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THE PRIVATIZATION IN THE WATER SECTOR

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ABSTRACT

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The work aims to analyze the evolution of the discipline of the national water service, with particular regard to the legislation that relates to the profiles of service assignment and organization from the original model of municipalization defined at the beginning of the twentieth century. It will be seen that the service born as a municipal service, for reasons of increasing efficiency, has over time ended up being the subject of an increasingly aimed discipline to encourage its private nature, through the imposition of the integration of the various operating phases and the involvement of subjects other than traditional ones and belonging to the public sphere. The term privatization refers to all those economic processes that are aimed at the transfer of ownership of an entity or company, from the sphere of public control to the private one. The motivations that pushed towards the privatization of water have been very similar from one reality to another: the need to improve the quality of the service, the will to generate new revenue or to reduce expenses for the state, the desire to mobilize private financing without having to increase taxes or public debt.

We will then see how the involvement of the sector in attempts to open up the public services market eventually led to a referendum. To continue the analysis, we will consider the experiences of water service management in the world and in particular in the United Kingdom, in search of a possible model that can be implemented in our country, taking into account the referendum constraints in the background. It will not be possible to fail to point out that, since in the Treaty on the Functioning of the European Union there are no specific indications on the organization and management of water resources, as well as sectoral directives on the matter, the debate on the need for effective protection of the water heritage does not share indications on its management methods followed. In this way, a very fragmented and uninformed picture was born that unites the different experiences. Just taking a cue from the study of the consequences of the privatization of water in Italy and in the world, public opinion and many representatives of the political parties of the opposition immediately expressed their adverse orientation, declaring themselves openly opposed to the advent of privatization in the water sector.

Particularly debated were the arguments concerning the effective distinction between public property and private management of water resources, the capacity and willingness of private individuals to support the investments necessary for the maintenance of infrastructures and above all the fear of witnessing exponential growth of tariffs against citizens. Finally, an overview of the situation currently present in the Italian territory, with a more detailed analysis conducted on Hera, the second operator at the national level, will allow for an assessment of the role of private individuals in the water sector.

Keywords: privatization, public property, private management, legislation.

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INTRODUCTION

Globally, the report "Water in a changing world", published by the UN, describes a reality in which more than 1 billion 200 million people do not have sufficient access to sources of clean water. The OECD predicts that, due to climate change, by 2030 almost half of the world's population will live in areas of high water stress. Furthermore, the scarcity of water in some arid and semi-arid areas will cause the movement of between 24 and 700 million people. Finally, the UN Report highlights the very strong impact that this situation has and will have on public health: almost 80% of diseases in developing countries are closely related to the use of contaminated water. William Cosgrove said that the demand for water "is creating fierce competition and what we need is better water management, better legislation and more effective and transparent water distribution." At the local level, as in many industrialized countries, the debate between public and private resource management is developing in Italy too.

The problem of water scarcity is reflected both economically and politically. In fact, there is a clear divergence between those who conceive water as a marketable commodity and those who consider it a vital common good, which as such must remain public.The purpose of this thesis will therefore be to provide the technical-economic elements useful to public decision-makers and citizens so that rational and conscious choices are made. The theme will be addressed with a look at the global and Italian situation and then focus on the reality of Hera spa.

CHAPTER 1
PRIVATIZATION

1.1 Evolution of privatization

Since the last decades of the last century, in Italy as in most of the rest of Western Europe, the role of the state in the economy has profoundly changed by downsizing its intervention in the production of goods and services. In the first 40 years of the twentieth century, the world conflict, the crisis of the '29 and the consequent great depression, had disastrous effects on European national economies. In this period, in much of Europe, the relationship between the state and productive activity intensified as public presence in the national economy was considered fundamental and necessary in order to be able to save businesses and industries that are heavily in crisis (Beatrice Hibou, 2004).

In order to improve national economic conditions, a first nationalization policy had been started in the 1930s: for example, IRI (Industrial Reconstruction Institute) had been set up in Italy, in its imitation Spain founded INI (Instituto Nacional de Industria), in France the railways and companies in the arms and aeronautical construction sectors were nationalized, in Germany, during the Weimar republic, large sectors of production (chemical, mines..) and production of services and infrastructures were managed by the State (Franco Amatori, 2014). But a greater and deeper nationalization process intensified after the Second World War: albeit with differences between the various countries, the "State - Entrepreneur" played a dominant role in the production of goods and services. In fact, after the Second World War, the public enterprise had enormously extended its intervention sectors and now controlled most of the production activities (Pierangelo Maria Toninelli, 2006):

- Public services (water, gas, railways, radio, TV..);
- The so-called basic industry (mines, steel industry, oil..);
- Banks and insurance companies;
- Education and health.

Mainly since the 1980s, however, there was a turnaround. The States of the Union have increasingly become aware that the public enterprise has limits and for this reason it has been the subject of numerous disputes. The latter in fact limits the free functioning of the market and causes the lack of real competitiveness which conditions and favors the effectiveness of the

corporate system. For these reasons, there is a growing need to eliminate or reduce public interference in the economic system and to argue that privatizing meant providing an indispensable tool for modernizing the economy. In addition, the European Union was exerting strong pressure for the reorganization of the economic system; in fact, at the end of the 1980s, the main objective of the Union directives was the liberalization of markets. European regulations provided for dual-level liberalization: both externally, therefore towards other Member States, and an internal liberalization of the country, in which to liberalize economic life, meant giving control of productive activities back to private individuals. In the latter case, the European institutions imposed ad hoc directives for each country and different for each sector according to the needs of the various nations. Furthermore, EU policies supported "balanced economic growth" based on "price stability, a highly competitive social market economy" (European Commission, Strasbourg 03/2016, pp. 3) and had indeed supported the importance of competition in the EU since the 1957 Treaty of Rome (Beatrice Hibou, 2004).
Article 2 of the EEC Treaty in fact states that: “The Community has the task of promoting, throughout the Community, by establishing a common market and an economic union ... a balanced and sustainable harmonious development of economic activities, a high level of employment and social protection. .. sustainable and non-inflationary growth, a high degree of competitiveness and convergence of economic results, ... economic and social cohesion and solidarity between the Member States " (EC Treaty, March 25, 1957, Art.2). The Union therefore condemns States that implement anti-competitive behavior and do not encourage liberalization; This is mainly because, through competitive policy, regulations are passed which guarantee fair competition between companies, lower prices and an improvement in the quality of the goods and services offered. In pursuing these goals and in complying with the directives of the Union, during the last decades of the last century, the structure of the Italian and European economic system underwent profound metamorphoses and it was in this context that the privatization process started.

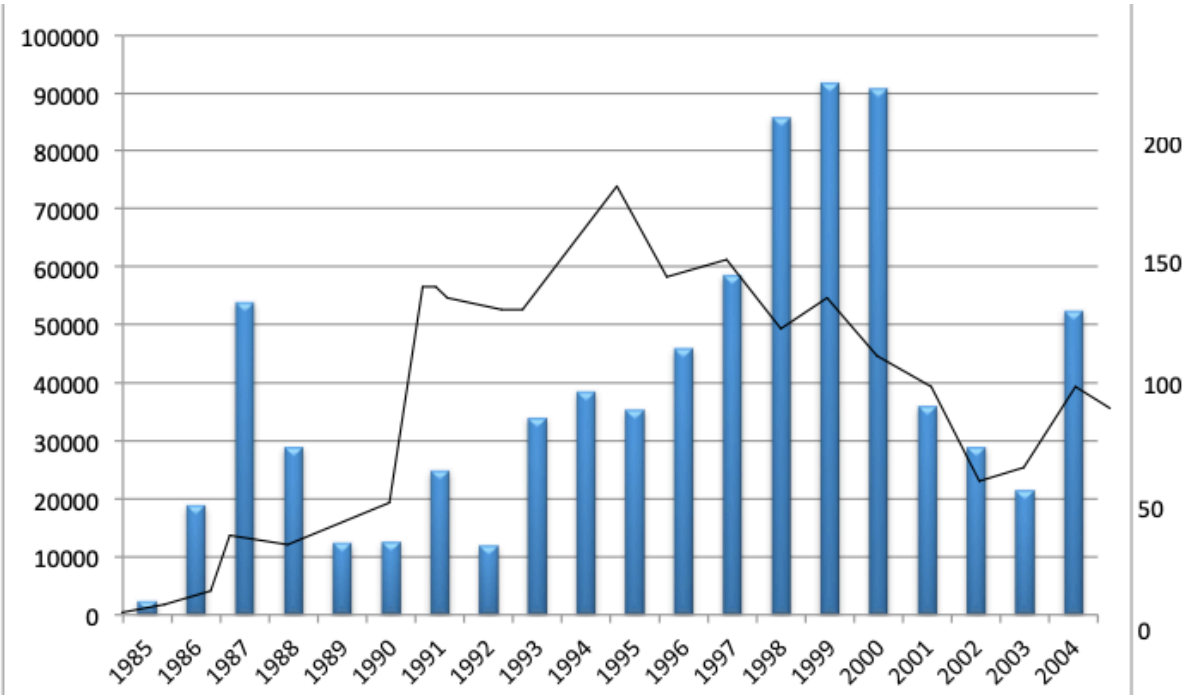
The privatization of public services consists in a transformation of the nature of the economic entity which aims to reduce the entrepreneurial and direct intervention of the state in the economy. This is the inverse process of the so-called nationalization, in fact, the public power withdraws from the productive and economic activity and the entity completely or partially divests its participation in the management of the activity. The divestments of public structures do not however indicate a total disinterest of the State towards the economic sector, but, having reached the awareness of the effective failure of the public enterprise regarding the profitability

of the enterprise, the quality of the services provided and transparency in management, the state decides to no longer benefit from a direct economic sector management model. On the contrary, he begins to carry out a largely regulatory activity, in order to achieve efficient operating conditions. In fact, it is claimed that we have moved from a concept of 'Entrepreneurial State', and therefore a direct manager of production activities to guarantee political and social objectives, to a 'Regulatory State', in which the latter has a different operating mode, mainly precisely regulatory activity in order to ensure efficient functioning for the community (Alberto Fossati, 2010).

