

Chapter 2

The Italian Water Industry

2.1 A Brief Overview of Italian Water Reforms: A Twenty-Year Excursus

The Italian Integrated Water Supply system presents a very complex landscape. Italy's water main and wastewater treatment plant network is very heterogeneous. Best practices exist, where entire areas are fully served by drinking water flowing directly to their homes all day, but there are other areas where the water flows from the tap only a few days a week. Municipalities served with high-quality water by innovative technologies coexist with poor areas characterized by outdated mains providing low-quality water.

The same applies to the sewerage systems and, above all, the treatment plants. There are many efficient and innovative wastewater treatment plants and many plants built years ago and now abandoned or poorly maintained. The European Community (EU) has begun several infringement proceedings against Italy, as it is not meeting the deadlines for the transposition of EU directive 271/91 for wastewater: the terms of adoption have long expired. In 2012, the European Commission took Italy to the EU Court of Justice for its failure to ensure that wastewater from agglomerations with more than 10,000 inhabitants discharging into sensitive areas is properly treated. In 2011, the Commission informed Italy that over 143 towns were still not connected to a suitable sewage system and/or lacked secondary treatment facilities or had insufficient capacity. While considerable progress has been made, 14 years after the deadline expired (in 1998, as the EU legislation required), at least 50 agglomerations still have shortcomings. The Commission claimed that the lack of adequate collection and treatment systems poses risks to human health and to inland waters and the marine environment.¹

Sections 2.1, 2.2 were written by Bettina Campedelli, Luciano Franchini and Giulia Romano, while 2.3 was written by Giulia Romano.

¹ http://europa.eu/rapid/press-release_IP-12-658_en.htm.

The Italian water industry needs to provide the investments required to address this critical situation. If we consider the infrastructure needs for the entire water supply sector, the total volume of investments needed reaches € 64 billion (D'Angelis and Irace 2011). However, the scarcity of funds available to national and local governments and the effects of the EU Stability and Growth Pact limit municipalities' investment capacity for water infrastructure and service improvements.

Attracting private investment could offer a solution, though investors are not currently interested in the Italian water sector because of its unstable legal framework (which has rapidly changed in the last 7 years) and the need to dialog with the local governments and politicians who manage a large part of the industry.

Although regulation of the Italian water industry began in 1865 (Marques 2010), the most comprehensive reform of water sector regulation began in the 1990s. In 1994, the Italian Parliament enacted the first law for the reorganization of the integrated water service (SII) in response to the emergency situation affecting a large part of the country. The SII covers the public collection, transportation, and distribution of water for civil use as well as sewerage and wastewater treatment for both mixed-use residential and industrial clients.²

Law 36/1994 (called the “Galli law,” for Giancarlo Galli, the Italian parliamentarian who was its principal author) tried to reorganize water services management, promoting the elimination of all direct municipal management and all the micro-enterprises that remain part of the Italian water system.

The Galli law was approved in 1994 and then applied along with subsequent regulations, such as ministerial rule 01/08/1996 on tariffs (the so-called “Normalized Method”) and law 152/2006 (the so-called “Environmental Code”). The main principles of the Galli law are the following:

- Surface water and groundwater, although not extracted from the subsoil, are public and must be maintained and used in accordance with the criteria of equity;
- Any use of water must safeguard the expectations and rights of future generations, so that they will benefit from a well-preserved natural heritage;
- Water use will follow the principles of water savings and renewal and must not affect water resources, the liveability of the environment, agriculture, fauna and aquatic flora, geomorphological processes, and hydrogeological equilibrium;
- Water use for human consumption has priority over other types of use, which are allowed when the resource is sufficient and preserving the quality of water for human consumption is possible.

The law aimed to overcome the permanent emergency affecting the integrated water services and promote the conditions for effective regulation of the industry. It provides, in the medium term, full water services coverage for the entire population and environmental protection through the construction of new sewers and wastewater treatment plants.

² National Authority for Energy, Gas and Water Services (AEEG).

Afterward, industrialization started to incentivize mergers and aggregations among utilities: large and diversified firms are best able to collect the necessary funds to cover all operating costs and finance infrastructure investments. In other words, the new law induced firms to try to produce economies of scale and scope by achieving cost efficiencies.

