —irrigation, water treatment, drinking water, hydraulic works and living, living environment and nature protection— within a common legal framework.

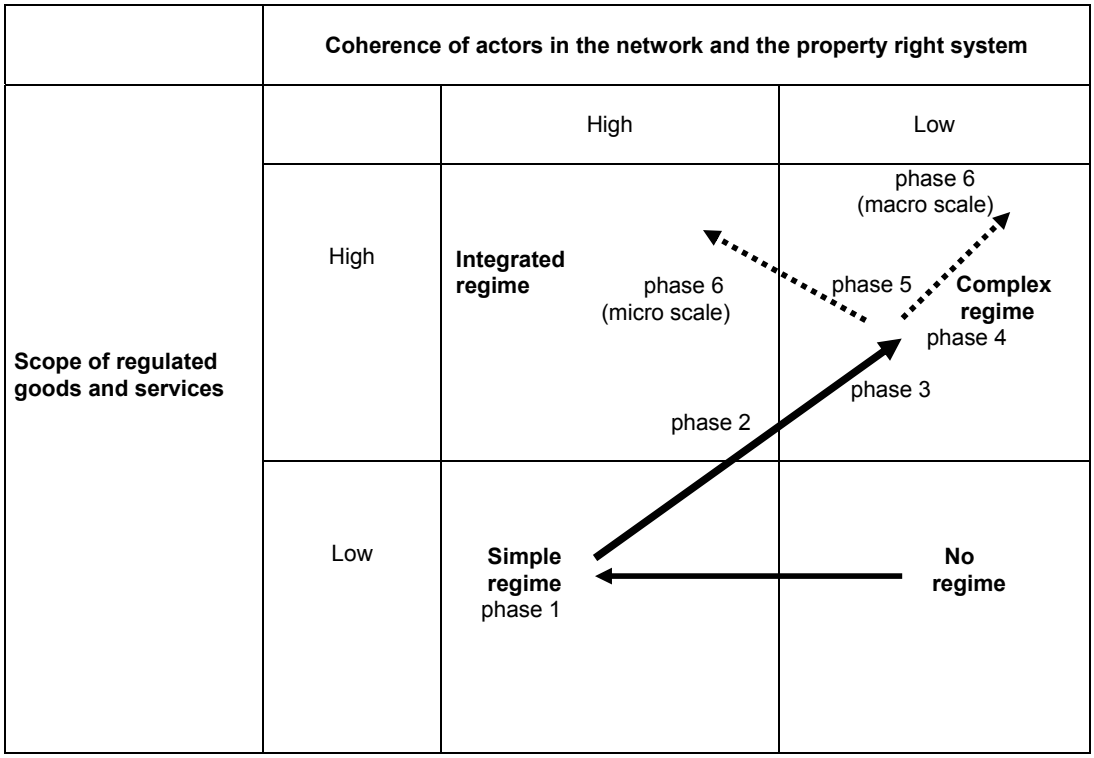
Regarding the latter, it marks a turning point in water regime by stating that all continental (surface and ground) waters are of public domain, even though it establishes transitory processes that in practice leave the doors open to keep many situations unchanged. However, the level of coherence (between users, policies and the network structure and property rights) remains low as sectoral inertia prevail and the moves towards a more integrated regime is slow and troublesome. Two main reasons account for it: policy fragmentation and plurality of interests. The first reason relates to the politico-administrative fragmentation of water regime. On the one hand, it is horizontally fragmented as, given the increase of the level of complexity, new issues related with water policy (i.e. water quality) emerge and lead to the creation of new administrative units at the State level. The creation of the Ministry of Environment in 1996 could be interpreted as a signal of transition into a more integrated regime, as this department holds powers on both environmental protection and water policy. On the other hand, the policy is vertically fragmented due to the involvement of both the European and regional policies: the European Union introduces integration criteria with the 1998 Framework Directive on Water and the Autonomous Communities are increasingly involved as formal and informal actors in the policy process in an attempt to defend their territorial interests. Regarding the second reason, a plurality of interests enter the policy arena and openly clash with the traditional approaches on water policy. Table 7 summarises the main trends characterising the six phases identified in Spanish water regime.