The privatization process in Europe is symbolically started from Great Britain during the Thatcher period. Subsequently, spreading among the other States of the Union, many of them began to withdraw in most sectors of the economy and to a public monopoly they began to prefer, and implement, freer and more competitive market models. The divestments initially concerned competitive sectors, such as the banking and financial sector and the manufacturing sector; only later were monopolistic sectors such as transport, telecommunications and public utilities privatized. Although with differences between the various countries, depending on the needs of each individual state and its historical and institutional characteristics, it seems possible to identify common purposes that have given rise to this process:
- political and ideological purposes, the importance of creating a market system based on private enterprise and the reduction of the weight of the public sector in the economy is reaffirmed;
- purpose of efficiency, therefore promoting economic efficiency, by increasing the level of competitiveness and the tendency of private companies to invest more in research and development;
- economic and financial purposes, privatizations are often induced in order to rebalance public finance; in fact, they are supposed to lead to improvements in financial conditions thanks to the use of disposals proceeds to decrease public debt or to cover current expenses;
- purpose of transparency, that is introducing managerial logic and greater transparency and clarity on economic, financial and equity aspects;
- purpose of improvement on the equity front by restoring value to the stock market, in fact, a low level of state intervention in the national economy constitutes a more attractive environment for foreign investors.

Most Western countries have initiated policies to revise public intervention in the market in the last decades of the twentieth century, but mainly from the 1980s and even more so in the

following decade. As shown in the graph (Privatization Barometer, 2007) that follows, the 1990s, with peaks between 1998 and 2000, will be the ones that will see the most privatization operations and the highest takings. Only between 1990 and 2001 in the OECD countries the proceeds from privatizations almost reached 700 billion dollars.



Graphic 1 - Privatization in the oecd Countries from 1985 to 2004

Number of transactions - scale on the right

Proceeds (current millions of euros) - scale on the left

With the start of the privatization process, the so-called Golden Share legal institution (literally Golden Action) is introduced in the United Kingdom. This term is used to indicate the special powers that the State maintains during and following the privatization process of a public enterprise, regardless of the percentage of the share capital that the State holds within the company (Muchlinski, 2007). In this way, even if it holds only one share, the public authority, among the various special powers, has:

- the right of veto on some corporate resolutions;
- the power to appoint members of the board of directors and the board of statutory auditors;
- the possibility of deliberating on decisions deemed important such as for example demergers, change of headquarters, mergers, amendments to the articles of association, etc.

The Golden Share, attributing so many powers to the public body, has been the subject of numerous debates over the years as it represents a real brake on privatizations. In particular, the Court of Justice stated that the special powers held by the State are incompatible with the precepts contained in the European Community treaties and in particular with the principles of free movement of capital and freedom of establishment; for this reason the Court of Justice has activated infringement procedures for several states, including Italy, Germany and France.

In 2003, Italy, through amendments to the previous regulations, severely limited the Golden Share through the possibility of exercising public powers only in cases where the vital interests of the state are compromised. In recent years, therefore, the use of the Golden Share in EU countries has declined sharply, passing on to the Golden Powers system. The so-called Golden Powers model is a lighter method of intervention but with a wider application scope as it is no longer used only by companies being privatized, but also on private ones in sectors that carry out activities or hold assets deemed of strategic importance , where it is essential to ensure minimum guarantees. The Italian rules provide for different disciplines according to the sectors. The law decree n.21 of 15 March 2012 declares that the State can exercise special powers in the defense and national security sectors, as well as in those companies operating in relevant sectors (Ennio Triggiani, Ugo Villani, 2014). A more invasive action is guaranteed to the Government regarding the defense and strategic security, that is energy, transport and national communications, but only "in the case of an actual threat of serious prejudice to the essential interests of defense and national security" (Decreto legge, 2012). In this case the State does not renounce any power with respect to those conferred on it in the Golden Share process and in particular the powers attributed to it are:

- "imposition of specific conditions relating to security of supply, information security, technology transfers, export control";
- "veto on the adoption of resolutions of the assembly or administrative bodies of a company ... concerning the merger or demerger of the company, the transfer of the company or its branches or subsidiaries, the transfer of the registered office abroad, the change of the corporate purpose, the dissolution of the company, the assignment of real or use rights relating to tangible or intangible assets or the assumption of restrictions that condition its use ";
- "opposition to the purchase, for any reason, of shareholdings in a company referred to in letter a) by a person other than the Italian State, Italian public bodies or subjects controlled by them, if the buyer comes to hold, directly or indirectly, even though subsequent acquisitions, through a third party or through otherwise connected parties, a level of participation in the capital with

voting rights capable of compromising in the specific case the interests of defense and national security".

In sectors of strategic importance, the State can use its powers only if there are exceptional situations, not regulated by national and European regulations, and if its interventions are necessary to ensure the minimum supply and operation of essential public services company (Muchlinski, 2007). Article 2 of the Law Decree n. 21 in particular provides that:

- "Any resolution, act or operation, adopted by a company" (in the energy, transport and communications sectors) ... "which has the effect of changing the ownership, control or availability of the assets themselves or changing their destination , including the resolutions of the shareholders' meeting or of the administrative bodies concerning the merger or demerger of the company, the transfer of the registered office abroad, the transfer of the company or branches of which the said assets are included or the the assignment of the same as a guarantee, are within ten days, and in any case before their implementation, notified to the Prime Minister by the company itself " (Decreto legge, 2012);
- “By decree of the President of the Council of Ministers adopted on the conformity of the Council of Ministers, a veto can be expressed to the resolutions (Decreto legge, 2012);

Therefore the second and third paragraphs of the Law Decree provide that any provision that may change the ownership, management or headquarters of companies operating in the energy, transport and communications sectors must necessarily be communicated to the Council of Ministers, which may aimed at opposing the implementation of the planned interventions.
The following paragraphs also provide that the sale of the company, in any capacity, to a person outside the European Union, is conditioned by the buyer's commitment to guarantee the fundamental interests of the State.

There were 4 types of public enterprises present in the period prior to the privatization phase, which began in the 1990s:

- Organ enterprise: the public authority carried out the business activity through its own body. In this case, the public entity was not an entrepreneur because it was a subsidiary and not prevalent entrepreneurial activity.
- Public entity company: which in turn distinguishes itself from an operating public entity from a public management or holding company where the former produces directly for the market while the latter holds interests in other companies. This typology is characterized by the fact

that the activity, even if the public subject holds the qualification of entrepreneur, is subject to the discipline of private law.
- Enterprise - company with public participation: in this case the person who carries out the business activity is a private individual, while advertising is found in the person who controls it through equity participation.
- Public group: it is a mixed species because it presents elements common to the public body company and the company with public participation; in this case there is a public management body at the top, subsequently transformed into a company with state participation, and further down there are companies with public participation.
From what has been described so far, it is clear that it is easily possible to find oneself in front of companies with public participation but which are not, however, public enterprises or, vice versa, in companies with private participations which are instead public enterprises (Dieter Bos, 2001).

1.2 Privatization methods

The substitution in the management of enterprises of the public hand in favor of the private entity takes place through various procedures; the concept of privatization can in fact be understood in different ways and we can therefore distinguish between formal privatization and substantial privatization. Formal privatization consists of changing the legal status of businesses. Or instead of the previous regime of public economic body or publicly owned company, a corporate model of private law, mainly joint stock company, will be adopted. In this way, therefore, there will be a transition from public law discipline to private law discipline, even if the State is the main shareholder. However, this form of privatization is considered a temporary solution and a sort of functional tool for carrying out the next phase, that is, substantial privatization (Asian Development Bank, 2008).

The Interministerial Committee for Economic Planning (CIPE) in its resolution of March 25, 1992 declares that: "the transformation of public economic bodies and state-owned companies into public limited companies represents the first phase of a more complex privatization process which envisages the subsequent placing on the market of shares of the public sector of the economy - the transformation into a joint-stock company is in itself a strategic objective which must be pursued as quickly as possible, in order to proceed with the necessary rationalization of the system of public bodies and companies and to further commit their management to

criteria of economy and efficiency according to the rules of the market, contributing, also for this aspect, to implement the expected process of consolidation of public finance " (Inter-ministerial Committee 1992). By means of substantial privatization, however, public enterprises move from the ownership of a public entity to a private one and the latter becomes the owner in all respects. There is therefore a real divestiture of public participation and the management of the business, or business sectors, is taken over entirely by private individuals. It should also be noted that the transfer of ownership can be total or partial, depending on the interest that the state has in maintaining some control in the economic sector in question and on the activities it is selling. To implement a substantial privatization process, numerous elements must be verified and for this reason there is greater complexity in the procedures; in fact we can distinguish several phases in its realization :

1. Selection of privatized properties;
2. Verification of the legal conditions of the assignment, consists in verifying the possibility of transfer of property rights at a legal level;
3. Verification of the economic conditions of the sale, at this stage all the economic and financial recovery works necessary to increase the possibility of the sale of the company are considered: a healthy company from an economic point of view is certainly more "attractive" to investors ;
4. Verification of the compatibility of economic policy, ie the study of the necessary interventions which can be legal, regulatory or deregulatory, all those processes of legal reorganization and managerial structure implemented in order to increase the sale price;
5. Definition of the transfer entity, which may concern the whole company or a minority part of it. It consists in selecting all those activities that seem to be most suitable according to the objectives pursued by the privatization itself and on how much public control over that sector is desired;
6. Evaluation of the sale, means assessing and reaching, based on the company's real possibilities of producing income, the right balance between economic capital and the sale price;
7. Definition of the transfer channels;
8. Definition of transfer times.