The law delegated to the regions the duty of identifying “optimal areas” (*Ambito Territoriale Ottimale*, or “ATO”) to be managed under the supervision of a local public authority for water services (*Autorità d’Ambito Territoriale Ottimale*, of “AATO”); however, though some regions quickly complied with the law (such as Tuscany and Lazio, which defined their ATOs in 1995 and 1996), other regions waited a long time to define theirs.

Law 36/1994 decrees that the management of the SII can occur under a private company, mixed-ownership company, or public company. In the case of a direct award to companies totally publicly owned or with a majority of public shares, an AATO, may entrust water services without recourse to competitive tendering. Otherwise, the AATO must conduct competitive tendering.

In order to maintain efficiency, effectiveness, and cost-effectiveness, local governments may provide for the management of the SII through a plurality of firms (e.g., one firm may provide the distribution and another the wastewater and sewerage).

In entrusting water management to an industrial company, a local authority negotiates with the concessionaires the required standards of service quality and investment needs. The execution of the plan and the service delivery are the utility’s responsibilities, while the municipality must periodically monitor activities through the AATO.

The Galli Law provided for the establishment of a tariff system based on the principle of a single tariff for each ATO, including the drinking water supply, sewerage, and waste water, to ensure full coverage of the operating costs and investment. The tariff is determined taking into account a variety of factors, including the quality of the water resource and the service provided, the investment and necessary maintenance, the extent of the operating costs, and the adequacy of the return on investment. These factors must all be weighed in relation to the financial plan for the investments: the tariff is determined on the basis of the “reference tariff,” used to adjust the tariff over time. To do this, the AATO takes into account the objectives of improved productivity and service quality and the current rate of inflation.

On August 1, 1996, the Minister of Public Works established the so-called “Normalized Method” to define the cost components and determine the reference tariff.

The Galli law confers significant autonomy onto each local authority, empowering AATOs to reorganize and oversee the water system. However, the law generated a high level of heterogeneity across the country, allowing many different ways of arranging water services.

In sum, law 36/1994 is a general framework that needed further regulations to be effectively applied; it provides no standards for delegating water services management, which is left to the regions and local authorities.

A further limitation of the 1994 reform was its lack of an independent regulatory authority for water. In the beginning, supervision was carried out by a committee of the Ministry of Public Work, which was transformed into the Commission of the Ministry for Environment (*Commissione Nazionale per la Vigilanza delle Risorse Idriche*, or the Co.N.Vi.Ri). Both entities were closely linked to the government and lacked the autonomy and independence they needed.

Moreover, the 2000 Water Framework Directive established a framework for EC action on water policy. The Directive introduces two key economic principles: it calls on water users (i.e., households, industries, and farmers) to pay for the full costs of the water services they receive and on Member States to use economic analyses in the management of their water resources and assess both their cost-effectiveness and the costs of alternatives when making key decisions.³

Twenty years ago, Italy had an opportunity to reform its national water sector, but this goal has been only partially achieved. After the promulgation of the Galli law, many areas of the country remain without effectively organized water services. Thus, 20 years after the reform went into effect, its purpose has not been completely achieved, though progress has been made: many firms now integrate their water, wastewater, and sewerage services (Co.N.Vi.Ri 2009), and some are now multiutility, providing services for the gas, electrical energy, and waste industries.

Further legislative interventions occurred over the last 20 years, but they were not completely consistent with each other and did not substantially improve the sector's organization.

Twelve years after the Galli Reform, Law 152/2006 provided new standards for the organization and control of water services. It regulates the water sector in an organic way, incorporating Law 36/94 and dictating more precisely the tasks and activities relevant to the various institutional actors involved in the water industry. Under the new law, the AATOs are now defined uniformly across the country instead of according to regional regulations.

Law 152/2006 defines the powers and responsibilities within the water sector as follows:

1. A National Regulatory Authority should define the national framework under which all firms must operate, choosing the tariff method and the service contract type; then, it should periodically monitor the implementation of the rules in every area.
2. A Local Regulator Authority (AATO) is responsible for controlling the entities that locally manage the services.
3. An entrusted water utility company is the owner of service delivery and the implementation of the necessary infrastructure.

