

PART II

Chapter 4

Multi-level environmental governance: Water

This chapter examines Italy's water management policies from a multi-level governance perspective. It presents the main trends in water quality and quantity and in the development of water-related infrastructure, including regional differences. It provides insights on the evolution of policy, legal and institutional frameworks for water management, along with governance challenges in managing water resources. The chapter highlights the interconnection between governance and financing of water management and the way they can be addressed jointly through the mitigation of territorial and institutional fragmentation, better management planning, further engagement of stakeholders, improvement of the information base, and wider use of economic instruments for river basin management. Finally, this chapter presents efforts to improve Italy's water supply and sanitation sector and to strengthen its financial sustainability.

Assessment and recommendations

Despite relatively high average annual rainfall, freshwater availability per capita in Italy is one of the lowest among OECD countries. This is due to high evapotranspiration, rapid run-off and limited storage capacity. Uneven distribution of water between seasons and regions reinforces the complexity of water management. While northern Italy enjoys an abundance of water, the South experiences water shortages which are compensated by the increasing use of groundwater (often above the replenishment rate) and water transfers between regions. Overall, Italy is considered to be a water-stressed country, and competition for water resources among alternative uses is likely to increase in the future. Climate change will exacerbate these pressures.

Pollution pressures have lessened in the last decade due to improved pollution prevention and control, and, especially in the aftermath of the 2008-09 crisis, reduced economic activity. However, water resources still receive heavy pollution loads from industry, households and agriculture, particularly in the industrialised and densely populated North. Polluted water is an additional supply constraint. More than one-third of surface water bodies and 11% of groundwater bodies will not meet the EU Water Framework Directive (WFD) objectives for ecological status by 2015.

Water management in Italy was subject to significant reform before 2000. This included the pioneering introduction of a river basin approach, and the consolidation of water supply and sanitation services. Despite these advances, water governance remains overly complex, largely emergency driven, and oriented towards short-term problem solving. To address current strategic and legal uncertainties, there is an urgent need to formulate a strategic vision for the water sector. This vision should include: more effective multi-level governance; better policy coherence and planning aligned with national and local priorities; more systematic use of economic instruments; a better alignment of river basin authorities with hydrological boundaries; comprehensive and consistent information systems; and better financing and regulatory frameworks for service provision. The process of developing this vision should engage a broad range of stakeholders from national and subnational levels in setting objectives and developing innovative solutions.

In the 2000s, transposition of the EU WFD provided a further push for consolidating water-related legislation, streamlining water management institutions and increasing water-use efficiency. However, the measures implemented have further complicated the water governance system. Proposals were made in 2006 to replace river basin authorities with eight river basin districts to implement some of the main provisions of the WFD. However, they were blocked by interest groups on various grounds, including not always appropriate consultation with regions. The arrangements put in place by the government using emergency powers made the governance arrangements even more complex, with some river basins managed by multiple authorities. The river basin management plans that were subsequently produced to implement the WFD reflected the institutional uncertainty and provided little value-added compared to river management plans prepared by the regions.

Building on earlier reforms, there has been a substantial consolidation of water service providers. Following the designation of optimal territorial areas – ATOs – the number of water utilities was reduced from more than 8 000 to 115 over the last 15 years. This has helped achieve economies of scale, improve planning, and, in some cases, establish the operation of utilities on a more commercial basis. However, the governance of the water supply and sanitation sector remains weak and is characterised by uncertainty and ambiguity. The authorities established to oversee ATOs and utilities – AATOs – have lacked the means to effectively control water service providers. The contracts between AATOs and utilities were, in many cases, poorly structured, creating uncertainties about interpretation and conflict resolution. Participation of local representatives in both AATOs and water utilities has created conflicts of interest. Efforts to more clearly separate water utilities and municipalities have stalled. Measures to abolish AATOs were introduced but uncertainty about the institutions that should replace them has resulted in many continuing to operate. Further uncertainty has been created by the 2011 water referendum, which significantly reduced the role of the private sector. Uncertain and weak governance arrangements have resulted in poorer water service provision in Italy than in many other OECD countries (for example, unaccounted for water is relatively high, and access to efficient wastewater treatment infrastructure is relatively low).

A body that regulates tariffs was established in the 1990s and reorganised following adoption of the 2006 Environmental Code. However, this body remained weak, with no executive powers or capacity. As a result, tariffs were set at the level of ATOs. This in turn resulted in tariffs being set at levels which did not cover the costs of maintaining or renewing infrastructure, and a lack of transparency which created barriers for new market entrants. The recent allocation of water service oversight functions to the National Gas and Electricity Authority (AEEG) is a potentially positive step. Drawing on the experience of managing other utilities, this new regulatory framework is expected to strengthen the financial management of water utilities, including by: reducing regulatory and legal risks, particularly in areas of the country where such risks are considered high by financial markets; further promoting economies of scale and the wider use of innovative financial products that could help to spread the financing of water infrastructure over the lifetime of the assets; and introducing competitive benchmarking of the performance of water utilities.

Italy has applied a wide range of economic instruments for water management. However, the way they are implemented has not always led to more efficient use of the resource, and fails to generate the revenue needed to invest in infrastructure. For water supply and sanitation, although tariffs have increased, they are still much lower than in many other OECD countries. Substantial amounts of water used are not billed, and in several regions the collection of payments for water use remains low. Concerning the management of water resources more generally, instruments in use include water licenses, water allocation quotas, and various charges for water use and pollution releases. However, water abstraction charges remain low and exemptions are numerous. The ongoing reorganisation of water management and the revision of river basin district management plans provide an opportunity for introducing a comprehensive reform of water-related economic instruments and underline the need for reform of the wider legal framework. Responsibility for setting water charges and using the revenue generated should be more closely linked with river basin district planning and management.

Monitoring and data collection related to water quality and quantity remains a challenge at the national level and in several regions. In the past decade, and under the

leadership of the Environment agency (ISPRA), Italy strengthened its capacity to collect hydro-geological, physical and meteorological data in order to support real time monitoring and standardise methodologies across the country. However, there are still substantial information gaps, especially regarding water abstraction, at the regional and local level. Economic analysis is still poorly woven in the development of water policies. ISPRA and the Ministry of the Environment, Land and Sea have very few staff dedicated to the water economy. This lack of capacity could be bridged by drawing more on relevant expertise in academic institutions.

Recommendations

- Develop a common and long-term strategic vision of how the national government can most effectively support regional and local authorities in managing water resources, taking account of territorial disparities in resource endowments, policy priorities and capacities.
- Streamline institutional arrangements for managing river basins, and strengthen their efficiency and effectiveness, by aligning them as far as possible with water catchment areas and establishing one authority in each district; strengthen their planning capacity and ensure co-ordination with national and local priorities; ensure that adequate provision is made for stakeholder and public participation in decision making, and for transparency and accountability.
- More systematically apply economic instruments (abstraction and pollution charges, and user fees) to support the effective management and sustainable financing of water resources at the level of river basins, including to finance measures for adaptation to climate change.
- Ensure that the newly appointed water regulator has sufficient human and financial capacity to carry out the key regulatory functions for the water supply and sanitation sector, including to promote sustainable cost recovery and to benchmark the performance of water utilities.
- Strengthen the collection, analysis and dissemination of information on the economic and financial aspects of water resources management; strengthen the analysis of the drivers of, and trade-offs associated with, competing uses of water.

1. Key environmental trends

1.1. Water availability and quality

Italy's average annual rainfall of 1 000 mm/year is well above the European average. However, due to high evapotranspiration, rapid run-off and limited storage capacity, average freshwater availability for the population (2 900 m³/per capita) is one of the lowest among OECD countries.

National data on freshwater abstraction are only partially available, but estimates indicate that total abstraction decreased by about 10% during the last decade. Despite this decrease, the rate of gross freshwater abstraction per capita is still high, and above the OECD average (Reference I.C). At a rate of about 30% of total available renewable water resources abstracted, Italy is classified as a medium-high water-stressed country according to the OECD definition.

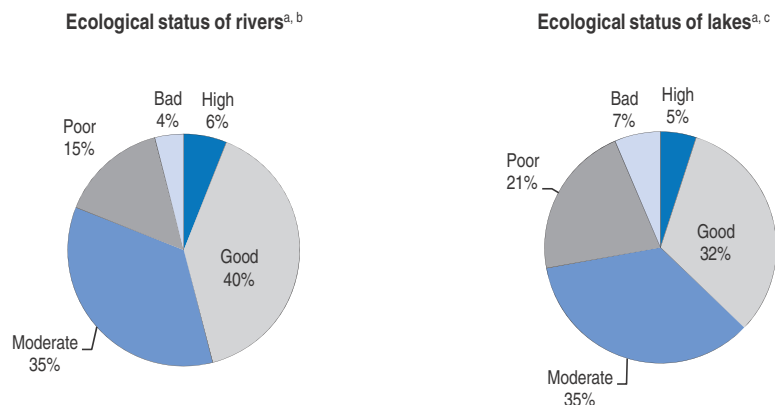
The agricultural sector remains the main water consumer, using nearly 50% of total water abstracted, mostly for irrigation.¹ Water demand for agriculture has decreased in the last decades, while future demand is forecast to stabilise at around the present level. About 19% of water is used by households,² 17% by industry³ and 15% for cooling purposes in energy production.⁴ Water abstraction for public water supplies, mostly from groundwater, has increased. It is the highest per capita among EU countries and is well above the OECD average. Water use by industry has declined since the early 1990s, but demand for water for cooling in energy production has increased.

Groundwater remains the main source of water for public supplies and industry. Signs of overexploitation have been recorded in the lower reaches of the plain of the Po River and around Venice due to industrial and agricultural uses as well as gas and oil extraction. In some regions the use of groundwater for irrigation above recharge rates is undermining the economic viability of farming. In the southern part of Apulia and in the coastal plains of Campania, Calabria and Sardinia groundwater withdrawal is the main reason for intrusions of saline water.

Average water quality in rivers has been stable, with class 2 (good) and class 3 (moderate) dominating. There has been a trend towards a decrease in class 5 (bad). In 2009, on average 46% of Italian waterways were classified as class 1 (high) or class 2 and 81% were in classes 1 to 3. About 72% of lakes were in these three top classes (Figure 4.1).

Figure 4.1. **Water quality**

2009



a) In evaluating the data, it should be taken into account that the number of monitoring stations varies across regions.

b) SECA index (Index on Ecological Status of Waterways). Excluding data from the following regions: Piedmont, Friuli-Venezia Giulia, Veneto, Umbria, Calabria, Campania and Sardinia.

c) SEL Index (Ecological Status of Lakes). Data are based on results from 140 monitoring stations in 12 regions; most of the lakes are located in Northern Italy.

Source: ISPRA (2010), *Environmental Data Yearbook 2010*.

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For coastal bathing waters, the rate of compliance with both mandatory values and guide values increased between 1990 and 1999 and stayed relatively stable at above 90% in the 2000s. The number of bathing sites closed (i.e. sites where swimming was banned) during the summer season increased from 125 (2.6%) in 2002 to 310 (6.3%) in 2009, but it fell to 33 (0.7%) in 2010. Closing of these sites has been linked to toxic microalgae blooming, which occurs in many coastal regions.

Low water quality is mostly associated with “hot spots” which occur, in particular, where medium or small streams drain areas with large urban or industrial centres. The concentration of industrial sectors with a heavy environmental impact (e.g. tanning and textile industries in the North and food processing in the South, or Mezzogiorno) is the most important cause of pollution. Approximately 70% of livestock rearing in northern Italy has a significant impact on water quality. The low level of wastewater treatment is also an important factor.