It is necessary to underline the importance of the seventh phase, the definition of the transfer channels, or rather the sales techniques. There are different types of divestitures but below we

will analyze the most frequent ones. The public sale offer (OPV) is one of these and is the most widely used method of substantial privatization among large companies. Through placement on the securities market, the IPO aims to create a widespread shareholder base and can take place either through the offer at a fixed price or through a public auction offer (Roberto Fazioli, 2013). A second modality of substantial privatization is the direct selling technique. This method is usually used for the sale of companies with low profitability to buyers with high financial opportunities and industrial experience since the seller's goal, in addition to maximizing revenue, is to ensure business success. In this case, the sale can take place: through private negotiation (there is a direct relationship between the private operator and the public operator for a bilateral negotiation); through an auction sale (with sale to the highest bidder); finally through the so-called Management buy-out or Employee buy-out: when the inefficiency of a public company is due to the lack of interest in management, the staff are motivated to act in the interest of the company and following a negotiation the latter is transferred to managers or employees. There are other ways in which the public body tries to adapt the company to market systems by modifying its management formulas while not hindering its control over it. These include:

-Deregulation or deregulation: in this case the State reduces the limits and restrictions of production activity and economic behavior in order to encourage the same market operations and efficiency. In fact, the basis of deregulation is the concept according to which the breaking down of the rules in a production sector leads to higher levels of competition, which in turn affect productivity and efficiency.
-Incremental privatization: occurs when most of the shares remain public, but part of the share capital is transferred to private individuals in order to expand the company's investments.
-Functional privatization: in this case, however, the State and the public body delegate, through the system of tenders or concessions, a production activity to a private company while maintaining ownership and the strategic control task. This is the case of franchising and contracting out.
-Cold privatization: involves a transformation in the way the company is managed as more solid legal relationships are introduced between private individuals and public administrators and private objectives (Roberto Fazioli, 2013).

1.3 Stages of the privatization process

The Green Book on State Participations, published in 1992 by the Directorate General of the Treasury, which presented the situation of public groups, their prospects and the basic elements for a reorganization program, can be considered a good starting point to understand which were the government's intent then to launch such a large restructuring program and what were the stages of this process. The document was drafted by a committee of independent experts commissioned by the Treasury and first submitted to Parliament in November 1992.

In its entirety, the privatization process started in Italy even before its strategy was defined in the terms indicated above. As of 2007, Italian privatizations ranked second and fifth globally, respectively in terms of revenues and number of transactions. As for aggregate income, Italy is the only one that has collected Japan, which collected most of its revenues through a few large transactions carried out in the mid-1980s during a very favorable market period. Taking into account the size of the country, the data regarding the proceeds as a percentage of GDP still show that Italy occupies a pre-eminent position. The Italian privatization process can be divided into five phases (Vuylsteke, 1988):

a) the preliminary stage, which embraces the 1980s until 1991;
b) the launch stage, from 1992 to 1995;
c) the acceleration phase, from 1996 to 2000, during which the major transactions took place;
d) the stage of consolidation, which began after the world crisis of 2001 and reached until 2005;
e) the current phase of mitigation and uncertainty, in which a major privatization was the sale, in 2008, of some assets of the airline Alitalia to the specifically established CAI company.

1.4 The private control discipline in public limited companies

Before examining the public discipline relating to publicly held joint stock companies, it is necessary to outline the system of controls proper to company law, which undoubtedly also applies to public companies. By virtue of the original provision of the civil code, both control over the corporate administration and accounting control were exercised by the board of statutory auditors or by a single auditor. Following the 1974 reform, which left the discipline of the board of statutory auditors unchanged, an external accounting control carried out by auditing firms was introduced for listed companies, giving rise to an overlap of functions with the board of statutory auditors that would prove to be deleterious.

At this point, various reforms followed, necessary to align the Italian audit regulations with the principles of Community law. Legislative Decree 27 January 1992, n. 88 ("Implementation of Directive n. 84/253 / EEC relating to the qualification of persons in charge of statutory auditing of accounting documents"), has set up a special register of auditors. Subsequently, the issuance of the Consolidated Finance Act (Consolidated Finance Act) in 1998 significantly changed the discipline of the board of statutory auditors of listed companies, attributing to the board only the control functions over the administration and shifting the accounting control exclusively to the statutory auditor. . An identical solution was reached with the 2003 company law reform, which also extended to unlisted joint stock companies (Paolo Bosticco, 2009).

1.5 Pros and cons of private management

After exposing the reasons that can push towards a privatization process, let's analyze the technical characteristics that would favor the private management model with the related arguments:

-The trend of stock prices in the stock market provides privatized companies with the guide towards the best allocation of resources that is lacking in public companies.
Here the efficiency of the equity markets is assumed, which removes the incapacitated management team. To the extent that, however, public participation is reduced to a relative majority share of the company, the remaining free float may still allow the same information flow on the assessment of the efficiency of the corporate policy choices. Furthermore, if managers of public enterprises obtain results that are deemed unsatisfactory, they can be removed from the public authority, and often more easily than the possibilities of the raiders of private companies.
-It is argued that the relative inefficiency of public enterprises derives from the low stringency of their budgetary constraints. This soft budget constraint takes the form of a systematic rescue work for public companies in difficulty, a policy that weighs on public budgets and induces inefficient management of the companies themselves.
The counter-argument points out how often private companies also enjoy this attention from public authorities, while sometimes even public companies are liquidated.
-In a context of incomplete contracts, if the residual control rights belong to the government, it could ex post expropriate the managers of the returns resulting from their irreversible investments in the company. This threat discourages, ex ante, the formation of an efficient

volume of firm specific capital. Problem that does not arise in the case of a company directly managed by the owner. However, in the case of companies with a large shareholder base, still characterized by the separation between ownership and control, this trade-off between protection of the interests of non-controlling owners and certainty of control returns. Public management is naturally led towards a multiplicity of objectives (stabilization, allocation and redistribution), while private managers are assumed to seek only to maximize the profit of their businesses. Beyond the criticism of the second part of the previous statement already developed in the managerial theory of the company, this multiplicity of objectives remains an ambivalent, unavoidable characteristic of public enterprises. On the one hand they can pursue social well-being, but they can also be used for purposes indicated by the alternate political guidelines, and in this they are affected by the lobbying activities of particular interest groups. However, even the activity of private companies can be influenced, through regulation, by political events; just as lobbying can try to address the same regulatory policy. Nevertheless, the implementation of contracts relating to the political objectives of public enterprises remains more difficult than those relating to pure profit maximization.

Since the political guidelines of subsequent administrations may also be different, it is necessary to introduce rules that limit the degree of commitment in pursuing the objectives. The goal of the private company remains the same over time: profit maximization. Even the empirical verification does not offer unequivocal conclusions about the superiority of one of the two types of ownership structure. Sarno (1994) carried out research relating to a sample of privatized companies during the 1980s. The comparative analysis shows that the choices of production combinations do not differ much between public and private companies (although public companies show a greater use of the labor factor, this difference is not statistically significant). In other words, empirical verification indicates a substantial economic efficiency of the production processes used by public enterprises; what distinguishes the public company is instead the adoption of a scale of production that is systematically excessive compared to the actual possibilities of product placement and market outlets. The public company therefore appears oversized compared to the corresponding private companies: the investments aimed at expanding its production capacity correspond to an overcapitalization and an excessive use of long-term debt. The returns on the capital of public enterprises are consequently very modest in relation to the main profitability ratios, confirming that the management of public enterprises does not only aim at maximizing profit. On the other hand, Lo Passo (1997) shows that, to the extent that budgetary constraints become stringent, public enterprises also aim to maximize

profits, showing a degree of economic efficiency equal to that of their private payments. In fact, he examines some performance and efficiency indices of the main companies affiliated to the IRI, ENI and EFIM groups for two subperiods. From 1978 to 1987, the phase in which these companies enjoyed a sort of soft budget contraint thanks to capital contributions as collateral (provided by the State) on the debts they contracted, the traditional hypothesis about the inefficiency and poor profitability of the companies public is confirmed. In the three-year period 1988-90, in which the financial assistance of the State is reduced, the investee companies show a significant recovery in competitiveness, such as to bring back their efficiency in line with their respective private comparables. It follows that the privatization process can be understood as an (almost) irreversible imposition of stringent budget constraints on companies that would otherwise have pursued political purposes. Rather than in theoretical foundations, which inspire a strategy to recover efficiency and concentrate the public presence on strategic points that are fundamental for the governance of the economy, the reasons for the current privatization process in Italy can be found in an attempt to reduce debt growth public through the proceeds of divestments. This public finance objective is however achievable only if the net income from the sale, added to the costs of the previous public management, exceeds the opportunity costs of this action, opportunity costs equal to the sum of:

• Any profits, dividends and capital gain potential which is renounced at the same time as the sale of the company;
• Placement and transfer costs;
• Costs for subsequent monitoring and regulation of the privatized activity.