³ http://ec.europa.eu/environment/water/participation/pdf/waternotes/water_note5_economics.pdf.

The relationship among these three actors is characterized by an intense reporting flow. Every AATO draws up a plan of the structural and organizational changes required to achieve the water and service quality targets established through national law and negotiated in detail with the utilities. This document is then matched with a business plan that includes an income statement, an asset and liability statement, a cash flow statement, and the financial ratios for each year covered by the license. Both documents are periodically revised and sent to the National Authority for Energy and Gas (AEEG) for approval. A third document, called the “contract of service,” negotiated between the AATO and the utilities, defines the standard of services and identifies the key performance indicators the local regulatory authority must monitor. Water services might be entrusted to:

- a private company chosen through a public competitive tender;
- mixed-ownership company, the private partner of which is chosen through a public competitive tender;
- public company, with an in-house provision of services.

The decree of January 16, 2008, n. 4, changed Law 152/2006, particularly to admit more entrusted water utility companies to the same ATO.

A map of Italian ATOs was designed by regional local authorities to chart the hydrological basins and the administrative boundaries. The map’s divisions were intended to create large areas that could be financially self-sufficient through tariff collections.

Figure 2.1 shows the 2009 distribution of Italian ATOs. The most common service cluster is between 250 and 400,000 inhabitants; however, quite a few ATOs operate in the lower and upper clusters (20 and 24 ATOs, respectively).

In 2008, nearly 15 years after the Galli reform, its planned changes had still not been fully achieved, despite certain improvements. The last report of the Co.N.Vi.Ri showed that, in 2008, only 75 % of AATOs had finished reorganizing

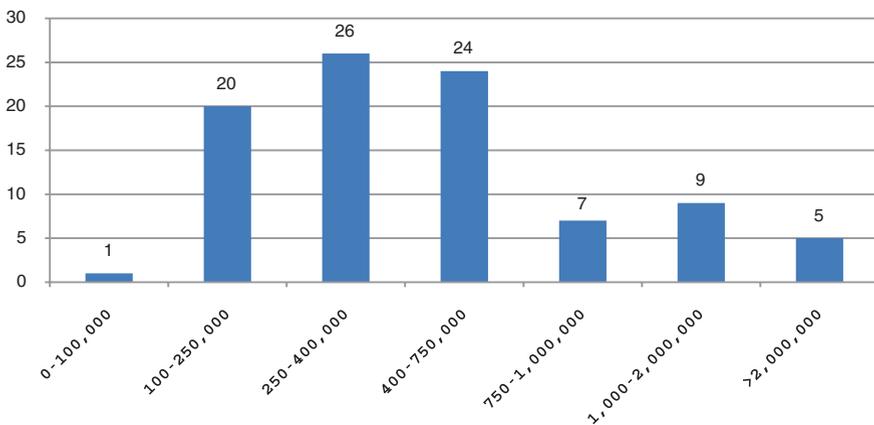


Fig. 2.1 Number of ATOs and size of population served. *Source* (Co.N.Vi.Ri 2009)

and franchising water and wastewater services to independent firms, serving 57 % of Italian municipalities and 66 % of the Italian population; in the remaining municipalities, most water services were still being provided by the municipalities (Co.N.Vi.Ri 2009 and 2011).

In response to this situation, the Italian government mandated the privatization of public services, including water and wastewater services (by modifying Law 133/2008, article 23 bis in November 2009). The intent of this reform is to improve SII performance through the introduction of private investors whom the Italian government considers to be more oriented toward efficiency and effectiveness than public investors are. Under this new reform, water and wastewater services had to be franchised to private or public–private utilities in which the private partner held at least 40 % of the shares; no water management franchises could be awarded to totally publicly owned utilities after December 2011 (Testa 2010).

This change prompted extensive political debate in Italy among a large part of the population: those in favor of water industry privatization believed that the private provision of water services would improve quality and efficiency and thus reduce tariffs, while supporters of public water systems were convinced that water services should not be privatized, being a natural monopoly, and that private players would not improve investments or water quality but only increase their profits. Moreover, they criticized the existing tariff system that allowed a 7 % assured return on invested capital even for inefficient firms (Guerrini and Romano 2013).