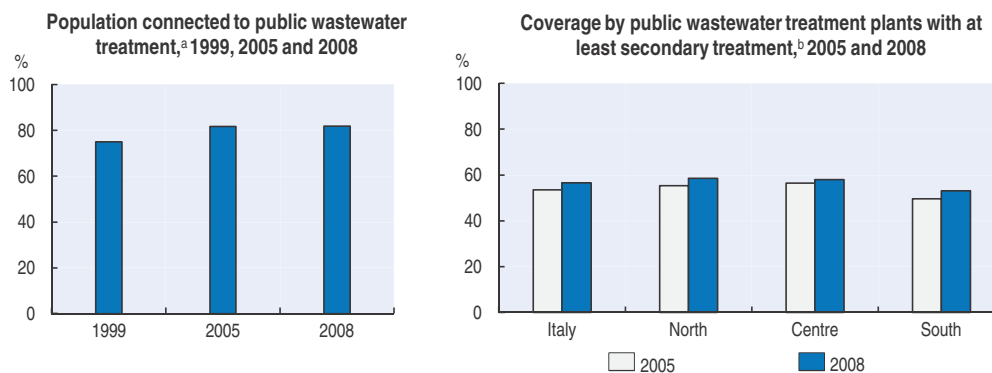
Although surface and groundwater quality has been improving due to the reduction of industrial pollution, investments in sanitation and better agriculture practices, analysis carried out in the context of preparing river basin management plans shows that 36% of surface water bodies and 11% of groundwater bodies will not meet the EU Water Framework Directive (WFD) objectives for ecological status by 2015, but rather in 2021 or 2027. Meeting these objectives will require increasing the efficiency of measures to control pollution from point sources (e.g. more efficient urban wastewater treatment in northern Italy and the extension of the network in the South) and reducing pressures from diffuse sources.

1.2. State of water supply and sanitation infrastructure

Italy has made progress in expanding infrastructure for water supply and for wastewater collection and treatment. In 2011, over 95% of the population had access to safe drinking water, with no significant differences across the country. However, supply networks experience a high level of non-revenue water, with the country-wide average at above 36%. Actual physical losses may be lower, as the data do not account for water not properly metered or paid for. Some estimates suggest, however, that illegal abstraction may account for between 4% and 20% of total water abstraction.

Progress in expanding infrastructure for collection and treatment of wastewater has been much slower. In 2008, 82% of the population was connected to public wastewater treatment plants, with around 60% of wastewater treated by advanced methods (Figure 4.2).

Figure 4.2. Population connected to sewerage and wastewater treatment facilities



a) Estimates referring to the population connected to the sewerage network and thus overestimating actual connection rates. Data may include some independent treatment; a breakdown by level of treatment is not available.

b) Based on data expressed in terms of population-equivalent of the domestic sector (excluding small, medium and large industry).

Source: MATTM; ISTAT (2009), *Censimento delle risorse idriche a uso civile*.

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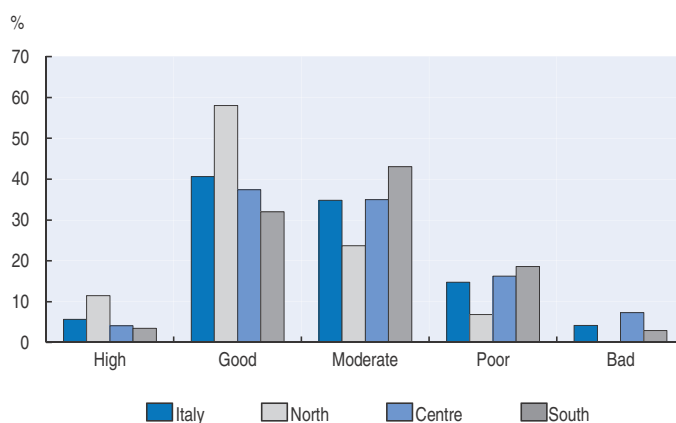
1.3. North-South disparities

Italy's water challenges vary across regions, as do climate and precipitation. Water availability is low on average, but the situation differs between seasons and regions. While the northern parts of the country enjoy relatively stable and abundant flows in watercourses throughout the year, southern Italy often experiences long periods without precipitation which result in droughts and water rationing, including for household use. From a hydrological point of view, river networks vary significantly. There are large river basins fed by the Alps in the North, characterised by an abundance of water, while there are many watercourses with irregular outflow paths within smaller basins along the entire arc of the Apennine Mountains. The river network is sparse in the South, especially in the region of Apulia. The surface water deficit has been compensated by the growing use of groundwater and water transfers between regions. For example, Apulia, which suffers from low precipitation, limited watersheds and over-exploited coastal aquifers, has signed water resources transfer agreements with neighbouring regions including Basilicata and Campania. Around 60% of water used in Apulia comes from water transfers.⁵

Groundwater is also distributed unevenly. Out of approximately 13 billion m³ of groundwater available annually, some 70% is located in the North in the alluvial plains, particularly in the Po River plain. Far lower volumes are available in the South. In some locations they are close to total depletion due to exploitation, mostly for agriculture.


The quality of surface and groundwater also differs across Italy. River quality is better in northern Italy, where 70% is class 1 or 2, compared to 44% and 35% in the Centre and South (including the islands) respectively. About 22% of rivers in the South (8% in the North) are classified as poor or bad quality (Figure 4.3). Groundwater quality shows significant regional differences. For example, in the regions/provinces of Trento, Bolzano, Liguria, Lazio and Marche, between 75% and 93% are classes 1 to 3; in Abruzzo and Umbria, 43% and 32% respectively are class 4 (poor). In Emilia-Romagna and Apulia, 57% and 52% of monitored points are class 0, denoting poor quality due to natural causes.⁶

Figure 4.3. **Ecological status of rivers^a**
2009



a) SECA index (Index on Ecological Status of Waterways). Excluding data from the following regions: Piedmont, Friuli-Venezia Giulia, Veneto, Umbria, Calabria, Campania and Sardinia. In evaluating the data, it should be taken into account that the number of monitoring stations varies across regions.

Source: ISPRA (2010), *Environmental Data Yearbook 2010*.

StatLink  <http://dx.doi.org/10.1787/888932772932>

Availability of resources for drinking water supply is threatened by qualitative factors in the North and quantitative ones in the South. Water supplies in the North rely substantially on underground resources that are increasingly contaminated due to agriculture and urban and industrial discharges. In the South, the main challenges are related to limited storage capacity and competition between different water users.

The southern regions face significant challenges with respect to water infrastructure. Water supply in many areas is inadequate, especially in Sicily. Around 20% of households in the South complain about an irregular supply of water from the tap, with rates as high as 27% and 32% in Sicily and Calabria, respectively. Peak summer demand due to tourism represents another pressure that adds to scarcity problems. At the same time, the rate of non-revenue water in the networks in the South is high, reaching 47% in Apulia. The share of the population connected to wastewater networks with treatment remains much lower in the South, at a level of 70%, and can be as low as 55% (e.g. in Sicily). The application of advanced wastewater treatment technologies is also low (Figure 4.2). All of Italy's regions face problems of aging infrastructure, but these problems are particularly acute in the South. The average age of treatment plants is 21 years in Apulia, but some sewerage networks can be 50 years old or more.

2. Evolution of the policy, legal and institutional framework for water management

2.1. Three major water reforms in two decades

By the turn of the century, Italy had developed a comprehensive policy and institutional framework for water management. This framework was shaped by two key reforms. The first followed adoption of the 1989 Water Resources and Soil Conservation Act, which helped to co-ordinate sectoral policies concerning water use, water pollution reduction and soil conservation. By establishing river basin authorities as the basis for water management, the Act placed Italy in the forefront of water reform among EU countries. The second wave of reforms followed the 1994 Galli Law, which helped mitigate territorial fragmentation of water and sanitation services through aggregation and rationalisation of the sector (Box 4.1).

Since 2000, the EU Water Framework Directive (WFD) has been a key driving force for the development of the legal, planning and institutional framework for protection and restoration of clean water across Italy, and for ensuring its long-term sustainable use. By transposing the WFD, Italy committed to meet a number of specific objectives, including its ultimate objective of achieving “good ecological and chemical status” for all Community waters by 2015 (Box 4.1).

Italy's 2002 Environmental Action Strategy for Sustainable Development echoed the objectives of the WFD and established a number of operational objectives, such as reducing leakage in water supply systems, reducing water consumption and re-using treated wastewater, particularly in agriculture, and reducing the pollution load, particularly through wastewater infrastructure development. Quantified, measurable and verifiable targets were also set for the eight regions of southern Italy and for the Ministry of Public Infrastructure in implementing the regional development policy and the use of EU Structural Funds.⁷ Specific water infrastructure targets set in 2007 included reducing the rate of water losses in the network from 38% to 25% and increasing the share of the population served by wastewater treatment plants from 57% to 70% by 2013.

Box 4.1. Italy's water reform: objectives and scope

The 1989 Water Resources and Soil Conservation Act (Decree 183/1989) set out the principles of integrated water resources management and developed a structured water policy, while reorganising competences between the central government and local administration. The Act was innovative in three main ways: it defined a river basin as an optimal area of intervention for an integrated policy of soil protection and water management; it created river basin authorities, which involved participation of both the state and the regions; and it made provisions for designing river basin plans. Under this new law, Italy was divided into 6 watersheds of national significance, 18 watersheds of inter-regional significance, and 20 watersheds of regional significance. The Serchio River was identified as an experimental watershed. Subsequently, basin-wide hydrogeological risk exposure plans were developed along with water quality protection plans, which identified the interventions and measures necessary to reach and maintain both the quality and quantity objectives for the water system. These plans were based on the concepts of “water balance” and “compatible water uses” with respect to the use priority and both the quality and quantity characteristics of different uses.

The 1994 Galli Law (Law 36/1994) aimed to improve the water supply and wastewater sector by establishing a clear-cut separation between service provision and public administration activities, and by improving overall efficiency through the gradual independence of the financial systems and operations based on income derived from water and wastewater tariffs (the polluter pays principle, and full cost recovery of both management and investment costs). The Galli Law reduced fragmentation of water services through the aggregation of utilities into larger multi-municipal units called Optimal Territorial Areas (Ambiti Territoriali Ottimali, ATOs), managed by autonomous authorities with a legal status. The reform provided for economies of scale and horizontal integration (one operator for each ATO), as well as economies of scope and vertical integration.

Adoption of the EU Water Framework Directive in 2000 prompted a number of legal and institutional steps that aimed to strengthen the water management framework and harmonise Italy's legal framework with EU requirements. Anticipating the WFD, the 1999 Water Quality Management Framework Act (Decree 152/1999) introduced the concept of quality objectives for water bodies, integrated supply and demand side policy instruments for achieving good ecological status for water bodies, and instruments for protection of groundwater. The Act also implemented the EU Wastewater and Nitrates Directives. Moreover, it required the regions to develop monitoring programmes for surface and groundwater in order to establish a coherent and comprehensive view of the physical, chemical, biological and hydrogeological status within each river basin.

The 2006 Environmental Code (Decree 152/2006) formally introduced the WFD requirements into Italy's legal framework. This legal text reclassified the entire national environmental legislation for pollution control, environmental impact assessment, and environmental decision making (Chapter 2). Part III defined water environmental standards and conditions for water resources management. In transposing the WFD, the Environmental Code divided the Italian territory into eight river basin districts (Serchio, Padano, Eastern Alps, Northern Apennines, Central Apennines, Southern Apennines, Sardinia and Sicily) and defined environmental and public health standards for water resources. It also introduced the principle of cost recovery and confirmed public ownership of coastal and internal waters and groundwater, which had been extended to groundwater by the Galli Law.

Adoption of the 2006 Environmental Code brought the Italian legal system closer to the requirements of the WFD. It introduced river basin districts, required economic analysis of water management and confirmed the full cost recovery principle. As a result, different regulations on water protection and water services are now contained in one legislative document. However, the reform process was spread over time and, to date, the implementation of some its provisions is pending mainly because of difficulties in introducing and using the new model of governance. Indeed, the river basin districts designed by the Environmental Code, which involved the state, the river basin district authorities and the regions, required more time for proper strategic planning and sequencing. Implementation of the reform was re-launched in 2009, but some of the steps envisaged by the WFD have not been implemented (Box 4.2). In March 2012, the EC delivered a reasoned opinion on Italy's failure to transpose a number of the WFD's articles correctly, including the lack of some measures to achieve the "good status" objectives set for river basins before the agreed deadline and the requirement to keep an updated register of protected areas. Italy's failure to reply in a satisfactory manner may lead to it being referred to the EU Court of Justice.