The controversies surrounding the wild privatization of water and the increase in prices testify to the delicacy of the topic and lead us to analyze also the negative aspects of private management. The privatization of water services blocks the possibility of public money transfers to operators in the sector, to the detriment of end users who can no longer benefit from a reduced price. In the presence of private management, in fact, there is an antitrust regulation, which sanctions "state aid" to private companies, as well as measures aimed at containing prices. Furthermore, a management entrusted under concession creates a multi-year legal monopoly, in which the private entity has less quality and service level constraints for citizens than direct public intervention. Furthermore, privatization leads to the usurpation of the basic responsibility of the state which loses control over a strategic resource and a service considered essential. In fact, before the advent of private management, governments received grants from

international organizations had the aim of helping the state to ensure adequate water supply and protect water quality.

The current trend, on the other hand, directs aid to private operators, this causes the state to weaken more and more, losing one of the aspects that represent the basis of its legitimacy. This factor represents a point in favor of private companies that manage water services and who can thus operate with greater discretion, responding to their own interests at the expense of those of the company. Another negative effect of privatization is that which affects communities in the peripheral areas of large cities and their lack of services is due to the fact that they are lacking in political power or are unable to pay for water. In fact, private companies invest only if the risk is offset by a "fair profit". This logic makes it difficult for governments to ensure universal access to this primary service. The discourse on the negative effects of privatization can become environmental if we consider the fact that the reduction in consumption by users leads the service provider to obtain lower profits. So it can be expected that the companies will not encourage water saving policies. Another critical issue that can be highlighted is attributable to the nationality of the water service operators. In fact, public companies that manage the water service are generally subject to national jurisdiction while in the case of privatization, companies are often of different nationalities from the state in which they operate and when a dispute is found, problems may arise due to the lack of contractual definition an arbitration office and for the choice of legislation to refer to. Again with regard to the manager's nationality, it is necessary to reflect on the destination of the substantial proceeds from the water sector which risk being reinvested abroad, causing a transfer of wealth outside the community. It also seems necessary to reflect on the reversibility of the privatization process. The long duration of the concessions leads the state to lose managerial and engineering skills, which it has irreversibly developed in the sector.

On the other hand, the private company will acquire ever greater experience and expertise in the sector, which will guarantee it to maintain management even after the contract expires, as it will have more information available and will be able to provide the service at a price. lower than any other competitor. The privatization process presents another problem related to irreversibility. If you were not satisfied with private management, remunicipalising the system would be very expensive from a financial point of view and would require that the public system, which has by now lost its skills, go back to dealing with water management. Furthermore, if the company is public, personnel costs and clientelistic logic may become

significant, even if these are not excluded in a private regime, where the adoption of criteria from a public company can favor the obtaining of exclusivity on a territory, and of consumer prices and monopoly profits. Or even more clearly, the transfer of ownership or of some functions related to the operation or management can be made to people close to the government or to private companies willing to pay a "bribe" in order to obtain the concession. Public management has raised criticism from many sides for waste and human resource management, in terms of number and meritocracy, which generate losses healed by public bodies with taxes or by cutting other services to citizens, and with undue increases in bills . Private companies, even if 100% publicly owned, can hire for direct and nominative calls, are not required in a competition for merits and exams such as a Public Administration or a Special Company.

From the analysis carried out on the various risks that can result from the privatization process, a complete and precise definition of the contract that defines the mutual positions and mutual commitments and regulation appear as key elements for risk prevention. However, these factors are lacking in developing countries with little bargaining power and whose regulation is non-existent or minimal. This is due both to the lack of a state apparatus, but in some cases it is a policy aimed at encouraging investments by multinationals attracted by a context in which they can act with greater discretion. (Hagen, 2008)

CHAPTER 2
WATER SECTOR

2.1 Legal framework

The legal regulation on water resources in the Italian legal system has ancient roots, dating back to law n. 2248/1865 (Lanza Law). Water is one of the natural resources and therefore among the goods that are directly supplied by nature. Already according to Roman law, the assets that were directly in nature available to everyone were classified as res communes omnium and in some cases defined as res extra commercium, that is, goods that could not be subject to market transactions and at the same time unsuitable for appropriation by private individuals. Therefore, goods whose control was directly the authority of the Emperor (Di Lieto A., 2006).

The control and public ownership of water resources have therefore represented a constant throughout the history of our country since the Romans, the first to deal with this resource also from the point of view of organizing the service, up to the present day. The events relating to the publicity of water resources have in fact followed an inverse path with respect to that of other goods equally belonging to the State property since, unlike these, their public character has been progressively emphasized by the various regulations that have followed over time.
In the first phase of standardization, coinciding with the already mentioned law 2264 of 1865, the interest in water was mainly linked not to a profile of protection of the resource but to a perspective of protection of the civilian population from the hydrogeological instabilities that could come into being as a result of an unregulated management of this asset as well as river navigation and river navigation activities (Di Dio F., 2006).

At that time water was perceived as an asset available in unlimited quantities and therefore there was still no need to make it the object of a significant legal interest and as such, to subject it to protection from a quantitative and qualitative point of view. The same fact that the discipline was included by law in the broader category of public works and therefore did not yet form a matter in its own right, hinted that what was relevant at the time were instead the different economic and security interests, which had to be guaranteed through adequate discipline (Mohamad Mova Al'Afghani, 2019).

In the following two decades, the exploitation and derivation of water, above all for agricultural and production purposes, became more intense, so much so that the legislator began to feel the need to regulate the matter in a more organic and incisive way. So it was that in 1884 with the law 2644, the autonomy of the water legislation with respect to that of public works was sanctioned (area within which it had been included by the aforementioned law 2248 of 1865). With this device, the growing interest of the State to control access to the resource in a more penetrating way through the introduction of a deadline for derivative concessions is starting to be seen (Mohamad Mova Al'Afghani, 2019). With the advent of the First World War and the urgent need to strengthen public control of water resources, a regulatory parenthesis opens which sees the issue of the Royal Decree n. 2161/1919, the establishment of a court, the Superior Court of Public Waters, with extensive jurisdiction in disputes relating to state-owned waters. The administration is also allowed to come into possession of the hydraulic works necessary for the derivation at the expiry of the concessions (Pioggia A., 2011). During the Fascist period, the first organic discipline on the matter, the r.d. December 11, 1933, number 1775 (Consolidated Law on laws on water and electrical systems). This regulatory framework, in addition to incorporating most of the laws previously produced, introduced a significant novelty from a legal point of view, in that it defined the advertising of waters on the basis of their aptitude for uses of "general public interest".

In essence, water, regardless of the physical form in which it occurred in nature, became a public good when it manifested a precise aptitude to satisfy an interest qualifiable as public and general50 (Grassi Nardi F., 2009). In this way, the legislator made a significant expansion of the public ownership of the waters, while reducing the private ownership of the resource to the only cases in which it had to do with waters of little hydrographic importance and that as such could not be destined to satisfy no general interest (Bartolini A., 2008). The legislator also provided for the registration of the waters identified as public, in special registers by the Ministry of Public Works, postponing the resolution of the disputes raised by interested parties against registration to the jurisdiction of the Superior Court.

2.2 Evolution of water service management

The regulation of water services is only apparently framed in an exhaustive manner within the framework designed by the Galli law and then inherited from the environment code. In fact anyone who ventures among the laws to try to reconstruct the current regulatory framework

will certainly notice that in its evolution, the discipline appears inextricably linked to the fate of various other subjects (primarily local public services and consequently the protection of the competition, but also environmental protection) and is also affected by numerous influences, also and above all of supranational origin, in particular as regards the profiles of liberalization and competition that the European Union aims to introduce in the various legal systems in search of a difficult harmonization. It is therefore, at the moment, rather difficult to navigate between laws, doctrine and jurisprudence to build a linear path that considers the various steps that have taken place over time and provides a clear organic framework that takes into account all aspects of the service.

To try to understand the current situation of impasse in which the relevant legislation is found, it is also not possible to limit ourselves to analyzing the latest interventions of the legislator nor to stop to consider the general principles of European law while representing today, in the opinion of the doctrine, the main reference points of the discipline. (Bruno F., 2012, pp. 217)
Instead, it is necessary to carry out a reconstruction operation starting from the past. The factual public monopoly situation of the water service depends, in fact, not only on the particular characteristics of which we have said, but also on precise municipal practices of the past which have then consolidated over time until obtaining explicit recognition also to legislative level.
The regulation of water management intended in the sense of public service of drinking water supply for the community, in fact represents a sector in which the municipalities have always played an important role and in which even today, even in the capacity of authority in scope, continue to hold important functions. The nature of these powers has its roots in the post unitary regulation on the organization of local bodies, which had provided for the division of the national territory into provinces, districts, mandates and municipalities, making the latter a sort of middle ground between a joint peripheral of the State and a representative body of the local communities to which it belonged (Fonderico G., 2012, pp. 22).

This hybrid nature had initially made it difficult to define a precise discipline regarding the functions attributed to municipalities and such a situation had allowed them to act quite freely in the economy by exploiting some of their prerogatives. For example, the autonomy they enjoyed in accounting, had allowed municipalities to secure certain rights in the public services sector aimed at securing their revenues. Similarly, other profiles of municipal regulatory power in certain economic sectors were instead a direct consequence of the exploitation of their police powers. Initially the phenomenon of interference of municipal powers in the economy turned

out to be rather contained and often considered unfavorably, given that in the first years following the unification the economic scenario was still characterized by a strong orientation towards liberalism and inspired by a general laissez regime faire. In order to survive in this context, the reserves of activity needed to find an explicit basis and legislative recognition, which they found first of all thanks to the law on municipalization.