Two 2001 referenda on these issues attracted broad public participation. The outcome was that AATOs were no longer obliged to franchise water and wastewater services only to mixed or privately owned utilities; they could grant concessions to public companies financed by municipalities, as they could before the 2009 reform. In addition, the tariff-setting method changed: water tariffs no longer had to guarantee a return on invested capital.

The 2010 Law n. 42 mandated the deletion of the AATOs not later than January 1, 2011 (later extended to December 31, 2012), conferring the AATO's functions onto the regions through a new law. The number of AATOs dropped to 71, since four Italian regions (Emilia Romagna, Tuscany, Abruzzo, and Calabria) opted for unique regional AATOs. In Tuscany, for example, instead of six different AATOs, the A.I.T. (*Autorità Idrica Toscana*) has operated alone since the beginning of 2012.

In 2011, Law 214/2011 gave the AEEG the power to supervise the water sector, in addition to the gas and energy sectors it already regulated. The AEEG is governed by a committee of five members who sit for 7 years; each member is named by the Italian government and then approved by parliamentary committees, and they represent all the major political parties.

2.2 The Current Regulatory Framework

As reported in the previous paragraph, the current regulatory framework is the result of the many attempts to liberalize and modernize the SII made by various governments over the last two decades (Guerrini and Romano 2013;

Carrozza 2011; Danesi et al. 2007). It is also the result of the European framework drawn through the Water and Waste Water Directives (Directive 2000/60/EC and Directive 91/271/EEC) and the overwhelming majority in June 2011 public referendum that delayed compulsory water services privatization and the guaranteed return on investment for water utilities.

Law 152/2006, the Water Framework Directive, and decree n. 201/2011 comprise the current national framework for water services. The latter decree conferred the regulation and control of water services onto the AEEG, with the Ministry of the Environment responsible for other functions (e.g., defining the general objectives of water quality, developing ways to encourage water conservation, water use efficiency, and wastewater reuse). The AEEG regulates water services according to the following aims:

- guaranteeing the dissemination, accessibility and quality of services to users uniformly throughout the country;
- establishing a tariff system that is fair, reliable, transparent, and non-discriminatory;
- protecting the rights and interests of users;
- managing water services in terms of efficiency and economic and financial stability;
- implementing the European Community’s “full cost recovery” (including environmental and resource-related costs) and “the polluter pays” principles.

To achieve these aims, the AEEG defined a tariff method for determining the rate of water service, paying particular attention to reimbursing operating costs, service costs, and the related environmental costs of the resources. The Authority began its activities in 2012 by issuing a transitional tariff model (MTT) and then developed a new model (the *Metodo Tariffario Idrico*, or MTI) that is more consistent with EU standards and respectful of the outcome of 2011 referendum. The MTT replaces the model that had been in force since 1996 and was applied in 2012 and 2013 before being replaced with the MTI in 2014. It is worth briefly explaining the MTI, since it affects businesses significantly. The new pricing formula is as follows:

$$VRG^a = Capex^a + FoNI^a + Opex^a + ERC^a + Rc_{TOR}^a$$

where:

- Capex: represents the cost of fixed assets, including interest expenses, tax expenses, depreciation, and amortization;
- FoNI: includes cost items paid to finance new investments;
- Opex: includes operating costs;
- ERC: covers the environmental and resource costs not included in the other tariff components;
- Rc: represents adjustments for the prior years’ tariff.

The MTI provides a new paradigm for tariff estimation: the previous “normalized method” was based on *ex-ante regulation*, which determines a tariff on the basis of planned investments; the MTI applies CAPEX tariff coverage through an *ex-post regulation* that includes only those costs related to actual investments. The

new model thus transfers the risk of delayed returns on investment from the citizens to the water utilities.

This provision represents a significant reform that could improve the quality of services. The former method did not incentivize firms to realize their investments, as they were reimbursed for the cost of their planned investments even when not realized. Under the *ex-ante regulation*, several utilities experienced high tariffs and low investments (Guerrini et al. 2011). In such cases, the AATO sanctions the firms, but the authority does not often exert effective control. The MTT and MTI will be further described in Chap. 4.