Several water-related legal acts adopted at the national level guided the national water management policy. However, implementation on the ground has been uneven due to environmental and socio-economic differences across the country, different approaches and lack of coherence across levels of government, as well as the absence of a coherent and common information frame of reference for decision makers. Poor monitoring and evaluation of water policy outcomes, and a mismatch between administrative responsibilities and available funding for public authorities to carry out their duties were also important factors. In addition, it has been suggested that unco-ordinated distribution of water management tasks among several actors from different administrative levels (including the central government, regional governments, river basin or district authorities, ATOs, provinces, and reclamation and irrigation boards) is a barrier to timely and adequate implementation of the WFD.

To address current strategic and legal challenges, Italy might consider formulating a long-term strategic vision which could help define clear policy objectives, in line with the WFD, and improve performance of the water sector. This vision could point towards more effective multi-level governance, better policy coherence and planning (including climate change scenarios), more systematic use of economic instruments, alignment of river basin authorities, comprehensive and consistent information systems and public participation, and better financing and regulatory frameworks for service provision. The process should provide a basis for engaging a broad range of stakeholders from the national and subnational level in applying innovative solutions.

The development of a vision for reform of the water sector should also take into account North-South asymmetries in terms of access, quality and quantity of water (in order to rebalance regional disparities), and define the contributions and scope of action across levels of government needed to make water reform happen. Such a strategic vision would require a high level of leadership and commitment to raise the profile of water on the national reform agenda. Its development would also benefit from a bottom-up approach and public participation mechanisms to align visions across multiple stakeholders and create collective commitment and ownership through better transparency, information disclosure, enforcement and compliance.

Box 4.2. EU Water Framework Directive requirements and status of their implementation in Italy

The 2000 EU Water Framework Directive (2000/60/EC) established a number of objectives, such as preventing and reducing pollution, promoting sustainable water use, environmental protection, improving aquatic ecosystems, and mitigating the effects of floods and droughts. Its ultimate objective is to achieve “good ecological and chemical status” for all Community waters (inland surface, transitional and coastal waters, as well as groundwater) by 2015.

Requirements of the WFD	Status of Implementation in Italy
<ul style="list-style-type: none"> Identify all river basins lying within the national territory and assign them to individual river basin districts (river basins covering the territory of more than one member state will be assigned to an international river basin district) 	<p>River basins were assigned to individual river basin districts in 2006. However, river basin districts identified in Italy aggregate several “sub-units” made up of individual river basins. The complexity of the country’s hydrographic system (some regions with no rivers, others with large rivers, barriers related to the Appenines, water transfers) has led to a complex aggregation of small- and medium-sized river basins that requires further streamlining.</p>
<ul style="list-style-type: none"> Designate a competent authority for application of the rules provided for in this Framework-Directive within each river basin district 	<p>Existing authorities assigned in 2006 (Table 4.1) and later in 2009 to prepare river basin management plans. A report on the competent authorities for implementation of the WFD according to Article 3 of the WFD was submitted to the European Commission, with a delay. District authorities not established due to an incomplete legal framework, as the ministerial decree aggregating and transferring the competence and funding from the existing river basin authorities to the new authorities was missing.</p>
<ul style="list-style-type: none"> By 2004 at the latest, produce an analysis of the characteristics of each river basin district; a review of the impact of human activity on water; an economic analysis of water use; a register of areas requiring special protection; and a survey of all bodies of water used for abstracting water for human consumption and producing more than 10 m³ per day or serving more than 50 persons 	<p>Produced by the competent authority in July 2006 with a delay of one year.</p>
<ul style="list-style-type: none"> By 2009, produce management plans for the period 2009-15 for each river basin district, taking account of the results of the analyses and studies carried out 	<p>Management plans produced by 2010, but economic analysis only partially carried out. Plans lack monitoring of the status of surface and groundwaters. Although they fulfil the requirements of the WFD, the programmes of measures to achieve the “good status” objectives set for river basins need to be specified in an appropriate level of detail. RBMPs contain characterisation of water bodies. Water quality status is defined, but in most cases it is based on a classification system not compliant with the WFD, due to delays in the transition to a new monitoring system and delays in establishing new monitoring methods.</p>
<ul style="list-style-type: none"> Encourage participation by all stakeholders in the implementation of this Framework-Directive, specifically with regard to the management plans for river basin districts (the management plans must be submitted to public consultation for at least six months) 	<p>Partially ensured. Management plans subject to public consultations for two months and subject to strategic environmental assessment.</p>
<ul style="list-style-type: none"> From 2010, ensure that water pricing policies provide adequate incentives for users to use water resources efficiently and that the various economic sectors contribute to recovery of the costs of water services, including those relating to the environment and resources 	<p>Partially ensured. Progress in increasing water supply and wastewater charges. Water abstraction charges for industry and agriculture are still low and do not recover the costs of water services. Some users are still not subject to a water abstraction charge.</p>
<ul style="list-style-type: none"> By 2012, implement the management plans to prevent deterioration, enhance and restore bodies of surface water, achieve good chemical and ecological status of such water by 2015 at the latest, and reduce pollution from discharges and emissions of hazardous substances 	<p>Pending. In some cases river basin authorities are required to prepare operational plans to ensure that the measures of the plans are operational by 2012.</p>
<ul style="list-style-type: none"> Protect, enhance and restore the status of all groundwater bodies, prevent pollution and deterioration of groundwater, and ensure a balance between groundwater abstraction and replenishment; preserve protected areas 	<p>Ongoing</p>

2.2. A tool for diagnosing multi-level governance gaps

The multiplicity of interdependent actors involved in water policy at different levels can generate multi-level governance gaps that need to be diagnosed and bridged to mitigate institutional and territorial fragmentation. The OECD Multi-level Governance Framework provides a tool to support policy makers in making such a diagnosis. This framework identifies seven co-ordination and capacity challenges that countries frequently face, regardless of their institutional setting (unitary, federal), hydrographic characteristics (water-rich, water-scarce) and organisation of water policy (centralised, decentralised) (Table 4.1). The degree to which effective co-ordination and implementation of integrated water policy may be hindered by multi-level governance gaps varies across Italy's regions, but common governance challenges can be diagnosed. The following sections address key governance issues in Italy's sector through the lens of the gap framework. Section 2.3 provides for an institutional mapping of key public actors at national and subnational level in water policy design, regulation and implementation to illustrate the policy gap. The governance issues related to management of water resources and services, and the policy responses adopted, are discussed in Sections 3 and 4.

Table 4.1. **OECD Multi-level Governance Framework: a tool for diagnosing co-ordination and capacity gaps in the water sector**

Administrative gap	Geographical mismatch between hydrological and administrative boundaries. This can be at the origin of resource and supply gaps. ● Need for instruments to reach effective size and appropriate scale.
Information gap	Asymmetries of information (quantity, quality, type) between different stakeholders involved in water policy, either voluntary or involuntary. ● Need for instruments for revealing and sharing information.
Policy gap	Sectoral fragmentation of water-related tasks across ministries and agencies. ● Need for mechanisms to create multi-dimensional/systemic approaches and to exercise political leadership and commitment.
Capacity gap	Insufficient scientific, technical, infrastructural capacity of local actors to design and implement water policies (size and quality of infrastructure, etc.) as well as relevant strategies. ● Need for instruments to build local capacity.
Funding gap	Unstable or insufficient revenues undermining effective implementation of water responsibilities at subnational level, cross-sectoral policies and investments requested. ● Need for shared financing mechanisms.
Objective gap	Different rationales creating obstacles to adopting convergent targets, especially in case of motivational gap (referring to the problems reducing the political will to engage substantially in organising the water sector). ● Need for instruments to align objectives.
Accountability gap	Difficulty ensuring transparency of practices across different constituencies, mainly due to insufficient user commitment, lack of concern, awareness and participation. ● Need for institutional quality instruments. ● Need for instruments to strengthen the integrity framework at the local level. ● Need for instruments to enhance citizen involvement.

Source: OECD, 2011b.

2.3. Institutional setting

Italy's water institutional organisation is characterised by multiple actors involved at central government level, and a wide range of authorities at the subnational level (Annex 4.A1 and 4.A2). The main governance challenges lie in the need to integrate different sectoral and territorial institutions in water strategic planning and design at central government level, and to co-ordinate activities across diverse subnational actors and between levels of government.

At the national level, six ministries and public agencies are involved in water policy design, regulation and implementation. This level of institutional fragmentation at central government level is similar to that in many other OECD countries.⁸ Since 1999, the Ministry of the Environment, Land and Sea (MATTM) has been responsible for water policy and co-ordinating river basin authorities. It is in charge of planning, priority-setting, and establishing overall frameworks for water resources management and water services provision (quality, continuity, access and tariffs). Other ministries involved in water management include: the Ministry of Infrastructure and Transport (MIT), which manages national scale infrastructure (i.e. long-distance water transfers); the Ministry of Agricultural, Food and Forestry Policies (MIPAAF), which plays a crucial role in strategic planning, priority-setting, information, monitoring and evaluation related to water for irrigation agricultural practices and related to nitrogen and pesticide use; the Ministry of Economic Development (MSE), which plays an equivalent role regarding water use by industries; and the Ministry of Health, which oversees drinking water standards and is involved in water monitoring, including that of bathing waters.

During most of the review period, oversight of water services was the responsibility of the Water Resources Surveillance Committee (Comitato per la Vigilanza sull'uso delle Risorse Idriche, COVIRI), created by the Galli Law. The COVIRI was responsible for monitoring implementation of water services, proposing rules for tariff definition and tariff setting, as well as protecting customers' interests. In November 2011, all these responsibilities were transferred to the Regulatory Authority for Electricity and Gas (AEEG), which had accumulated vast experience in defining and analysing public utility tariffs.

The Institute for Environmental Protection and Research (ISPRA), under the MATTM, is responsible for technical support for defining rules, norms and standards for water discharges, collecting geophysical and meteorological data, and co-ordinating the action of Italy's regional environmental protection agencies (ARPAs), which operate in each region.

The uneven nature of decentralisation, and successive delays in implementing national regulations, have generated several layers of bodies that manage water resources and provide water services at the subnational level. These include:

- *Regions and provinces*, which oversee quality and quantity monitoring of surface and groundwater, design plans for water use, update planning instruments, and regulate water service investment plans. They are also responsible for water licensing, compliance monitoring, and administrative non-compliance response.
- *River basin authorities*, which are responsible for drawing up river basin management plans and ensuring consistency between the river basin plans and European, national, regional and local rules.
- *Authorities of Optimal Territorial Areas (AATOs)*, which are inter-municipal structures responsible for contracting and overseeing the provision of drinking water and wastewater services to the population in areas under their jurisdiction. They develop technical and financial plans, select operators, decide on service levels and tariffs, and enforce water service contracts.⁹ All local authorities covered by an AATO adhere to it and take part in its decision-making and management process.
- *Reclamation and Irrigation Boards*, which control land reclamation and water distribution for irrigation. They are managed by associations of landowners.¹⁰
- *Local communities*, which take part in the implementation of water management plans adopted by each region; their competences therefore vary across the country.

3. Governance challenges in managing water resources

3.1. Aligning river basins and authorities

Historically, responsibilities related to water management have rested with the regions in regard to quality aspects and with the state (principally the Ministry of Public Works) in regard to quantitative issues. Regions have enacted their own laws and prepared water-related plans. The 1989 reform established a number of river basins of national, inter-regional or regional importance (Table 4.2). Since 1999, each region has been required to draft a water protection plan (Piano di Tutela delle Acque) to achieve the environmental objectives defined by the basin authority.