2.2.1 The municipalisation of public water distribution services

In doctrine, the term "municipalization" was coined to indicate the institution relating to the direct recruitment of public services by municipalities and provinces. In particular, it must be specified that this term is used without distinction to describe both situations that may arise in reality and more precisely, the exercise of the activity by the local authority with the support of private entrepreneurs, singular hiring or, if this it is explicitly permitted by law to be hired by the entity, collectivization (Asanga Gunawansa, 2013). The processes of direct intervention in the economy by autonomous territorial entities originated in nineteenth-century England and during the twentieth century their spread also spread to the rest of the continent and overseas mainly on the basis of two ideological thrusts which, although opposed to each other, aimed in this case for a common result: the breakdown of private monopolies in services considered as public (Geisser A., 1909). On the one hand, in fact, the socialist ideology aimed at the removal of services of general interest from the monopolies of private individuals to be used for collectivization, on the other the liberal ideology was inclined to break the same monopolies even if for reasons other than those that animated the ideologies socialists and in particular for the alleged superiority of the competitive regime (Caia G., 1991). This debate developed in a context in which the monopolistic model in the field of local public services represented an already consolidated reality since it was exercised, as appropriate, by both private individuals and local authorities. In fact, many municipalities had long since begun to take on the direct management of some services, so much so that the scientific and political debate, having taken note of this, had begun to discuss which was the best subject to exercise the monopoly (Fonderico G., 2012). This was also reflected in the preparations for the law which would sanction the model of municipalization. During the preparatory work for the bill and for the parliamentary discussion that preceded the enactment of Law 103 of 1933, it had emerged how the government intended to fall within the category of public services, which are also very different from each other than in municipalities only had the catchment area to which they referred: the local community (Merusi F., 2004). The proposing political forces also based the ratio of the legislation on the consideration that the exclusive hiring of services by the

municipalities was the only possibility to prevent the abuse of a dominant position that private concessionaires had perpetrated over time against the users, coming to obtain management profits that were not then reinvested to improve the service and damaging citizens. On the other hand, the liberal representatives of the parliament criticized this approach, believing that such a law would give legitimacy to a situation of de facto monopoly even in services, which, due to infrastructural or market characteristics, did not present the typical assumptions monopoly, well being able to open up to a competitive market (Asanga Gunawansa, 2013).

Eventually, however, despite the heated debates it had sparked, the law was passed. Article 1 of the Giolitti law of 29 March 1903, n. 103 provided that the municipalities could assume "in the ways established by this consolidated act, the installation and direct operation of public services and in particular those relating to:

1. construction of aqueducts and fountains and distribution of drinking water;
2. installation and operation of public and private lighting;
3. construction of sewers and use of fertilizing materials;
4. construction and operation of animal or mechanical traction tramways;
5. construction and operation of telephone networks in the municipal area;
6. establishment and operation of pharmacies;
7. public garbage and clearing of garbage from houses;
8. funeral transport, also with private property rights, except for the transport of members of congregations, confraternities and other associations set up for this purpose and recognized as moral entities;
9. construction and operation of mills and normal furnaces;
10. construction and operation of slaughterhouses, even with private property rights;
11. construction and operation of public markets, also with the right of property rights;
12. construction and operation of public toilets and washrooms;
13. ice factory and sale;
14. construction and operation of night-care centers;
15. installation and operation of omnibus, cars and any other similar means, aimed at providing for public communications;
16. production of hydraulic and electric power distribution and construction of related plants;
17. public billboards, also with private property rights, except always for election posters and public authority deeds;
18. maize dryers and their warehouses;

19. establishment and sale of seedbeds and nurseries of vines and other arboreal and fruit bearing plants ” (Legge n.103, 1903).

For a long time there was debate about the nature of this list and in particular it was debated whether it was a mandatory list, which therefore eliminated the discretionary spaces for the benefit of public administrations, in defining any new types of services to be taken under exclusive, or if it were a mere list of examples and therefore likely to be expanded. In the end, both the doctrine and the practice of the municipal administrations led almost unanimously to favor the second option and in fact, once a public service other than those belonging to the list was identified, the municipality was free to decide for its direct recruitment (Di Via, 1992).
From a formal point of view, therefore, the Giolitti law aimed to legitimize municipal direct management practices that had consolidated over time in our country, but also outside our national borders, and at the same time to widen the sphere of activities that they could potentially become the subject of new reserves for municipalities (Fonderico G., 2012). The law was on the whole divided into five heads who dealt with regulating all the different aspects that ranged from the modalities foreseen for the direct hiring of the service (art.10 and ss), to the supervisory and control profiles due to the municipal administration (art. 17) on the work of municipalized companies up to the procedure for the redemption of concessions (art. 24), an institution that the Giolitti law had not abolished and that indeed could be very useful in cases where the local authority did not have available sufficient funds to cover the initial investments necessary to make services available (Merusi F., 2004).

In general, it is possible to summarize the essential features of the law n.103 / 1903 by summarizing them in the following points (Merusi F., 2004):
1. removal from private individuals of the management of legal monopolies (ie expressly created by previous regulatory provisions) and de facto ones (in the case of services with technical-infrastructural characteristics such as to have necessarily led to the creation of natural monopolies) and assignment of the related activities to municipalities for their direct exercise with the aim of eliminating the negative effects that past management had caused;
2. definition of the municipal company as an original legal form conceived to find a meeting point between the organization of the public administration and the need for a certain degree of entrepreneurship in the management of the service;
3. attribution to the city council of the faculty to identify public services other than those listed.

As regards the water service in particular, Article 1, as we have seen, simply limited itself to entrusting the municipalities with the possibility of directly assuming the construction of the aqueducts and sewers and the distribution of drinking water, thus extending to this service all the forecasts that followed. However, this activity did not fall within the meaning of art. 1 of the law and article 2 of the implementing regulation 108/1904 among those for which a patent was envisaged. In fact, the patent hypotheses all had in common the fact that they were not connected to the desire to remove activities carried out by private individuals in monopoly situations (which instead happened for the water service), but the institution of the patent was actually used for to protect certain activities from competition for which contingent reasons and economic evaluations discouraged the competition regime. In fact, an activity that was taken on privately did not allow other subjects other than the municipality to carry out this activity, whereas in the case of the water service, the option of using the market was always possible. In fact, the law regulated some sections of the concession relationships and kept the right to appeal to private individuals intact. Indeed, precisely in this regard, it must be specified that the concession in concession did not require the particular procedural procedures and the conditions that were required in the case of direct assignment and therefore represented the formally easiest way to go. In light of this, there are those who in doctrine maintain that Law 103 was designed to contain the phenomenon of municipalization. However, it was only with the direct assumption (art. 28 law 103) that the law provided for the possibility for municipalities to forfeit operating profits and this was probably one of the reasons that led to the spread of the model in the following years. Although the main purposes consisted, as mentioned above, in removing from private individuals the monopoly management of services that had great social as well as economic significance, and at the same time attempting to regulate the phenomenon of direct recruitment by local authorities, some ambiguity immediately began to shine through especially with regard to the institutional set up required by law. In the case of direct recruitment, in fact, the combined reading of the various articles unequivocally discerned a certain overlap between the regulatory, ownership and management competences (Briganti R., 2012).

Subsequently, the power to gather and coordinate the provisions in force on the matter had been delegated to the Government (R.D., 1923). The consolidated text 2578/1925 therefore brings together and coordinates Law 29 March 1903, n. 103, on the direct recruitment of public services by the municipalities, with the Royal Decree December 30, 1923, no. 3047, which had previously modified it, and with the Royal Decree February 4, 1923, no. 253, with which the Royal Commission for municipal and provincial credit was abolished.

The consolidated text 2578/1925 assimilates and re-proposes in a more organic way the provisions of the Giolitti law, in particular introduces some innovations on the management side by the municipalities, alongside the already widespread management in economics, the possibility of organizing the service through the special company, an organization with a certain administrative and accounting autonomy but without legal personality (Di Dio, 2011). In consideration of the territorial context in which the service was carried out and in particular taking into account the fact that this could concern one or more local authorities, the possible forms of management according to the T.U. 2578/1925 were therefore:

1) municipal company;

2) special consortium company;

3) economic management of a single municipality;

4) management in inter-municipal economy, that is management by consortium according to the consolidated text of municipal and provincial law (Nicoletti G.,1994).

2.2.2 Reforms after the 90s

A) *Law n. 142 of 8 June 1990*

For several decades the regulatory system planned in 1903 was not retouched, in fact the contents of the Giolitti law merged as said in the following Consolidated Law R.D. 15-10-1925 n. 2578 which would remain in force until 1990. The consolidated text retained the rights provided as well as almost all the other aspects already covered previously by the Giolitti law, including the ambiguous institutional set-up which immediately raised some criticisms. Furthermore, as regards water services, some regulations had intervened which had strengthened the role of the municipalities. Suffice it to say, for example, that the organization of the service by the municipalities, which according to the Giolitti law should be remembered, was not among the hypothesis of a patent, had in fact been made mandatory by art. 91 of the Royal Decree March 3, 1934, no. 383, which provided that the costs relating to the construction, maintenance and operation of the works with drinking water supply and sewage were expenses that the municipality had to bear. In the same year, article 248 of the consolidated text of the health laws also states that "every municipality must be supplied, for drinking use, with pure and good quality water. When the drinking water is lacking, it is insufficient for the needs of the population or it is unhealthy, the municipality can be, by decree of the prefect, obliged to take care of it ". These two provisions make it clear how the legislation had now sanctioned the primary role of municipalities in the water service.

Despite having resisted for a long time, the model of municipalization began to show its limits and in fact over the years a series of critical issues emerged that required a resolving intervention by the legislator. Emblematic in this regard, was the context in which the water sector was located in the early nineties. The economic analysis had highlighted how the entrusting of the service to individual municipalities or businesses, however linked to the local authority, had led to an extreme and excessive fragmentation of the management of the service given the high number of managers who were operating in the different phases. To this excessive fragmentation were then added other problems attributable to the lack of entrepreneurial know-how of the local administrations, which had led to an often non-industrial management of the service which was followed by a general delay in the development of the sector in terms of infrastructure investments and of service quality (Bercelli, 2006).