2.3 An Overview of the Italian Water Industry

A recent survey (AEEG 2013) on a sample of 284 water utilities shows that Italy has highly heterogeneous service area sizes (see Table 2.1). The average number of municipalities served by a single firm is 12, highlighting the severe fragmentation of the Italian water industry. This is shown in Fig. 2.2, which indicates that 117 out of 284 selected firms operate in an area with fewer than 5,000 inhabitants.

Many firms are still operating on limited hydrological basins. Moreover, some municipalities have not yet delegated the management of their water services, which furthers the aggregation and corporatization of the Italian water sector.

The AEEG database indicates that 1,235 independent firms and public bodies were involved in Italy's provision of water services at the end of 2013. Of these 1,235 operators, 75 % (n. 931) are municipalities or other public bodies (such as consortia of local governments or mountain communities) that provide one or more water services directly "in house." As can be seen in Table 2.2, the great majority of the local governments that have chosen to provide services directly (around 79 %) are located in the north of Italy, mainly in Lombardia and Trentino Alto Adige. In some regions (i.e., Basilicata, Friuli, Puglia, Sardegna, Umbria, and Veneto), no municipality or public body is involved in the provision of water services. In two regions (Molise and Valle d'Aosta), water services are provided only by municipalities or some other public body, with no water utilities involved in the industry (see Table 2.2). Moreover, only 232 municipalities or other public bodies

Table 2.1 Size of Italian water utilities

	Population served			Number of municipalities served		
	Water	Sewerage	Wastewater treatment	Water	Sewerage	Wastewater treatment
Average	124,224	116,046	138,240	12	12	16
Max	4,060,595	3,981,387	3,972,744	283	286	288
Min	31	23	79	1	1	1
Coverage of the sample (%)	55	46	43.10	38	34.70	35.40

Source (AEEG 2013)

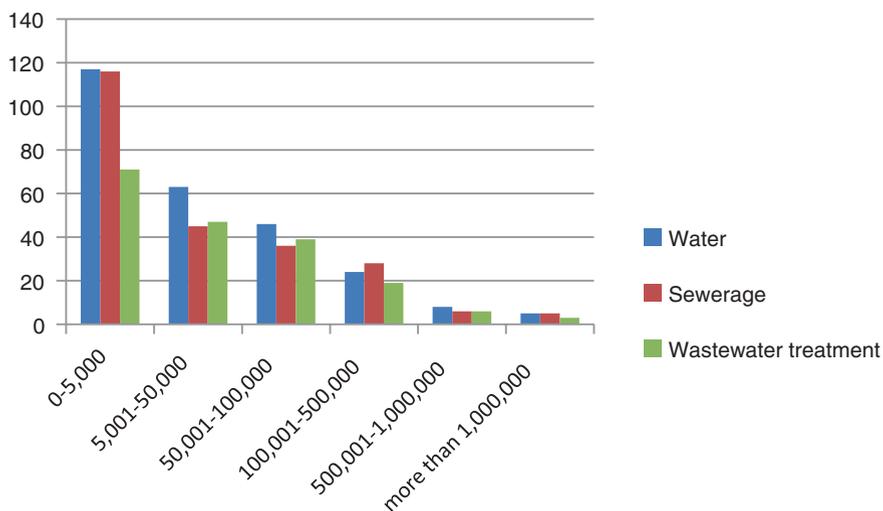


Fig. 2.2 Number of inhabitants served by utilities

Table 2.2 Geographical localization of public bodies and water utilities providing water services in Italy