Table 7: Water regime transitions

PHASE 1 **1866/1879 - 1898**	**PHASE 2** **1898 – 1953/59**	**PHASE 3** **1953/59 – 1978**	**PHASE 4** **1978 – 1985/1986**	**PHASE 5** **1985/1986 – 1999/2001**	**PHASE 6** **1999/2001 →**
SIMPLE	SIMPLE → COMPLEX (transition)	COMPLEX (low complexity)	COMPLEX (high complexity)	COMPLEX → INTEGRATED (transition)	INTEGRATED or FRAGMENTED ??
PR Property and use rights are regulated following liberal principles **PD** –	**PR** Property rights unaltered **PD** Deep social and economic crisis Need to promote large hydraulic infrastructures as a means to modernise the country (regeneracionism) Administrative reforms Failed agricultural reforms	**PR** Property rights unaltered (but need to review this issue) **PD** Economic and demographic boom Increase of water uses and rivalries Increasing perception of water scarcity as a national problem Hydraulic plans to supply for the increasing demand Policy community	**PR** Property rights unaltered **PD** Democratisation and decentralisation Water scarcity as a national problem Perception on the need to review property rights regime Policy community weakening	**PR** Public domain and private waters (1985 Act) **PD** Water scarcity as a national problem Territorial rivalries vs. interterritorial solidarity Environmental protection and water quality Regulation and hydraulic projects European Union Multilevel governance Multi-actor governance (environonm. groups, regions) Alternative problem definitions and perspectives	**PR** Water markets (1999 Act) **PD** Water scarcity as a national problem Water policy based on territorial diversions Environmental protection and water quality European Union Multilevel governance Multi-actor governance (environonm. groups, regions) Alternative problem definitions and perspectives: sustainability and efficiency Policy mix: regulation, markets and hydraulic projects

The failed attempt to adopt a National Hydrological Plan in 1993 and 1994, and the social and territorial opposition surrounding the adoption of the National Hydrological Plan in 2001 reveal an absence of internal and external coherence of the regime. The failure to adopt this planning instrument in the early nineties due to territorial, social and institutional conflict, together with the increasing perception of reorienting water policy towards more efficient and market-oriented approaches, lead to the modification of the 1985 Water Act in 1999. Two years after, a definite a National Hydrological Plan, which aims at integrating River Basing Hydrological Plans as well as regional and environmentalists views, is presented by the Minister of Environment in 2000. The 1999 Water Act introduces important changes on water regime —mainly by the regulation of the so-called water markets— and reinforces environmental concerns in a way to preserve the resource and introduce efficiency criteria. In spite of this, the National Hydrological Plan is strongly based on huge inter-basin transfers of water as a way of redistributing water between the Spanish territory. In this way, the plan does not face the scarcity problem by adopting efficiency criteria based on the rationalisation of its use and the modernisation of irrigation systems, but by constructing large infrastructures having an impact on fluvial and non-fluvial ecosystems at a large scale. In short, the efficiency and environmental criteria inspiring the text of the 1999 Water Act, which might lead to more efficient and sustainable uses of water at a local scale, is reinterpreted in such a way by the National Hydrological Plan that may lead to unsustainable uses of water as criteria are adopted at a macro scale. The limited internal and external coherence of the regime as resulted from the adoption of the National Hydrological Plan is also reflected at the network level. While the 1998 White Book on Water was adopted in a highly consensual fashion, the National Hydrological Plan has been adopted with the opposition of some Autonomous Communities, some political parties, environmental groups, the affected irrigation communities and the vast majority of the scientific community. As a conclusion, while after 1985 there are some signals of integration of the regime, policy events pose uncertainty on the real extent of integration. Tables 8 summarises the evolution and main trends of each of the stages of Spanish water regime.

Table 8: Evolution of Institutional Resource Regimes



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EUWARENESS is a research project on **European Water Regimes and the Notion of a Sustainable Status**. Research institutes from six European countries (Netherlands, Belgium, France, Spain, Italy, Switzerland) have been cooperating in this two year project (2000-2002). The project is supported by the European Commission under the 5th Framework Programme, and co-ordinated by the University of Twente in the Netherlands.

The EUWARENESS-project has focused on sustainable use of water resources by means of integrated water management. It aims to contribute to the implementation of the EU Water Framework Directive. A better understanding is needed of the dynamic relationships between various conflicting uses of water resources, the regimes under which these uses of water resources are managed, and conditions generating regime shifts towards sustainability. The EUWARENESS-project studied the long term evolution of 6 national regimes, and also - more in depth - the specific regime transitions of 12 water basins across Europe during the last decades. Important issues are the participation of users, redistribution of property rights among users, the coherence between water rights and water policies.

More information: www.euwareness.nl

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