It is in this difficult scenario, as well as on the basis of the impulse given by European law on competition and free movement of services, as well as by the progressive emergence of environmental and social interests, that the reason for the legislative interventions of these years must therefore be sought. In particular, the main regulatory sources are represented by the law 8 June 1990, n.142 concerning the reform of the system of local self-government and by the law 5 January 1994, n. 36, the so-called Galli Law. While not directly dealing with the water service, the law on the reform of the local self-government system had intervened to modify the regulation of local public services (article 22), also affecting the water sector as a result. In particular, the law introduced significant changes regarding the forms of management of the service since it provided for how municipalities and provinces could manage public services concerning the production of goods and activities aimed at achieving social ends and promoting development. economic and civil of the local communities in the following different forms (Leonetti F., 2010):

"a) in economics, when due to the small size or characteristics of the service it is not appropriate to set up an institution or company;
b) in concession to third parties, when technical, economic and social opportunity reasons exist;
c) by means of a special company, also for the management of several services of economic and business importance;
d) by institution, for the exercise of social services without entrepreneurial relevance;
e) by means of joint-stock companies or limited liability companies with predominantly local public capital set up or owned by the public service body, if the participation of several public

or private entities is appropriate in relation to the nature or territorial scope of the service" (Legge 142, 1990). The main novelties of the law lay primarily in the different approach in identifying services, which were no longer listed but "identified" through a general definition that left local authorities wide margins of discretion in choosing the activities to be traced back to the list of local public services and secondly in the attention paid to the organizational structure of the service. In particular, in this regard we note on the one hand the reconfirmation of the possibilities for the local authority to grant the management of the service to third parties or to provide it directly through the management in economy and on the other hand the attempt to definitively overcome the management of the service through municipal companies replacing them with the "new" denomination of "special companies" (Cortesi, 2003).

The latter, which Article 23 deals with extensively, differed from the former municipalized companies in that they were real instrumental bodies of the public body and no longer a mere articulation within the administration. They are in fact endowed with entrepreneurial autonomy, their own statute and above all, legal personality. For these companies, paragraph 4 provides for the obligation to operate according to criteria of effectiveness, efficiency and economy and in particular the obligation to balance the budget is imposed in an attempt to spread a greater degree of entrepreneurship in the management of the service. However, the problematic coexistence of economic interests on the one hand and social interests on the other that characterize the water service more than the other public services, made this forecast useless in a certain sense and in fact just a few lines below, in paragraph 6, it was expected that between the various tasks of the local authority were also to provide for the "coverage of any social costs", to be understood more concretely as the possible losses deriving from the need to guarantee the universality of the service (Cortesi, 2003). The law also attempted to respond to the growing requests to open the sector to the market on the basis of European law, through the provision of management through mixed companies (point and paragraph 3 of article 22). This hybrid form of company was first introduced in the hope of attracting private investors to be able to start an embryonic form of competition for the market and at the same time to keep strategic sectors of the economy in the hands of public authorities.

B) *Galli Law*

Despite the importance of the provisions introduced by law 142/1990, the most significant changes concerning the Italian water service discipline are to be attributed to the law of 5 January 1994, no. 36, Galli law.

First of all, it must be specified that the Galli law was by far the first organic law that intervened on the matter and, unlike the previous regulations on water or local public services in general, which had not adequately dealt with the organization of the service, it tried to define within an innovative framework the new principles on the basis of which to modernize the water sector in an industrial key.In fact, the law saw the light in a context of pulverization of both the operating structures and the decision-making centers that supervised the different phases. In essence, the operating scheme of the Italian water sector was summarized as follows: the ownership of the water was, as said, of the State; the ownership of the networks and plants was in the hands of local authorities (in most cases in the municipalities); the management of the service was entrusted to companies (which could be public or private depending on the case) which were usually concessionaires of a single phase (Lettera, 1995). Before the law of 5 January 1994, n. 36 in fact, the different stages of collection, adduction, distribution, purification of waste water and reuse were the subject of independent services that shared only the use of the same resource. Consequently, each phase was regulated independently from the others and at the same time, as regards the organizational aspect, it could be managed by different subjects, consequently leading to a scenario characterized by a varied number of small operators who dealt with of the different phases with qualitative standards also very different from each other.

This confusing situation had of course important consequences:

• About 45% of the population, with much higher percentage points in the South, often had to deal with interruptions in the supply of water and other inefficiencies;

• The sewage system was in very bad conditions or in some cases was totally absent, thus causing serious environmental consequences through discharges of untreated water (Bruno, 2011).

The 1994 legislator, attributing the main reason for the problems of the sector to the fragmentation of the management and to the organizational chaos that had consequently been created, had therefore decided above all to put an end to this division.

The main innovation introduced was therefore the overcoming of the historical subdivision of the different phases that were from that moment incorporated into a single service indicated with the new denomination of integrated water service (S.I.I.). However, the legislator was aware that, to achieve an adequate level of business development and to overcome fragmentation in the sector, the integration of the different phases into a single service was not

sufficient. An overall reorganization and redefinition of the service from a dimensional point of view and a general review of the skills between the various public and private subjects that intervened in the entire process were necessary. From the dimensional point of view, it was expected that the water services were reorganized on the basis of optimal territorial areas (ATO) whose identification was remitted to the regions on the basis of some criteria indicated by law and in particular in compliance with the unit of the river basin envisaged by the soil protection law n. 183/1989 (Legge, 1994). In this way, the service would have reached adequate dimensions, defined on the basis of physical, demographic and technical parameters, industrial management and the exploitation of economies of scale. As regards the organization and management, then, the regions and municipalities belonging to each ATO had to, within six months from the identification of this, define the service on the basis of the criteria of efficiency, effectiveness and economy as specified later by the dPCM March 4, 1996.

The choice of the manager was instead the prerogative of the local authorities which, in their capacity as area authority, were in charge of choosing it according to the organizational forms governed by law 142/1990 mentioned above (article 9). With regard to this aspect, it seems appropriate to underline that, although the law still allowed in some cases the possibility of the service being exercised by a plurality of subjects, the will of the legislator was clearly aimed at favoring the creation of a single manager for each ATO. Furthermore, given the business and dimensional characteristics with which the law wanted to redevelop the service, the choice of local authorities regarding the possible forms of management provided for by law 142/1990 was essentially reduced to three possibilities: special company (possibly also in consortium form), concession to third parties and mixed companies. In essence, the legislator, by introducing dimensional and technical constraints, tried to definitively overcome the direct management of the municipalities in the economy which up to that point has been said to have been the prevailing form (Fioritto, 2000). Again with regard to the management profiles, a specific regulation was then provided for in Article 10 as regards existing managers, which provided for the possibility for special companies and public bodies and consortia based on the date of entry of the new legislation, to continue managing the service pending the actual implementation of the reorganization process provided for in article 9 and in the event of their dissolution, it was expected that they would join the new manager. As regards the companies and consortium companies that are concessionaires of services, the law had confirmed the expiry of the relative concessions, after which the plants and assets had to be transferred to local authorities. As was said at the beginning, the Galli law then tried to redesign the system of

relations between the subjects who intervened in the definition and organization of the service, as well as their duties. First of all, it is good to remember that the main players according to the legislation were the area authorities, the regions, the local authorities and finally the managers. However, the legislator was unable to reach an optimal result from this point of view since, also and above all because of the peculiarities of the service, the different functions were assigned according to non-rigid allocation criteria, with the consequence that their exercise by different subjects interferes with the tasks of others. In the legislator's forecasts, however, the desire to spread a certain degree of cooperation between the subjects in the government of the sector is noted.

Regions are assigned tasks related to planning, management and control activities. As regards planning, it has already been said how the regions were in charge of identifying and delimiting the optimal territorial context. As regards management activities, the law assigned the regions the task of regulating the various forms and instruments of collaboration between local authorities, in particular through the preparation of an agreement (article 11) which was to regulate relations between local authorities and manager of the water service in which the various aspects relating to:

1. the legal regime chosen for the management of the service;
2. the obligation to achieve the economic and financial balance of the management;
3. the duration of the assignment, in any case not exceeding thirty years;
4. the criteria for defining the economic-financial plan for management integrated service;
5. the methods of checking the correct exercise of the service;
6. the level of efficiency and reliability of the service to be assured to users also with reference to plant maintenance;
7. the right of redemption by local authorities according to the principles referred to in Title I, Chapter II, of the regulation approved by decree of the President of the Republic 4 October 1986, n. 902;
8. the obligation to return the works, systems and channels of the services referred to in Article 4, paragraph 1, letter f), subject to operation, in conditions of efficiency and in a good state of conservation;
9. suitable financial and insurance guarantees;
10. penalties, penalties for non-compliance and the conditions of resolution according to the principles of the civil code;

11. the criteria and methods for applying the tariffs determined by local authorities and their updating, also with reference to the different categories of users.

Finally, as regards the functional block relating to the control activities, provisions were provided in article 19 on the substitutive powers that the region could activate against local authorities in the event of failure to stipulate the agreement within the set deadlines or in the event of verification serious irregularities and defaults which made it impossible to continue managing the service. In summary, it is now possible to summarize in points the main innovations introduced by the law regarding the water service:

• determination of the fundamental principles for organizing the service;
• integration of the entire water use cycle through the merging of the different phases;
• reduction of the territorial and numerical fragmentation of the managements and introduction of the single manager principle;
• conferment of the entrepreneurial character to the service and economic self-sufficiency of the management bodies thanks also to the introduction of a new tariff system which was to constitute a consideration for the entire service.