Region	Area	Public bodies		Water utilities		Total	
		No.	%	No.	%	No.	%
ABRUZZO	South	9	1	7	2	16	1
BASILICATA	South	0	0	1	0	1	0
CALABRIA	South	2	0	3	1	5	0
CAMPANIA	South	49	5	13	4	62	5
EMILIA	North	3	0	8	3	11	1
FRIULI	North	0	0	9	3	9	1
LAZIO	Centre	42	5	9	3	51	4
LIGURIA	North	23	2	18	6	41	3
LOMBARDIA	North	321	34	82	27	403	33
MARCHE	Centre	17	2	12	4	29	2
MOLISE	South	51	5	0	0	51	4
PIEMONTE	North	28	3	31	10	59	5
PUGLIA	South	0	0	1	0	1	0
SARDEGNA	South	0	0	2	1	2	0
SICILIA	South	29	3	48	16	77	6
TOSCANA	Centre	1	0	10	3	11	1
TRENTINO	North	293	31	27	9	320	26
UMBRIA	Centre	0	0	3	1	3	0
VALLE D' AOSTA	North	63	7	0	0	63	5
VENETO	North	0	0	20	7	20	2
TOTAL		931	100	304	100	1235	100

Table 2.3 The specific type of services provided by 25 mono utilities

	Number of water utilities
Only collection	0
Only potabilization	1
Only adduction/transportation	0
Only wholesale	3
Only distribution of water for civil use	5
Only sewerage	1
Only wastewater	15
Total	25

provide all of the five main water services (i.e., the collection, transportation, and distribution of water for civil use and sewerage and wastewater treatment), while the others provide only one service or some (mainly sewerage and distribution).

Thus, only 304 of the 1,235 operators are independent firms (water utilities) that were established on average in 1991, so they are on average 23 years old, with a maximum of a firm that was established in 1852 (Società Acque Potabili, located in Turin).

Only 160 Italian water utilities provide at the same time the services of collection, transportation, and distribution of water for civil use, sewerage, and wastewater treatment. These utilities are located mainly in the north of Italy (64 and 27 % only in Lombardia). These data highlight a complex scenario, where there are regions (Basilicata, Puglia, and Sardegna) that have only one or two water utilities that manage the water services for the entire regional area, and regions (such as Lombardia, Trentino, and Sicilia) with numerous different operators.

Analyzing financial statements and websites, we find that many Italian water utilities provide only the water services (mono-utilities) and are not involved in other industries such as electricity, gas, or municipal waste management. Actually, 202 utilities are not involved in other businesses. In particular, 25 mono utilities provide only one service (see Table 2.3), while 108 firms are the mono utilities that provide at the same time all the main water services (collection, adduction/transportation, distribution of water for civil use, sewerage, and wastewater treatment).

The complexity of the water utilities' vertical integrations and diversification strategies makes it difficult to compare firms' performance and efficiency and reflects the complexity of the endogenous and environmental factors affecting decision makers' definitions of the best organizational structure for the water industry.

Using the AIDA database, we collect information about the number of employees, ownership type, and number of shareholders for each of the 304 utilities for 2012. We find that Italian water utilities had more than 43,700 employees, with an average of around 160 employees each, and a maximum of more than 6,500 employees in Hera Spa, the biggest Italian multi-utility. The mono-utility with the most employees was Acea Ato 2, serving the Roma area, followed by Abbanoa, which provides water services to almost all of Sardinia (both with around 1,400 employees). Thus, the water sector is very important for the Italian economy in

Table 2.4 Clusters of firms on the basis of ownership type

Ownership type	Number of firms	% of firms	Average number of shareholders	Min number of shareholders	Max number of shareholders
Publicly-owned	162	53	29.67	1	343
Mixed-ownership	64	21	19.79	1	128
Privately-owned	78	26	29.90	1	583
Total	304	100	27.51	1	583

terms of employment; Romano and Guerrini (2014) show that Italian publicly owned water utilities have significantly more employees than the others do.

In addition, most of the 304 utilities (53 %) are public firms (whose shareholders are municipalities or other public bodies; see Table 2.4); 26 % are totally private firms, and the remaining 21 % are mixed-ownership firms with both public and private shareholders.

These 304 firms (excluding the 15 private partnerships and sole proprietorships, 13 co-ops, and 3 listed companies) have an average of 27 shareholders, with a minimum of one sole shareholder and a maximum of 583. The average number of shareholders is higher in private firms, although when excluding the firm with the most shareholders, the average is only 18.6, the lowest among the three clusters.

Moreover, 50 firms have only one shareholder, 33 of which are public; 90 firms (around 30 %) have no more than three shareholders, and only 13 have more than 100.

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