Table 4.2. **River basin districts and river basin district authorities under the EU Water Framework Directive**

River basin district	River basin coverage (km ²)	Basin authorities (BAs) and regions assigned to be in charge of river basin districts	Other existing river basin authorities	Regions within the river basin district
Eastern Alps	38 385	<ul style="list-style-type: none"> • Regional BA for Isonzo, Tagliamento, Livenza, Piave, Brenta-Bacchiglione Rivers • National River Adige BA • Veneto Region • Trento Autonomous Province 	<ul style="list-style-type: none"> • National Basin Authority Alto Adriatico • Inter-regional Basin Authority for Lemene, Fissero, Tartaro and Canalbianco Rivers 	Trentino-Alto Adige, Friuli-Venezia Giulia, Veneto
Padano	74 115	<ul style="list-style-type: none"> • National River Po BA • Piedmont Region 		Emilia-Romagna, Liguria, Lombardy, Piedmont, Tuscany, Aosta Valley, Veneto
Northern Apennines	39 000	<ul style="list-style-type: none"> • National River Arno BA • Inter-regional River Magra BA • Inter-regional River Fiora BA • Inter-regional River Reno BA • Liguria Region 	<ul style="list-style-type: none"> • Inter-regional Basin Authority Conca Marecchia • 6 Regional River Basin Authorities (Liguria, Toscana, Uniti/Montone/Ronco/Savio/Rubicone/Usso Rivers, Foglia/Arzilla/Metauro/Cesano/Misa/ Esino/ Musone, Lamone, Costa Romagnola) 	Emilia-Romagna, Lazio, Liguria, Marche, Tuscany, Umbria
Serchio	1 600	<ul style="list-style-type: none"> • River Serchio BA 		Tuscany
Central Apennines	35 800	<ul style="list-style-type: none"> • National River Tiber BA 	<ul style="list-style-type: none"> • 2 Inter-regional River Basin Authorities (Tronto, Sangro) • 3 Regional Basin Authorities (Abruzzo, Lazio, Potenza/Chienti/Tenna/Ete/ Aso/ Menocchia/Tesino/Marche) 	Abruzzo, Emilia-Romagna, Lazio, Marche, Molise, Tuscany, Umbria
Southern Apennines	68 200	<ul style="list-style-type: none"> • National River Liri-Garigliano and Volturno BA • Campania Region 	<ul style="list-style-type: none"> • 7 Inter-regional Basin Authorities (Sele, Sinni/Noce, Bradano, Saccione/Fortore/Biferno, Ofanto, Lao, Trigno) • 5 Regional Basin Authorities (Campania, Apulia, Basilicata, Calabria, Molise) 	Abruzzo, Basilicata, Calabria, Campania, Lazio, Molise, Apulia
Sardinia	24 000	<ul style="list-style-type: none"> • Sardinia Region (Regional Sardinia BA) 		Sardinia
Sicily	26 000	<ul style="list-style-type: none"> • Sicily Region (Regional Sicily BA) 		Sicily

Source: EC, 2007.

In 2006, a new framework for managing Italy's waters was introduced. It divided the country into eight hydrographical districts. These districts aggregated existing river basins into larger management units. The reform aimed to increase the efficiency of the management system and respond to the requirements of the WFD (Table 4.2). The 2007 report from the European Commission stated that decisions to consolidate territories

previously belonging to different river basins were often not made in line with the WFD intentions. For example, river basins which drain into the Tyrrhenian and Adriatic Seas were grouped together, thus combining waterways which flow in opposite directions. This is the case in the Northern, Central and Southern Apennine river basin districts. The Serchio River Basin District (RBD) was kept separate although it is much smaller than the other management units. At the same time, it divides the Northern Apennine RBD into two separate areas, so that the Ligurian river basins are not linked with the rest of the Northern Apennine RBD. Although the issue of delineation of Italian river basin districts was not included in the infringement procedure concerning the implementation of the WFD, and some of these features are due to the challenge posed by the hydrographic features of the country, the division of Italy into water districts is not optimal and complicates effective river management.

The 2006 reform also formally abolished numerous river basin authorities established under the 1989 law and envisaged the creation of eight river basin district authorities (RBDAs) as entities competent to manage river basin districts. The RBDAs were expected to take over planning and programming functions, including the development of District Management Plans. However, the new institutional framework encountered serious opposition from interest groups and experts, including an influential NGO, the “183 Group”.¹¹ Interest groups accused the authorities of introducing arbitrary delimitations of the hydrological basins without adequate consultations with the regions, inconsistency of the new framework with the previous water basins arrangement and the European directives, and lack of transition periods for appropriate introduction of the new framework. Due to difficulties in introducing the new governance system, the RBDAs were not created. To fill the gap and avoid non-compliance with the WFD, a new legal framework created in 2009 assigned the task of developing the first river basin management plans (RBMPs) to six selected, already existing national river basin authorities in co-operation with the regions belonging to each district (Table 4.2).¹² In the case of the regional districts of Sardinia and Sicily, responsibility was assigned to the regions.

This type of arrangement would not be problematic if there were one authority for two or more districts, as in many other OECD countries. However, in Italy the opposite was the case: more than one management authority was assigned for a single district. While the former Law 1989/183 was coherent with respect to the river basin approach, the design of the new districts introduced unnecessary complications to an already functioning framework. For example, the Northern Apennines is now managed by five different authorities and the Eastern Alps by four (Table 4.2). In fact, all inter-regional and regional river basin authorities established under the 1989 decree were still operational, e.g. including 13 river basin authorities in the Southern Apennines district, pending the institution of river basin district authorities. Arrangements were made to establish a co-ordinating committee, but these arrangements diluted responsibilities, multiplied management layers, created competition between authorities, and delayed the development of river basin district plans. In general, the national river basin authority acts as a co-ordination authority for the regions and only indirectly, through the regions, for regional/inter-regional basins. In the case of the Eastern Alps, two national river basin authorities are involved, i.e. the Adige and Alto Adriatico River Basin Authorities. In practice, for the purpose of implementing activities under the RBMP, the two national basin authorities work together and share management bodies, including the Secretary-General.

Conflicts between authorities were not solved through this sequence of reforms and adjustments to the institutional setting. Although the competences of each authority and administration are set out in legislation, the lack of a clear understanding of the hierarchy between the different administrative levels (i.e. regions, provinces and river basins, ATOs, irrigation boards, and their respective water management plans) has made interactions complex and not conducive to addressing tensions between stakeholders with divergent views. Another obstacle to proper implementation of the WFD is the conflict between national authorities and the regions, as well as regulatory uncertainty due to the perception of continuous changes in the institutional framework. Indeed, when the river basin authorities became river district authorities, the central government acquired more power regarding river basin management while the distribution of power among the state and the regions had previously been more clearly defined. The district authority is now considered a source of conflict between the state and regions, instead of being a planning and co-ordinating authority.

3.2. River basin management plans

The delay in identifying river basin districts and attributing competences to the district authorities reduced the time available for developing river basin management plans (RBMPs) before the WFD deadline of December 2009. To avoid non-compliance procedures by the EU, the deadline was extended and Italy introduced specific procedures, with strict timetables, which allowed the competent authorities (national river basin authorities and regions) to develop the RBMPs. The MATTM provided specific guidelines for plan finalisation and approval.

The first versions of eight RBMPs were adopted by the end of July 2009 and submitted for strategic environmental assessment (SEA), as required by national legislation, and for public consultation, as foreseen by the WFD and the national SEA procedures. All eight RBMPs were approved in 2010.¹³ Some RBMPs presented a detailed analysis of the state of surface and groundwater bodies and a summary of significant pressures and impacts of human activities on the status of water bodies (Box 4.3). However, in other cases they fell short of WFD requirements on a number of counts. This included: limited identification of protected areas; limited mapping of monitoring networks and results; incomplete lists of environmental objectives; limited economic analysis of water use, investments and the determination of investment needs; and gaps in the programme of measures to achieve a good ecological status of water bodies.

The difficulties encountered in implementing the WFD reflected, in particular, the inability to provide an appropriate evaluation of measures, as revealed by the status and content of the river basin management plans. Due to late implementation of the WFD and the national provision for the preparation of the plans, proposed measures were designed in only a few months and their evaluation was mostly carried out in parallel with their selection and design, and hence without sufficient detail. According to WWF Italy, the RBMPs do not present any substantial modification of the regional water protection plans (Piani di Tutela delle Acque) and the new guidelines and measures included in the plans are superficial and vague. In many cases, use of water for irrigation was not included due to separate management structures and particular requirements. This created problems of policy co-ordination and effectiveness, especially since in many river basins water withdrawals for irrigation prevail. Adequate implementation was also hindered by lack of resources. The first round of RBMP preparation, in particular, was carried out without any additional resources from the Italian central government.

Box 4.3. Governance and planning in the Po River basin district

The Po River basin is the largest river basin in Italy, covering an area of 74 700 km² or 24% of the country's territory. Its main river channel is Italy's longest (650 km) and its level of pollution discharge is the highest. The river basin district includes seven regions and one autonomous province (Aosta Valley, Piedmont, Lombardia, Liguria, Emilia-Romagna, Veneto, Toscana and Trento), with a total population of about 17 million. This river basin is a strategic asset for the Italian economy, as it generates nearly 40% of national GDP through intensive industry, agriculture and tourism. About 37% of the country's industries are concentrated in the basin area, while the basin's agricultural production accounts for 35% of Italy's total agricultural output.

In dry years, water availability creates conflicts among users, particularly during the summer when water consumption for agriculture is highest while water is retained in upstream dams for hydropower production. Concerning water quality, surface and groundwater is affected by discharges from industries, agriculture and households. Surface waters suffer from eutrophication, and groundwater from high concentrations of nitrates and coastal aquifers from salt intrusion.

The management structure of the Po River basin district includes the Institutional Committee, which is its executive body. The Institutional Committee comprises five national ministries (environment; infrastructure and transport; agriculture and forests; cultural affairs; and home affairs) and the presidents of the seven regions and the autonomous province of Trento. The Committee is formally chaired by the Minister of the Environment, while the Secretary-General, appointed for five years by the Institutional Committee, is in charge of preparing and implementing the Committee decisions. A Technical Committee, composed of experts from government agencies, ISPRA and the regions, and a Technical and Operational Secretariat carry out technical work.

In many respects the river basin authority anticipated the WFD requirements before 2000. Knowledge developed, based on data collected since 1992, allowed identification of the most critical environmental issues within sectors, as well as development of the process of planning and intervention in the river basin area in order of priority, with efficient and effective results. Many critical issues have been addressed in regional protection plans, and various measures have been implemented. Following the requirements of the WFD, the Institutional Committee adopted the Po River Basin District Management Plan in 2010. The plan must still be approved by the Council of Ministers, but some general and urgent measures came into force during a temporary transitional period and are being implemented by the authority and through planning at lower level, by means of regional protection plans.

The Po River Basin District Authority (RBDA) has opted for an extension of the deadline for achieving good status of water up to 2027. The arguments put forward include technical unfeasibility to achieve the required improvements by the deadline of 2015, and the fact that achievement of these improvements would generate disproportionate costs. Concerning the former, the Po RBDA states that further background studies are required to better understand the reasons for the alteration of water bodies' ecological status. With respect to the latter, the RBDA states that further cost-benefit analysis is needed.

3.3. Use of economic instruments for river basin management

Italy has a long experience with applying economic instruments to manage water resources. These instruments include abstraction fees (even if traditionally very low), irrigation fees, industrial wastewater discharge treatment fees, and charges for the use of

rivers or for withdrawal of sand and inert material from the river beds. Although some efforts have been made to increase the rates and expand their scope, their application is fragmented and disconnected from river basin management planning and investment (Chapter 3).

Particular efforts have been made to increase the impact of fees applied for irrigation. These are the payments to the Reclamation and Irrigation Boards made by farmers for the use of water. Although area-based charges are still widely applied and vary across Italy, the actual rates increased during the review period from EUR 5-14/ha to EUR 30-100/ha in the South and from EUR 20-30/ha to EUR 50-150/ha in the North. Rates up to EUR 700/ha can be applied in some regions with certain water shortages. The fees are also differentiated according to irrigation technology, type of crops and type of irrigation. Some collective systems, mainly located in the South, adopt metering together with a per volume charge which can vary significantly (from EUR 0.04 to EUR 0.20/m³).¹⁴ Water use is coupled with a user-based allocation mechanism for collective irrigation systems.¹⁵ Although the approach of linking water use with payments and the quota system is sound, fee levels are still low and water permits are issued by the regions rather than by river basin management authorities. The revenues from irrigation fees are used to support local investment managed by the Reclamation and Irrigation Boards. While many boards often show a balance between revenues and operational costs, public resources are filling the gaps, reaching as much as 50% of operational expenditure. This occurs particularly in the South, where the capacity of boards to raise the level of charges effectively and collect payments is much lower.

Less progress has been made in reforming payments for industrial use of water. Although industry users pay for water supplied by public networks, most use their own groundwater supplies, which have not been subject to water abstraction payments. Only recently have some regions (e.g. Piedmont and Lombardy) started to raise water abstraction taxes. Wastewater charges are applied, and are linked to permits issued by public authorities. They are set on the basis of effluent quantity and quality and tend to respect the full cost recovery principle.