In summary, it can be concluded by saying that the Galli law has had the merit of attempting a difficult rationalization of the entire system in order to achieve two fundamental objectives at the same time: to increase the quality level of the protection of water resources and to evolve the from an entrepreneurial point of view, in order to create efficient management able at the same time to survive without weighing on the state budget and to provide a quality service. However, part of the doctrine, noting the difficulties of the sector to evolve towards forms of competition that went beyond just competition for market access, also highlighted some critical aspects of this law, especially as regards the failure to foresee a strong model of regulation that would have been at least desirable in light of the monopolistic management by the only public or private manager that it was (Fioritto, 2004).

2.2.3 The main reforms of the 2000s

A) *Article 35 of Law 448 of 2001*

If the twentieth century has been defined as the century of municipalizations given the strong presence of local public authorities in the economy, it is probably not a big mistake to indicate the twenty-first century as the century of liberalizations (Robustella, 2001). The first decade of the new millennium is characterized by an increasing focus by the legislature in relation to local

public services that led to the production of a set of rules without a comprehensive reform plan behind. This meant that the succession of laws during this period was so rapid as to effectively prevent any attempt at reform from taking root.

The first legislative intervention in reality did not follow any news on the side of local public services since the Legislative Decree 267/2000 (consolidated text of the laws on the organization of local bodies), which dedicated articles 112 and ss to the matter, was limited to repeal the discipline of the aforementioned article 22 of law 142 of 1990 without however making any substantial modification to it. Quite different weight instead had the reform introduced by Article 35 of the financial Law of 2002, which intervened to change the text of Article 113 of Legislative Decree 267/2000. This reform moved along two tracks: the constitutional reform of Title V, which through the principle of subsidiarity accentuated the role of local authorities with a view to administrative autonomy and the need for adaptation to the Community system, which based on competitive principles it required a revision of the methods of entrusting local public services (AA.VV. 2004).

The content of the reform presented three novelty profiles for local public services:

1. <u>The separation of ownership, network management and plant management</u>

This principle essentially provided for a distinction to be made between the owners of the functional goods for the provision of the service and the subjects who had to deal with managing the service itself. In particular, according to the law, the local authorities had to maintain the ownership of the networks and other capital endowments without any possibility of alienation or transfer of ownership other than the transfer of these assets to wholly publicly owned companies and only in the event that this was not prohibited by sector regulations (Decreto Legislativo, 2000). This separation, which among other things was not immediately binding for all local public services as it was provided only as a possibility in general which could also not be confirmed in the sector legislation, was considered by the legislator as the main tool to ensure the affirmation of competition and the establishment of a free market in public services according to Community principles. While presenting significant advantages, this option also showed some rather serious limitations such as the fact that the maintenance and improvement of the infrastructure remained the responsibility of the local authority, leading to the possibility of tensions and disputes between the various parties involved (Nicoletti G., 2002) and the

possibility that such situations prejudice users. In any case, as regards the water service, this possibility will never be practiced Di Dio, 2010).

2. The concept of industrial relevance

The second significant change introduced by Article 35 related to the distinction between public services of industrial relevance and those without industrial relevance. The novelty, however, did not consist in a simple lexical revision (Legge, 2002) but in the new discipline of the subjects who could provide these services. In fact, unlike in the past, article 35 provided that services with industrial relevance could only be provided by limited companies instead of those without industrial relevance which could also be directly entrusted to special institutions and companies. In any case, it was then forbidden for existing companies and direct contractors of local public services to participate in tenders for the assignment of the management of the service if it were characterized by industrial relevance (Legge, 2001).

3. Relationship between service manager and local authority and related tasks

The third change introduced by law 448/2001 concerned the division of roles according to which it was envisaged that joint-stock companies in charge of managing the service would be entrusted with management tasks while the local authority held the functions of regulation, address and programming. The relations between these two subjects, in line with the provisions of the Galli law, had to be governed by specific agreements (service contracts) provided for in paragraph 11 of article 113, which provided that such contracts should contain the service levels to be guaranteed. as well as the tools to verify compliance with these levels.

Ultimately, the 2001 reform aimed to accentuate the corporate character in the management of local public services, weakening the tool of the special company and introducing the obligation of the tender with the contextual "elimination" of direct award in the hope that a shift in the key deprivation of the management structure could more easily attract the capital necessary for the maintenance and development of the infrastructure. However, it is good to remember that the legislation introduced by article 35 was valid except for the sector provisions. In the case of integrated water services, the regulation of the new article 113 could therefore not be considered as residual as in the case of other sectors (gas, energy) but represented the reference legislation since the sector regulation in force at the time was not concerned the forms of service management.

Paragraph 5 of article 35 of law 448/2001 specifically provided for the integrated water service which "as an alternative to the provisions of paragraph 5 of article 113, the competent subjects, identified by the regions pursuant to article 9 of the law of 5 January 1994, n. 36, may entrust, within twenty-four months from the date of entry into force of this law, the integrated water service to joint stock companies only owned by local entities that are part of the same optimal territorial area, for a period not exceeding the maximum period determined by the pursuant to the provisions of paragraph 2 of this article. Within two years of this assignment, even if already occurred at the date of entry into force of this law, with the modalities referred to in this paragraph, the local shareholder bodies apply the provisions referred to in letter c) of paragraph 3, by means of public evidence, under penalty of immediate loss of the award of the service to the company they participate in ". In essence, the abolition of direct assignment had not been envisaged for the integrated water service as this clause made it possible to easily identify the situations to subtract the award of the service at the beginning of the tender.

B) *The legislative decree 269/2003*

Both before and after the entry into force of the reform outlined in Article 35 of Law 448/2001, the discipline designed by the Italian state had been targeted by the European Community. The content of the new article 113 T.U.E.L. on the assignment of the management of local public services of industrial importance had in fact been the subject of two formal notice procedures for the violation of the Community provisions concerning the procedures for entrusting these services (Napolitano, 2005). In light of this, a new revision of the legislation had become urgent, which was therefore carried out first through the legislative decree. 269/2003 converted into law 326/2003 and then with paragraph 234 of article 4 of law 350/2003.

As for the first intervention, the changes that modified the discipline of the new article 113 T.U.E.L. were contained in Article 14. It was an important intervention which, while not implementing an organic review of the matter, brought significant changes by redesigning a framework of reference that in some respects was very different from the previous financial law of 2002. A first significant change has to do with the classification of public services. The terminology introduced by the 2002 financial law is in fact revised by replacing the term "industrial relevance" with the term "economic relevance". The legislation therefore dictated a different discipline that distinguished the methods of assignment between public services of economic importance and services that were instead devoid of such relevance. This definition, linked to the Community concept of services of general economic interest, in addition to

representing a novelty from a linguistic point of view, led to an extension of the scope of application also to services previously considered as lacking in industrial relevance. A second innovative profile introduced by the legislative decree 269 which clearly highlights the turnaround with respect to article 35 of law 448/2001, pertains to the methods of entrusting local public services. In fact, the tender obligation that characterized the previous intervention is no longer fulfilled through the provision of a new method of direct assignment, in-house assignment.

According to the new regulation of article 14, in fact, in cases where the principle of separation between network management and service provision applied, it was possible, in the case of network management, direct assignment to joint-stock companies with total participation of public capital and instead, as regards the provision of the service, the same could happen in favor of companies with fully public capital or companies with mixed public and private capital for which the private individual had been identified following a procedure in evidence public.
Rereading the device of article 14, a curious detail emerges. Although the reform was created with the aim of adapting internal regulations to the Community framework with a view to greater competitiveness, in fact it had reduced the space for the introduction of a more competitive regime in the management of local public services, in particular as regards it concerned competition for the market (abolition of the tender obligation in the choice of the operator). This result had led part of the doctrine to glimpse a sort of "return to the past" (Napolitano, 2005) since in this way the local authorities returned to cover that management function that they had tried to eliminate with the previous reform. Despite this aspect which in principle was clearly in contrast with the Community principles, it could not be denied how that new discipline nevertheless sought to realign itself with the Community provisions. The provision, in fact, in providing for the possibility of direct entrustment to wholly publicly owned companies subordinated this situation to the two cumulative conditions according to which "the entity or public bodies holding the share capital exercise over the company a control similar to that exercised over its own services and that the company carries out the most important part of its business with the entity or public bodies that control it " (D.L. 2003). By introducing these two conditions, borrowed from a well-known sentence of 1999 (Teckal judgment), the Italian legislator had tried to hide and mitigate the discretion that the rule conferred on local authorities regarding the choice of the methods of entrusting services in the hope of putting themselves in shelter from possible new procedures by the Community institutions (Polimanti P., 2010). In reality, the subsequent Community jurisprudence, while reiterating that the requirements for

direct assignment were precisely those provided for by the new article 113, highlighted the fact that this type of management had to be "exceptional", thus highlighting the error made by the Italian legislator in attributing discretion to the local authority regarding the choice of the methods of entrusting.

With regard to the water service in particular, some important changes in contrast to the apparent closure to the market by the legislative decree should be highlighted 269. First of all, paragraph 5 of article 35 of law 448/2001 (d.l. 2003) is explicitly repealed, which, as mentioned, provided for direct entrustment to joint stock companies only owned by local authorities. Relevant were also two circulars of the Ministry of the Environment of 6 December 2004 ("Award of the integrated water service to public-private joint venture companies" and "In-house award of the integrated water service") in which the differences between the two were specified different custody possibilities and their characteristics.