Fragmentation of water management, delays in introducing river basin authorities, and rushed preparation of river basin district plans have prevented detailed analyses of the use of economic instruments and their impacts on water management. The current revision of river basin plans provides an opportunity to analyse experience with the use of fees, charges and taxes, including their incentive and revenue raising effects. This analysis should also review institutional arrangements which can enhance watershed approaches to water use and pollution reduction and explore the relations with water abstraction licensing and environmental permitting. Multiple stakeholders (e.g. ISPRA, regional environmental agencies, river basin authorities and the research community) can help pool knowledge, meet their mutual needs and strengthen capacity building. As ISPRA takes part in the technical committees of national river basin authorities, it can play an advisory role with respect to environmental economics and how this should be used in basin management. Wider involvement of the research community should be promoted to broaden analytical capacity.

3.4. Public participation

Public participation mechanisms and transparency in decision making are important elements of any governance system. Mechanisms for engaging the public in the preparation of Italy's river basin plans have included consultation events involving

authorities from the national and local level, business, the research community and NGOs, and the provision of information, mainly through publication of official documents on the websites of the RBDAs and press releases. In some cases, such as during the elaboration of the Po River Basin District Plan, discussions have resulted in the setting up of permanent panels on specific themes such as agriculture, industry, energy, research and innovation, tourism, fishing and biodiversity. The consultation process has also been combined with SEA procedures, which requires basin authorities to make the river basin plans available for public consultations for a period of 60 days.

Although mechanisms exist for public participation in water resource management and water services provision, experience with constructive engagement has been limited, thus generating an accountability gap. Delays in developing river basin plans have shortened the consultation period and events have focused on one-way presentation of draft plans, which has not allowed in-depth discussion. Public debate takes place on the basis of limited data and tends to be passionate and confrontational.

Unofficial consultations are also carried out, particularly when actual implementation of measures falls under the authority of bodies other than river basin authorities. They are used to reach agreements (“river contracts”) between the public administration and private actors (generally through their representative associations) for defining and implementing specific measures. In the Carpi district, for example, an agreement was reached to respond to over-abstraction of groundwater by the textile industry. The industry committed to voluntarily halt abstraction and to create a joint water supply and wastewater treatment company with the public bodies which would provide water from sources other than groundwater (including reuse of treated effluents).

A number of public campaigns and actions have been carried out by NGOs. For example, the WWF has been active in country-wide awareness raising and educational activities including the production of analytical reports on water management in Italian river basins, filing of complaints over illegal activities, and reaching agreements with other parties to promote river restoration, such as “a pact on rivers” with the Young Entrepreneurs of the Italian industry association (Confindustria) in 2001, management of the natural drainage network with the Association for Renewable Energy in 2005, and an agreement on water saving with the National Irrigation and Reclamation Association in 2006.

3.5. Water-related information systems

Recognising that information and knowledge related to water availability and use are important features of effective and efficient water management, Italy has made substantial efforts to expand its key water-related information hub, the National Information System for Italian Water Protection (Sistema Informativo Nazionale per la Tutela delle Acque Italiane, SINTAI). The SINTAI is managed by ISPRA based on information provided by the regional environmental agencies. It contains a wealth of information related to surface and groundwater quality and water pollution discharges. The system is structured according to key national and EU requirements. The SINTAI is an integral part of the Italian National Environmental Information System (SINAnet) managed by ISPRA. Through SINAnet it interacts with other systems, such as the comprehensive Integrated System for Water Management in Agriculture (Sistema Integrato per la Gestione delle Risorse Idriche in Agricoltura, SIGRIA),¹⁶ and other databases on coastal waters and emissions of hazardous substances.

Most of this information is collected and processed at the subnational level, and ISPRA has contributed to capacity-building of regional and local authorities responsible for data collection. Examples of good governance practices fostered by ISPRA include: establishing thematic working groups (e.g. those which carried out “gap” analyses to oversee challenges to the application of new methodologies); coastal water quality assessment; systematic twinning for joint flood protection and water management; and training activities and real-time information provision support. ISPRA also supports collaboration between the MATTM and river basin authorities to develop methodologies for monitoring compliance with the requirements and technical standards for data quality analysis.

The Italian National Institute of Statistics (ISTAT) has also contributed to filling the information gap and improving national knowledge on water statistics, following the guidelines of the EU Water Framework Directive and Eurostat/OECD initiatives on water statistics and water accounts. ISTAT’s surveys of water supply and wastewater statistics allowed the development of an information base that is progressively updated and supported by the development of indicators concerning freshwater resources, water abstraction, water use, and wastewater treatment at various levels (regions, river basin districts) in Italy.

Despite the efforts made, implementation and updating the SINTAI is complex and resource intensive. Information gaps result from the fragmentation and incompatibility of information collected at the regional level, as well as insufficient data on some aspects of water management (e.g. water abstraction). For example, the Information System for Water Resources Surveillance (Sistema informativo di vigilanza sulle risorse idriche, SIVIRI), following the COVIRI’s difficulties, never started up. Major gaps also remain in terms of the availability or reliability of economic and financial data, and the role of ecosystem services in maintaining water quality and regulating water flows. Better economic and financial data and economic analysis of eco-system services could provide important support for linking the state of the environment and policy measures applied at the national and regional level. ISPRA and the MATTM have very few staff dedicated to water and economic analysis, while relations with academic institutions working in the field of environmental economics are limited and the wealth of information available from the research community is not always used in analysis and policy making.

3.6. EU policy package: a driver to improve water governance in Italy

Over time, the EU has become an increasingly important driver for vertical and horizontal co-ordination of water policy in Europe. The implementation of EU requirements has created some incentives for policy coherence across ministries and public agencies, and for better co-ordination across regions and between levels of government. The preservation and sustainable exploitation of natural resources, as well as improvement of the quality of environmental services, are priorities within the EU Structural Funds and with respect to national resources devoted to regional development. Italy introduced an indicator system called the “National Performance Reserve Scheme” for funds allocated to regional policies in order to improve programme management and effective spending. This involved setting aside a reserve of a programme’s budget and distributing it only if specific objectives were achieved. For example, a sub-objective required regions to reduce the water loss ratio from 37% to 25% by 2013. The objective of the national programme was to improve the administration’s capacity for reform, rationalise decision making and streamline procedures. Overall, this experience has

already produced some positive results despite a variation in outcomes from region to region (Chapter 3). There are opportunities to broaden this experience in the water sector, and to extend it to other sectors.

4. Governance challenges in reforming water supply and sanitation services

4.1. Clarifying recent institutional reforms to improve the performance and governance of water utilities

With the adoption of the Galli Law in 1994, Italy launched a wide-ranging reform of its water and sanitation services. This reform aimed to overcome fragmentation in the sector, and to create integrated operational structures separate from the direct influence of public administration and capable of attracting private capital and achieving a scale of operations within the Optimal Territorial Areas (ATOs). The law also created a dedicated authority in each ATO (the AATO) to carry out surveys on the state of infrastructure and levels of service, draw up an investment and tariff plan, entrust a service provider with the concession, and exercise supervision over the water service concessionaire. Each ATO has been managed according to an Optimal Territorial Area Plan that summarises water services and infrastructure needs and defines the financial plan, along with future investments and water tariffs.

The way ATOs have been defined varies: in some cases a whole region (e.g. Apulia, Basilicata, Aosta Valley and Sardinia) is considered a single ATO; in others the ATO coincides with the boundaries of lower administrative districts/provinces (e.g. Emilia-Romagna). Only in a few cases has the ATO been delimited in a way that does not coincide with administrative boundaries (e.g. in Veneto).

Following these reforms, the number of bodies in charge of providing water supply and sanitation services was reduced from over 8 000 in the late 1990s to 115 in 2009. In many ATOs the reform resulted in streamlining and better co-ordination of service provisions (Box 4.4). However, the setting up and operation of the ATOs has not been without difficulties, partly due to the resistance of local authorities that lost control over the provision of water services, but also due to successive changes in the criteria for designating the ATOs.

A number of assessments of ATO operations have shown that, although planning capacities improved, the ATO authorities had serious weaknesses. For example, many ATOs lacked expertise and authority in regard to service providers. Most data for external control by ATOs were furnished by the service providers, making independent assessment difficult. In some cases decisions may have been negotiated and made outside the ATO's assemblies, with the AATO only called upon to ratify them. The authorities did not possess the technical know-how needed to deal with the service provider companies, especially when these were owned by large national (formerly municipal) enterprises or were multi-national corporations. The ATO investment plans have been a patchwork of local demands rather than strategic water basin planning documents. The fact that mayors were engaged as stockholders of service providers on the one hand, and members of the regulatory authority on the other, has led to conflicts of interest and influenced decision making. Moreover, the proliferation of appointments (presidents and members of boards of governors) has created opportunities for the consolidation of local political elites, with emoluments and benefits often equal to those of elected members of local councils.

Problems have also been encountered in regard to the way service contracts were designed. Many have lacked adequate consideration of contingencies, and were vague with

Box 4.4. Water supply management in the Venice city-area

The water supply system in the Venice city-area has been successfully rationalised, consolidated and integrated on a wider scale. Eighteen municipal water agencies (joint stock companies) now share the ownership of water distribution and wastewater networks. Simultaneously, the four “bulk” water suppliers that previously operated were consolidated in 2007 into a single corporation (VERITAS), owned by 25 municipalities which are owners of various aspects of the bulk water distribution network. It works on a contractual basis with the 18 municipal water providers (until 2018).

Concurrently, the regulatory framework has evolved. Water supply continues to be governed by national laws and associated regional laws and policies. The Veneto ATO also plays a regulatory role: it sets fees for water services, and determines contractually-based incentive payments and fines for compliance with water quality standards/environmental standards established by VERITAS. This situation, although in compliance with current EU legislation, involves a conflict of interest in that the regulators are also owners of the company. At the same time, this arrangement has certain benefits, such as the close exchange of information between the municipalities and the supplier, and economies of scale and scope arising from synergies in planning multi-utility investments.

The case of Venice is interesting because of the degree to which the process of rationalisation was “bottom-up”: municipalities were key drivers of the consolidation process. They were motivated by concerns about the implications of new EU water sector requirements. Informally, the desire for consolidation and creating a “critical mass” of water providers gained currency, as it would create an institution that could compete in a sector likely to be opened up to competition from private water supply companies. In this context, the drive to scale up operations, improve performance and increase efficiency was seen both as a defensive and a proactive measure.

The experience in Venice shows some of the benefits that can be achieved through co-ordination across metropolitan city-regions. VERITAS has standardised operating systems and accounting procedures. It is developing an integrated regional water supply network to replace the poor quality surface water being used for drinking water in the southern zone with higher quality water from the northern part of the city-area. When completed, the area water supply network will be a positive, although rare, example of an integrated, co-ordinated infrastructure network operating across an entire city-area.

Source: OECD, 2010b.

respect to the rules that justify tariff revision and cost pass-through. Service levels were defined in a generic way. Although sanctions for missing service quality targets were foreseen, their application was often left to the discretion of an AATO (which usually did not intervene if the company was owned by the same municipality). Renegotiation of contracts has remained a problem, as no provisions were made for situations that justify modifications of the planned figures or disputes that might eventually arise and the criteria to use in settling them. Nor were criteria provided for determining whether deviations of costs from those anticipated depended on planning errors, on internal inefficiency or on external market changes.

The most recent integrated urban water management reform (Decree 42/2010) tried to address these shortcomings, but it has left Italian water governance with uncertainties and ambiguities. While abolishing AATOs as legal entities, this decree did not designate clear responsibilities for taking over the AATOs’ tasks (i.e. whether they will be carried out by the regions, municipalities or other entities, or new forms of co-operation). This led to

extension of the deadline for AATOs' operation from the end of 2011 to the end of 2012. The process of redesigning AATOs is still ongoing. Almost half the regions have approved new legislation (sometimes contested by the central government, which appealed to the Supreme Court). In many cases, the AATO's functions are performed by the regions as a temporary measure, maintaining the ATO as a geographical unit for the purpose of planning, contracting and setting tariffs, and supervising the operator. As of July 2012, a number of AATOs continued to operate.

In principle, the whole territory of an ATO was expected to be served by a single water utility. In practice, however, it is common for several water utilities to serve the municipalities of a single ATO. For example, eight ATOs in Emilia-Romagna are served by 16 utilities. As of 2009, 58 utilities were still publicly owned and 31 involved mixed ownership companies with selected partners, while in seven cases concessions had been given to the private sector, including four private concessions awarded in Sicily. A total of 114 agreements between AATOs and water service providers had been concluded. However, 24 AATOs had not assigned service provision at the area's aggregate level and management was still based on provisional contracts with smaller service providers.

In 2008 and 2009, the government took steps to speed up separation of service provision from municipal control with a view to increasing efficiency. A decree was enacted which stipulated that water supply would be managed exclusively by private companies or by mixed public-private companies, where private investors hold at least 40%. The decree called for tendering all "in-house" provisions by 2013 and required local authorities with a stake in utilities listed on the stock exchange to reduce their shareholding gradually to a maximum of 30% by the end of 2015. However, the decree made it possible for municipalities to avoid tendering procedures by demonstrating that current in-house provisions were more efficient than a concession, or by selling 70% of stock in in-house companies to private investors.¹⁷

Further restructuring of water service providers stalled following the referendum in June 2011. The outcome of this referendum may lead to a rejection, *inter alia*, of competitive tendering in favour of in-house management when the commercialisation of services is not feasible (Box 4.5).

4.2. Oversight of the water supply and sanitation sector

The 1994 Galli reform introduced national oversight of the water and sanitation sector by the COVIRI. The COVIRI, operating under the MATTM, was made responsible for monitoring implementation of the water service reform, proposing rules for tariff definition and tariff setting, and protecting customers' interest.

The law gave the COVIRI a wide range of regulatory functions, but did not provide it with adequate means and resources. Its creation was based on the premise of a strong organisation equipped with a technical secretariat and a water services monitoring centre, and with a staff of 40. However, such capacity has not been established and the monitoring centre was only created in 2004 with a reduced number of staff. Given the importance of the COVIRI's mission, this was insufficient. For example, the COVIRI was charged with determining and revising the water tariff system based on the so-called "normalised method" (Metodo Tariffario Normalizzato, MTN) introduced in 1996. This involved establishing a standard of 7% for return on capital investment. However, no revision of the MTN was approved despite the many shortcomings of the tariff system. The COVIRI was

Box 4.5. The 2011 referendum on water services

A country-wide consultation was held on 12-13 June 2011. Two of the issues concerned water management. The first question was whether an article in a 2008 law, which required water supply to be managed exclusively by companies in which private investors held at least 40%, should be repealed. The second question was whether an article in the 2006 Environment Code, which guaranteed a minimum remuneration of 7% on capital costs in the calculation of water tariffs, should be repealed.

Several months of intense, often ideological campaigning preceded the referendum, much of it focusing on the principle of private sector participation in the provision of water services. The yes campaign argued that water was “a public and common good to be publicly managed.” The no campaign argued that private participation in the water sector was necessary to drive efficiency and provide much-needed investment.

More than 95% of voters (with a 55% turnout) voted in favour of all four questions. By restricting the return on capital, the referendum limits opportunities for water utilities (public and private) to raise capital for investment in capital markets. The plans of a number of privately operated utilities to upgrade parts of Italy’s water network have been shelved. Some public utilities may be able to resort – in the short term – to taxation to repay loans, but this option is not available to private operators, including utilities jointly operated by the public and private sector.

Despite the results of the referendum, most municipalities still apply the pre-referendum rules and allow the private sector’s continued involvement in water provision. Supporters of the referendum have asked the Constitutional Court to force these municipalities to comply with referendum outcomes. The decisions taken by the newly designated water regulator, AEEG, may also have a bearing on this issue. The way in which future tariffs, and the associated rate of return on capital, are defined could influence investment decisions. It is clear that current policies have created considerable uncertainty and are an important impediment to investment in the water sector.

also made responsible for verifying the ATO’s plans, but lack of capacity and enforcement powers limited evaluations to verifying formal compliance with national guidelines.

Although the COVIRI was reorganised following adoption of the 2006 Environmental Code, the new authority remained weak, with no executive powers and capacity. In the absence of a strong national regulator, tariffs were set by ATOs with no regard to funding needs. The initial rates were generally set at levels that just covered operating costs and did not yield sufficient revenues for the maintenance and renewal of networks, thus creating a funding gap. The regulatory heterogeneity also raised transaction costs for the sector as a whole and made it more complicated for any new entrant, including private investors, to understand the risks in the sector and how they could be managed. This was a disincentive in areas of the country where higher legal risk is perceived at the local level (e.g. in some ATOs in southern Italy).

In November 2011, regulatory responsibilities for water supply and sanitation were transferred to the Regulatory Authority for Electricity and Gas (AEEG).¹⁸ This is a step in the right direction, as the AEEG is regarded as an independent professional body which, in principle, could provide a clearer and more transparent regulatory environment for water companies by overseeing tariffs, promoting efficiency, and ensuring that services are run effectively and transparently.

Simply transferring competences foreseen in the 1994 law to the newly appointed regulator will not be sufficient to realise the potential benefits. Adequate resources will need to be allocated and work carried out to clarify the main regulatory needs and modalities for discharging key regulatory functions. This should include, first and foremost, reducing regulatory and legal risks, particularly in regions considered to be of higher risk by finance market operators. Regulatory risks increase when the legal system changes too frequently. For example, many banks providing loans to the sector after the 2008 laws called for the immediate termination of all “in house” companies, as the duration of contracts was the sole guarantee on which financing plans had been based. During the last ten years, the ongoing legal changes have made long-term planning close to impossible. Other steps to increase the efficiency of the sector should include encouraging economies of scale and wider use of innovative financial products to reduce the costs of due diligence necessary to analyse and quantify the regulatory risk; and benchmarking utilities’ performance based on systematic comparisons of the efficiency and quality of service provided.

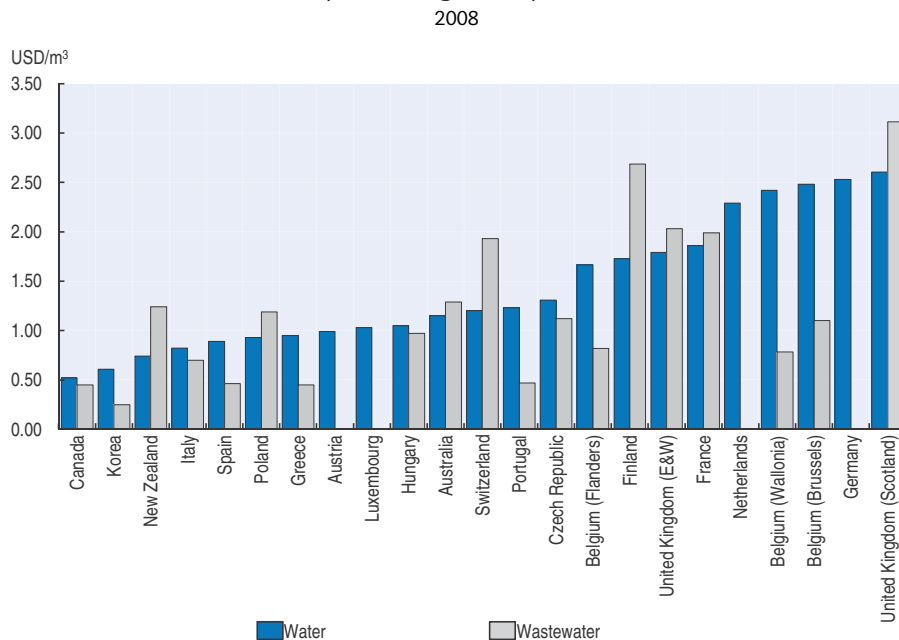
4.3. Financial sustainability

Domestic water supply has been priced using mechanisms that increasingly provide incentives to save water. In many locations water tariffs include fixed and volumetric components, with the latter based on increasing block tariffs. In some ATOs, the water tariff is linked to the quality of the service provided and is assessed using a set of environmental and service performance indicators. After a sharp increase in the 1990s, water prices have continued to increase – although at a slower pace during the last ten years. This has partly been due to insufficient application of the “normalised method” (MTN) and long transition periods in water sector reform when the Inter-Ministerial Committee for Economic Planning (CIPE) functioned as the regulator in areas where no management concession had been awarded. Despite increases, rate levels have remained low. While the average water supply rate in Italy is around EUR 0.90-0.95/m³ (with wide variations across the country), in many other OECD countries they are already between EUR 2 and 3/m³. Charges for wastewater collection continue to be lower than in other OECD countries (Figure 4.4).

In the absence of a tariff regulator and of adjustment of the MTN, many ATOs have established their own methods of tariff setting. The Constitutional Court has, however, outlawed tariff setting by the regions. Calculated for a representative level of households’ water consumption (200 m³/year), water bills across regional/provincial capitals range from EUR 0.58/m³ in Milan to EUR 2.39/m³ in Florence. A number of analyses have shown that the tariffs of most utilities do not fully cover economic and environmental costs. Cost-recovery problems are aggravated by the approach to billing, which allows payments to be made only at the end of the year, and relatively common non-payment of water bills, especially in the South.

Although the prices of a cubic metre of water and of wastewater services, adjusted for inflation, have increased in recent years, revenues are not sufficient to guarantee necessary investment in the extension and modernisation of water infrastructure and to make up for the structural lag that has grown over the years. The worrying state of water supply and sanitation infrastructure is also due to a decrease in public funds allocated for the development of water infrastructure (Figure 4.6). While expenditure on water and wastewater has remained stable (at constant prices), the share of investment has decreased, particularly in regard to wastewater infrastructure. This trend has been reinforced by limited involvement of private operators and a limited role for other means of financing water and wastewater infrastructure, such as equity or debt financing. The drop in investment has

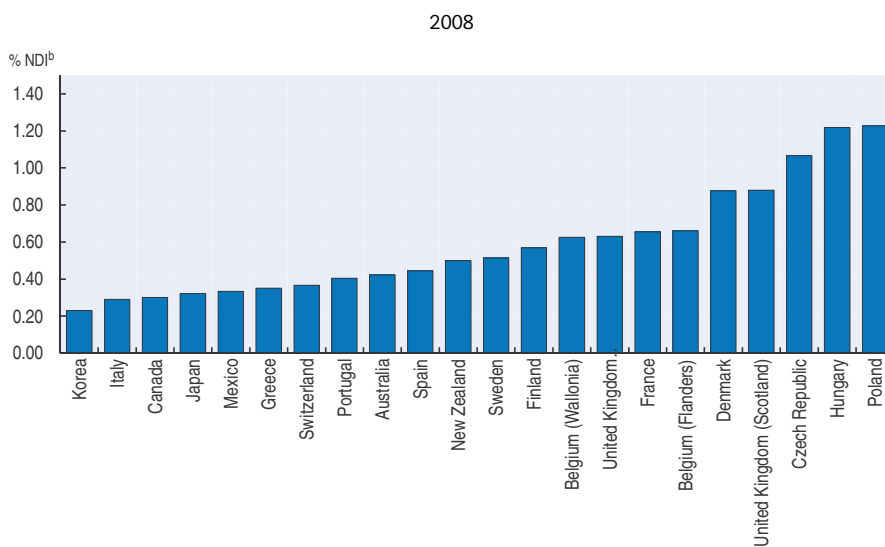
Figure 4.4. **Comparison of average unit prices of water and wastewater services to households (including taxes) in OECD countries**



Source: OECD (2010), *Pricing Water Resources and Water and Sanitation Services*.

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Figure 4.5. **Water supply and sanitation bill as a share of disposable income in OECD countries^a**



a) Data for water tariffs are calculated for a consumption of 15 m³/month and based on 2007 purchasing power parities for private consumption.

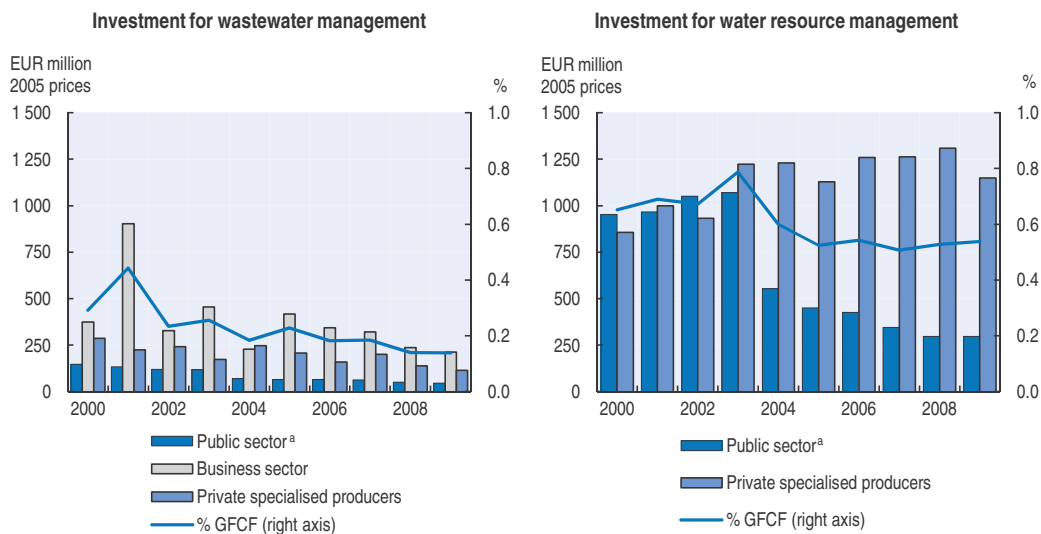
b) Net disposable income at 2007 prices and purchasing power parities.

Source: OECD (2010), *Pricing Water Resources and Water and Sanitation Services*.

StatLink <http://dx.doi.org/10.1787/888932772970>

Figure 4.6. **Investment for wastewater and water resources management**

2000-09



a) Includes public specialised producers of environmental protection services.

Source: ISTAT (2012), *Expenditures for the Management of Waste, Wastewater and Water Resources in Italy*.

StatLink  <http://dx.doi.org/10.1787/888932772989>

contributed to increasing obsolescence of infrastructure, a rise in network leakages and a decline in service levels, including disruptions in supplies to end-users.

The fall in investment has occurred at a time when the requirements of the EU Directives, and the deteriorating state of the required infrastructure, require increased investment. The Blue Book 2011, a report by the research arm of the operators' association Federutility, estimates investment needs for water services at EUR 65 billion over a period of 30 years, of which only 9.1% from public funding, corresponding to EUR 2.2 billion per year. The challenge for the sector is therefore to more than triple the current level of investment, without being able to rely any longer on the contribution of public funds at a level comparable with that of the past. As discussed above, meeting this challenge requires clarifying institutional arrangements and moving away from municipally controlled operating bodies to utilities operating on a commercial basis. There will also need to be a greater contribution from consumers. The average water supply and sanitation bill as a share of disposable income is much lower in Italy than in other OECD countries, suggesting that there is scope for a further increase in water tariffs. Wider use of market-based (including water abstraction charges) and private sector financing mechanisms should also be considered to spread payments for water infrastructure over the lifetime of the assets.

Notes

1. The share of irrigated land in total agricultural area (17.4%) is well above the OECD average (4.5%).
2. Italy's water consumption by household is characterised by strong regional variations. Water-rich islands and northern regions have higher water consumption rates on average than the water-scarce southern regions.
3. Failing direct estimations, use of water by industry is calculated on the basis of the water consumption coefficient for persons working in the different manufacturing sectors. The

coefficients are estimated and updated by national experts on an irregular basis. The data do not include withdrawal from watercourses and from groundwater directly made by companies.

4. Use of water for electricity production in hydropower stations is not included.
5. Several water transfer systems (Ionico-Sinni, Ofanto-Sele-Calore or Fortore) have been built to divert water resources from the Sele, Calore, Ofanto, Basento, Biferno and Sangro rivers to reservoirs in Apulia.
6. Water quality designated as Class 0 is affected mostly by volcanic and tectonic activities. These waters are often exploited as a thermo-mineral resource. Groundwater quality can also be affected by contamination of saline water intrusions.
7. A total of EUR 1.6 million was devoted to water from EU Structural Funds received in 2000-06. In particular, capacity building of regional environmental administration has received support from Structural Funds, especially in the South (e.g. a task force of 150 experts to support regional environmental authorities and ARPAs).
8. The number of central government authorities involved in water policy making is a useful indicator of the level of institutional fragmentation, although it has limitations and needs to be appraised in a dynamic way. For example, a large number of agencies is an indication of complexity but does not necessarily entail the negative impacts of fragmentation (e.g. silo approach, asymmetry of information, mismatch of funding, conflicting objectives) if the fragmentation is somewhat compensated by sound co-ordination mechanisms.
9. The ATO authorities (AATOs) can delegate responsibilities for carrying out day-to-day activities related to provision of water services to a third party (i.e. a water operator), which may be publicly and/or privately owned. However, ATO authorities were legally suppressed in 2011 and the regions were asked to perform their functions in accordance with the principles of subsidiarity, differentiation and adequacy.
10. The size, role and type of organisation of Reclamation and Irrigation Boards are not the same in northern and southern Italy due to the different structures of the water supply systems. In the northern part of country, water supply is highly segmented and separated among various sectors (urban, industrial and irrigation). In most cases, irrigation is managed collectively through local scale farmers' associations dedicated only to water supply for irrigation purposes, which do not have a particular connection with urban and industrial water supply agencies. However, in the South irrigation is managed mainly by large Boards which are highly interconnected with urban and industrial water supply agencies. This is essentially due to the fact that most important water structures (e.g. dams, aqueducts, pumping stations) are constructed for multi-sectorial water use and their management is frequently under the Boards' competence.
11. The 183 Group is a not-for-profit organisation established in 1995 by Members of Parliament, environmentalists, and representatives of regions, local governments, trade unions and company managers. The objective of the 183 Group is to promote sustainable development in land management and in the use and management of water resources.
12. Adoption of the management plans was the responsibility of an institutional committee within each district, which comprised the basin authority of national importance and members appointed by the regions included in the district.
13. For each basin belonging to the district, a management plan for environmental protection of water bodies and rational exploitation of water resources must be approved. At the same time, a hydrogeological plan for soil protection and hydrogeological risk (called "Piano di assetto idrogeologico", PAI) is also required. It has a different scope and separate approval procedures.
14. Water must be metered before it can be charged for volumetrically. Metering is often required for permit holders, although limited evidence concerning actual implementation and control at the farm level could be identified.
15. Reclamation and Irrigation Boards receive a quota at the beginning of every year (availability versus needs). Individual farmers, in their turn, are also subject to quotas or abstraction requirements.
16. This contains a complete set of databases and tools concerning land use, irrigation networks and economic data in eight regions of southern Italy (Abruzzo, Molise, Apulia, Campania, Basilicata, Calabria, Sicily, Sardinia).
17. The 70% threshold applied to quoted companies such as Acea or Hera, which would allow them to maintain what was originally entrusted to them if public shareholding was reduced. For in-house companies the threshold was lower (40%), but required that operational responsibilities be delegated to a private partner.

18. Created in 1995, the AEEG has been regulating the gas and electricity sector. It is self-financed by a tax on energy bills, with therefore no impact on the public budget. The transfer was subject to a Prime Ministerial Decree whose purpose was to decide which functions were to be transferred to AEEG and which should be retained by the Ministry of the Environment, Land and Sea. The Decree is still pending; its text has been approved, but is currently awaiting advice by the Supreme Administrative Court (Consiglio di Stato).

Selected sources

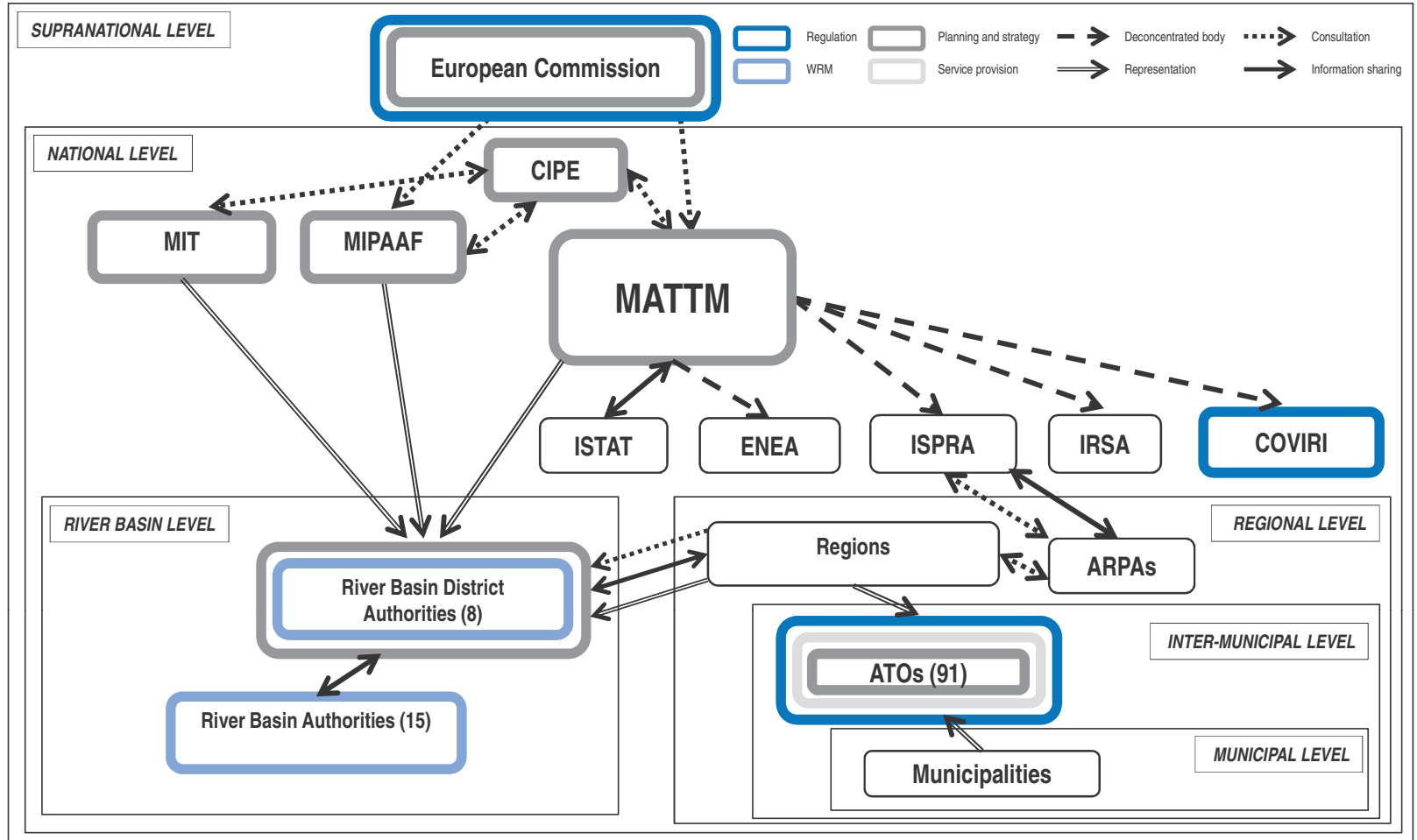
The government documents, OECD documents and other documents used as sources for this chapter included the following:

- APAT (Agenzia per la protezione dell'ambiente e per i servizi tecnici) (2007), "Water demand management in the Mediterranean, progress and policies", in *Mediterranean strategy for sustainable development – Monitoring process and promotion of water demand management policies – National Report on Italy*, APAT, Rome, www.planbleu.org/publications/atelier_eau_saragosse/Italie_rapport_final_EN.pdf.
- Armeni, C. (2008), "The right to water in Italy." *IELRC Briefing Paper 2008 – 01*, International Environmental Law Research Centre, www.ielrc.org/content/f0801.pdf.
- Arnaudo, L. (2011), "Holes in the water – The reform of water and competition in Italy", *Competition and Regulation in Network Industries*, Vol. 12, No. 2, pp. 173-187, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1747744.
- Balzarolo, P., et al. (2011), "The implementation of the water framework directive in Italy", *Options Mediterrannées*, A n° 98, 2011 – Dialogues on Mediterranean water challenges: Rational water use, water price versus value and lessons learned from the European Water Framework Directive, <http://ressources.ciheam.org/om/pdf/a98/00801477.pdf>.
- Benvenuti, M. and E. Gennari, (2008), "Water services in Italy: Implementation of the reform and efficiency of providers", Bank of Italy, *Occasional Paper*, No. 23, www.bancaditalia.it/pubblicazioni/econo/quest_ecofin_2/qef_23/QEF_23.pdf.
- Bardelli, L. and L. Robotti (2009), "The water sector in Italy", *CIRIEC Working Paper*, 2009/01, Centre international de Recherches et d'Information sur l'Economie Publique, Sociale et Co-opérative, www.ciriec.ulg.ac.be/fr/telechargements/WORKING_PAPERS/WP09-01.pdf.
- Carroza, C. (2011), "Italian water services reforms from 1994 to 2008: Decisional rounds and local modes of governance", *Water Policy*, Vol. 13, No. 6, IWA Publishing Online, www.iwaponline.com/wp/01306/0751/013060751.pdf.
- Ceccherini, E. (2009), "Intergovernmental relations in Italy: the permanent State-Regions-autonomous Provinces conference", *Revista de la Facultad de Ciencias Sociales y Jurídicas de Elche*, Vol. I, No. 4, <http://revistasocialesyjuridicas.files.wordpress.com/2010/09/04-tl-01.pdf>.
- Civita, M.V., et al. (2011), *Groundwater in the Southern member states of the EU: an assessment of current knowledge and future prospects – Country report for Italy*, European Academies – Science Advisory Council, www.easac.eu/fileadmin/PDF_s/reports_statements/Italy_Groundwater_country_report.pdf.
- Cunha Marques, R. (2010), "Chapter 2.9: Italy", in *Regulation of water and wastewater services – An international comparison*, IWA Publishing, London.
- EC (European Commission) (2007), *Accompanying document to the communication from the Commission to the European Parliament and Council – Toward Sustainable Water Management in the European Union – First Stage in the Implementation of the Water Framework Directive*, COM(2007)128final, http://ec.europa.eu/environment/water/water-framework/implrep2007/pdf/sec_2007_0362_en.pdf.
- ENEA (European Network of Environment Authorities) (2006), *The contribution of Structural and Cohesion Funds to a better environment*, European Commission, Brussels, http://ec.europa.eu/environment/integration/pdf/preliminary_stocktaking.pdf.
- EUREAU (European Federation of National Associations of Water and Wastewater Management Services) (2009), *EUREAU statistics overview on water and wastewater in Europe 2008 – Italy's country profile*, June 2009, EUREAU, Brussels, www.riool.net/riool/binary/retrieveFile?itemid=4814&style=default.
- García Quesada, M. (2011), "Chapter 6: Italy", in *Water and sanitation services in Europe: do legal frameworks provide for good governance?* – Centre for Water Law, Policy and Science University of Dundee/UNESCO.
- Guerrini, A., et al. (2010), "Factors affecting the performance of water utilities companies", *International Journal of Public Sector Management*, Vol. 24, No. 6, <http://dx.doi.org/10.1108/09513551111163657>.

- Deloitte/IEEP (2011), *Support to Fitness Check Water Policy*, Deloitte Consulting and Institute for European Environmental Policy for the European Commission, General Directorate Environment, http://ec.europa.eu/environment/water/blueprint/pdf/safeguard_fitness_freshwater.pdf.
- ISPRA (Institute for Environmental Protection and Research) (2010), *Environmental Data Yearbook*, ISPRA, Rome.
- ISTAT (Italian National Statistical Institute) (2005), *Public Water Services Census*, ISTAT, Rome.
- Iuzzolino, I., et al. (2011), *Convergence among Italian regions 1861-2011*, Banca d'Italia, Rome, www.bancaditalia.it/pubblicazioni/pubsto/quastoeco/qse-22/Quaderno_storia_economica_n_22.pdf.
- Lippi, A., et al. (2008), "Adapting public-private governance to the local context – The case of water and sanitation services in Italy", *Public Management Review*, Vol. 10, No. 5, www.tandfonline.com/doi/abs/10.1080/14719030802264309.
- Lippi, A., et al. (2007), "Qui gouverne les services publics locaux ? Des configurations variables entre les secteurs public et privé dans le cas du service public de l'eau en Italie", *Revue Politiques et Management Public*, Vol. 25, No. 3, Institut de Management Public, www.persee.fr/web/revues/home/prescript/article/pomap_0758-1726_2007_num_25_3_2383.
- Massarutto, A. (2008), *L'acqua – Un dono della natura da gestire con intelligenza*, Il Mulino, Bologna.
- Massarutto, A. (2011a), "Aqua tempestose – Il referendum che asseta l'Italia", *Energia*, 32/3.
- Massarutto, A. (2011b), "I conti senza l'oste – Chi pagherà l'acqua dopo il referendum di giugno 2011?", *Economia dei Servizi – Markets, Institutions, Management*, Number 2, May-August 2011.
- Massarutto, A., et al. (2003), "Public participation in river basin management planning in Italy: an unconventional marriage of top-down planning and corporative politics", HarmoniCOP Project – Harmonising Collaborative Planning Work Package 4 – Final Report, www.harmonicop.uniosnabrueck.de/_files/_down/Italy.pdf.
- Mazzola, M.R. (2005), "Improving drought preparedness through water transfers", The agreement between Basilicata and Puglia regions, University of Palermo, <http://hispagua.cedex.es/sites/default/files/especiales/Trasvases%20Africa/basilicata.pdf>.
- OECD (2001), *Territorial Review of Italy*, OECD, Paris.
- OECD (2004), *Competition and regulation in the water sector – Italy's National Contribution*, OECD, Paris, www.oecd.org/regreform/liberalisationandcompetitioninterventioninregulatedsectors/33691325.pdf.
- OECD (2009a), *Reviews of Regulatory Reform – Italy, "Better regulation to strengthen market dynamics"*, OECD, Paris, <http://dx.doi.org/10.1787/9789264067264-en>.
- OECD (2009b), *Managing water for all – An OECD perspective of pricing and financing*, OECD, Paris, www.oecd.org/env/42350563.pdf.
- OECD (2010a), *Pricing Water Resources and Water and Sanitation Services*, OECD, Paris, <http://dx.doi.org/10.1787/9789264083608-en>.
- OECD (2010b), *OECD Territorial Review – Venice, Italy*, OECD, Paris, <http://dx.doi.org/10.1787/9789264083523-en>.
- OECD (2011a), *Economic Survey: Italy*, OECD, Paris, http://dx.doi.org/10.1787/eco_surveys-ita-2011-en.
- OECD (2011b), *Water Governance in OECD Countries: A Multi-level Approach*, OECD, Paris, <http://dx.doi.org/10.1787/9789264119284-en>.
- OECD (2012a), *Better Regulation in Europe – Italy*, OECD, Paris, <http://dx.doi.org/10.1787/9789264169975-en>.
- OECD (2012b), *A Framework for Water Resources Management Financing*, OECD, Paris, <http://dx.doi.org/10.1787/9789264179820-en>.
- Scarpidigno, A. (2011), *Water use efficiency and economic approach – National study, Italy*, Plan Bleu UNEP/ MAP Regional Activity Centre, Sophia Antipolis, July 2011, www.planbleu.org/publications/etudes_efficiency_eau/National_report_Water_IT.pdf.
- Skou Andersen, M., et al. (2011), *Environmental fiscal reform – Illustrative potential in Italy*, Integrated Environmental Assessment Programme Environmental Fiscal Reform – Illustrative Potential in Italy prepared by Mikael Skou Andersen, Stefan Speck and Orsola Mautone for the European Environment Agency, December 2011, www.dt.tesoro.it/export/sites/sitodt/modules/documenti_it/eventi/eventi/EEA_Briefing_Note_for_ETR_Workshop_Rome_finaldraft.pdf.
- UTILITATIS (2011), *Blue Book 2011: I dati sul servizio idrico integrato in Italia*, www.utilitatis.org/book/blue_book/2011bluebook.html.
- WWF Italia (2011), *Fiumi d'Italia, La Campagna WWF Liberafiumi 2010*, www.wwf.it/UserFiles/File/WWF%20Cosa%20Facciamo/Acque/Convegno_Fiumi_d'Italia_27_gennaio_2011/Dossier_WWF_Fiumi_d'Italia_2011.pdf.

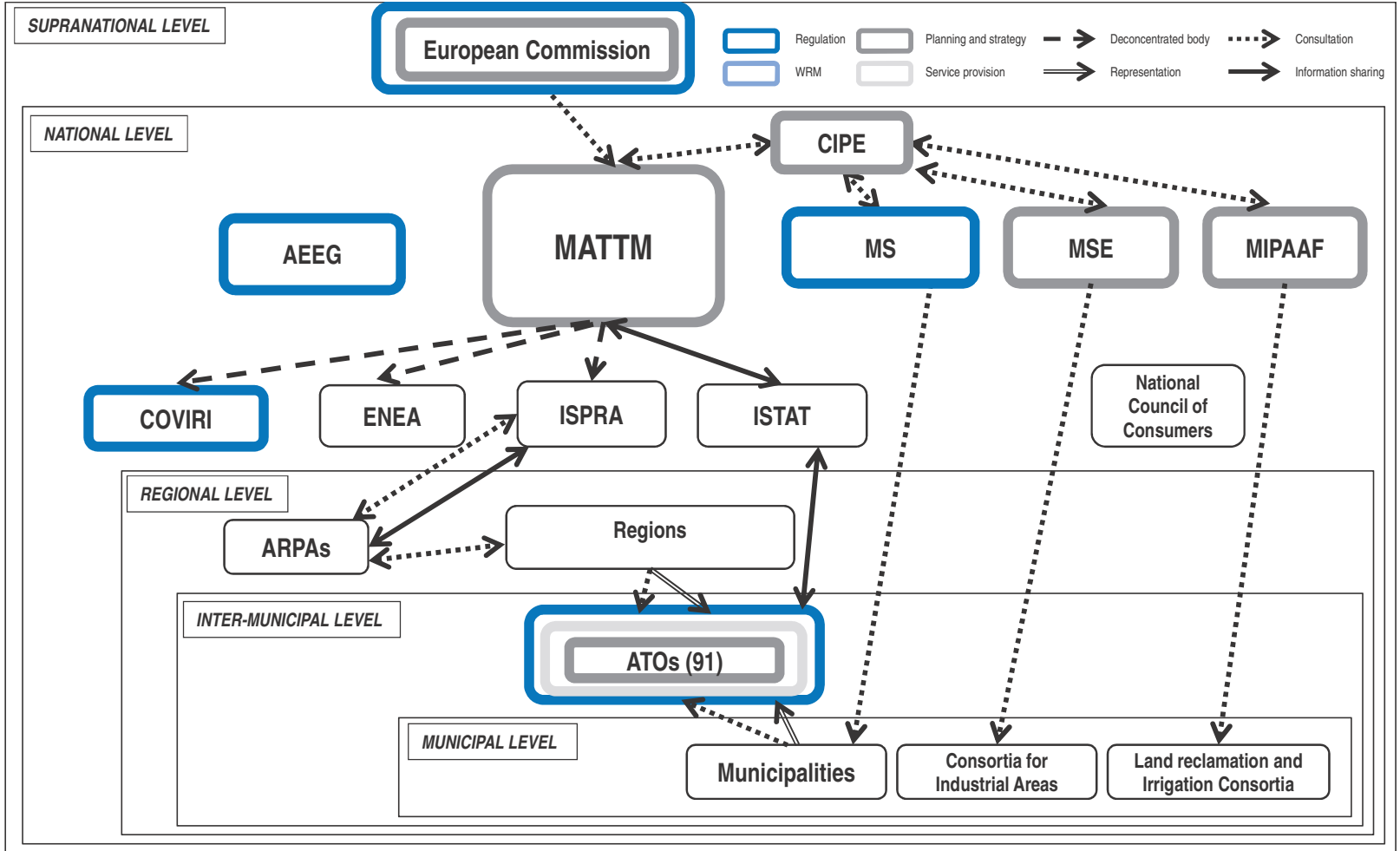
ANNEX 4.A1

Institutional mapping for water resources management



ANNEX 4.A2

Institutional mapping for water supply and sanitation





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