The first highlighted the methods and times for the correct identification of the private partner. In particular, the "necessary recourse to a public tender" was emphasized according to the principle of impartiality. With regard to the shareholding amount of the private shareholder, it was underlined instead that despite being such a choice at the total discretion of the local authorities, "a minimal participation would circumvent the regulatory provisions and would be in clear contradiction with the ratio legis aimed at ensuring that the private individual represents added value to the benefit of the management company's functionality and therefore, hopefully, of the end users of the service ". In light of this, it could be concluded that the presence of the private individual should therefore have "substantial" importance.

In the second circular, on the other hand, it was clarified that the assignment according to the in-house providing model represented an eligible option only "in exceptional and residual cases, contrary to the principles deriving from the treaties, in particular the rules on the free movement of goods and services, as well as the fundamental principles of non-discrimination, equal treatment, transparency and mutual recognition, which govern the services market "thereby confirming the jurisprudential interpretations about" the strictly residual character of the in-house corporate model ".

Despite the residual nature of the in-house assignment enshrined in legislation and jurisprudence, the analysis carried out by the Supervisory Authority on the water service and

waste in the 2005 annual report had shown that in only four cases the integrated water service had been entrusted to private companies following public tender procedures. Direct assignments without recourse to tender were therefore still by far the most frequent hypothesis (Parisio V.,2007).

C) *Article 23 bis of Law 133/2008, the Ronchi decree and the repeal referendum*

Following the changes in the organization of local public services of economic importance, a category to which it has been said, the integrated water service no doubt belongs, as well as the need to transpose some EU directives, this matter has been subject to a reorganization at the inside the cd environment code (Corte Cost.,2010). Despite having formally repealed the Galli law, this device did not make any changes to the general principles that had characterized the legislative intervention of 1994nor to the aspects relating to the methods of assignment mentioned above (Di Gaspare 2006). The need to complete the tender was confirmed in the case of entrusting the service to third parties and in the choice of the private partner in the case of entrusting to a mixed company, and at the same time the possibility of excluding the public tender procedure with consequent entrusting to wholly publicly owned companies only if objective technical or economic reasons arise (D.lgs. 152/2006). Two years later, however, the legislator again intervened on the methods of entrusting the water service, dictating a new regulation for local public services through article 23 bis of the legislative decree 112/2008.

Beyond the criticisms made by the doctrine which considered the choice of the legislator to carry out a reform of public services somewhat "systematically" through a "extravagant" rule without being directly revised the single text on local authorities, this latest reform did not has had the effects hoped for by the legislator (De Nictolis, 2008). The objective of article 23 bis was in fact the definitive liberalization of local public services, as can be seen from the first paragraph which stated verbatim that "the provisions of this article govern the assignment and management of local public services of economic importance, in application of the community discipline and in order to favor the wider diffusion of the principles of competition, freedom of establishment and freedom to provide services of all economic operators interested in the management of services of general interest in the local area [...] " . To achieve this objective, the legislative decree, converted by law no. 133, identified only two possible ways of entrusting the water service, an ordinary one consisting in the conferral of the management of the service "in favor of entrepreneurs or companies in any form established identified through competitive public tender procedures, in compliance with the principles of the Treaty establishing the

European Community and the general principles relating to public contracts and, in particular, the principles of economy, effectiveness, impartiality, transparency, adequate advertising, non-discrimination, equal treatment, mutual recognition, proportionality ” (d.l. 2008) and a derogating method, which on the other hand, it consisted of direct in-house assignment “[...] for situations which, due to the particular economic, social, environmental and geomorphological characteristics of the reference territorial context, do not allow effective and useful recourse to the market [...] ” (d.l. 2008).

The subsequent legislative decree 135/2009, Ronchi decree, which intervened to integrate and partially modify art. 23 bis, alongside these two forms also that of the mixed company, whose failure to provide in art. 23 bis had previously generated doubts about the will of the legislator to continue to make use of this method of assignment, which, however, it should be remembered, was still in effect in all respects as provided for in paragraph 5 of the T.U.E.L. and capable of coordination with the text of article 23 bis (d.l. 2009).
The possibility of entrusting the management of the water service to mixed companies was in any case subject to the fact that the selection of the private shareholder took place following a public procedure and with the restriction that its participation in the capital was not less than 40% therefore a significant share which underlined the importance that the legislator wanted to be attributed to the role of the private person in the management of the service in this way (d.l. 2009). In light of the integration envisaged by the Ronchi decree, there were therefore three possible entrusting models:
• Competitive model open to both public and private entities in any form established;
• Non-competitive model based on direct assignment to joint-stock companies with mixed public and private participation with the necessary prior tender for the selection of the private partner and the 40% stake to be held;
• Non-competitive model based on direct in-house assignment to joint-stock companies with total public participation in the presence of the required conditions.

In order to speed up the use of the market, the legislation tightens the conditions for in-house custody by providing for adequate publicity to be given to this choice and above all through the introduction of the obligation of the contracting entity for a prior market analysis. which constituted a sort of "diabolical probatio" in which the Competition and Market Authority was also involved which, based on this analysis, should have expressed an opinion on the real need for direct awarding (d.l. 2009).

The Ronchi decree then introduced significant changes as regards the duration of the existing credit lines governed by article 23 bis. In particular, while the latter provided in paragraph 8 that the concessions relating to the integrated water service issued with procedures other than public evidence would cease no later than December 31, 2010 without the need for a specific resolution by the awarding entity, the paragraph 8 of article 15 of the Ronchi decree envisaged as regards the transitional period of credit lines not compliant with paragraphs 2 and five different hypotheses.

In light of what has been said about the content of article 23 bis and legislative decree 135/2009, the legislator's willingness to accelerate the use of the market was clear, with the consequent marginalization of the in-house management institution clearly seen with some disadvantage by the legislator (Lucarelli, 2010). The legislative provisions of article 23 bis as amended by article 15 of the legislative decree September 25, 2009, no. 135, have therefore been implemented in the Presidential Decree September 7, 2010, n. 168, regulation whose scope did not concern all local public services since sectors that already had an organic reference framework were explicitly excluded (D.P.R. 2010). The scope of application instead included the integrated water service for which the legislator expressly reiterated the principle according to which "[...] the managerial autonomy of the manager remains, the full and exclusive public ownership of water resources, as well as the exclusive right to the public institutions of the government of the resources themselves, pursuant to article 15, paragraph 1-ter, of the decree-law of 25 September 2009, no. 135, converted, with modifications, by the law 20 November 2009, n. 166 " (D.P.R. 2010). The regulation also indicated the threshold of 200,000.00 as the economic value of the service subject to the award, beyond which the prior expression of the opinion was required, pursuant to paragraph 4 of art. 23 bis, by the Competition Authority (D.P.R. 2010).

With regard to this, however, a derogation was included as regards the integrated water service, for which the awarding entity could represent specific conditions of efficiency that made in-house management not distorting competition or at least not disadvantageous for citizens compared to alternative management method, with particular reference to: a) the closure of profitable financial statements, excluding for this purpose any transfer not related to investment costs by the awarding body or other public body; b) the reinvestment in the service of at least 80 percent of the profits for the entire duration of the assignment; c) the application of an average tariff lower than the sector average. Compliance with these conditions had to be

checked annually and the result of the check had to be sent to the Guarantor Authority. The assignment could therefore be revoked in the event of verification, by the body or the Authority itself, of the non-existence of the requirements required in paragraph (D.P.R. 2010). To encourage liberalization as transparent and impartial as possible, the regulation also made a strict distinction between regulatory and management functions both from an organizational and functional point of view (Rizzo, 2012). In the first case, in fact, paragraph 1 forbade administrators, managers and managers of the offices or services of the local authority, as well as other bodies that performed functions of contracting authority, regulation, address and control of local public services, to cover assignments relating to the management of the service, extending this prohibition both over time and towards relatives and the like up to the fourth degree. From a functional point of view, on the other hand, it was forbidden to cross between subjects who held political or technical positions and the appointment of member for the tender commission.

After being immediately attacked becoming the subject of several appeals by some regions aimed at censoring its content, the regulatory framework outlined by article 23 bis was finally swept away by the outcome of the popular referendum of 12 and 13 June 2011. On this occasion, in fact, the initiative promoted by the Italian Forum of water movements in strong opposition to the spirit of the reform designed by the government, gave rise to a real crusade against what was considered the prelude to the transition "from monopoly public private monopoly ”in the management of water resources. The campaign activated by the Forum thus garnered considerable consensus in public opinion despite inducing some confusion among citizens between "privatization of the service" and "privatization of the object of the service", in this case water (Avino, 2011).

The attention of the promoters of the referendum initiative had initially focused on three different aspects relating to the integrated water service (Azzaritti, 2010). Firstly, the repeal of article 23 bis of Legislative Decree was requested n. 112/2008. A partial repeal of the provision provided for in article 154, paragraph 1 of Legislative Decree 152/06 (integrated water service tariff) was also requested, limited to the part in which it was envisaged that the "remuneration was also taken into account when determining the tariff. of the invested capital "and the repeal of article 150 of Legislative Decree 152/2006, choice of management form and award procedures for the integrated water service.

In the intentions of the proposers, the repeal of these three rules would have entailed the possibility of entrusting the water service according to the forms provided for in article 114 of Legislative Decree 267/2000, that is to public law such as special company, special consortium company and consortium between municipalities in order to eliminate the possibility of recourse to tenders and of substantial opening to the market in the award of the water service (Ciffarelli, 2010).

The Constitutional Court was thus called upon to rule on the admissibility of the referendum requests and expressed itself in sentences no. 24, 25 and 26 of 26 January 2011. In particular, the Court declared the first two questions admissible (repeal art. 23 bis and partial repeal of article 154) while it deemed "unsuitable" and not "coherent" with respect to the aim that the referendum initiative was proposed, the referendum request for the repeal of article 150 of Legislative Decree 152/2006, thus declaring the inadmissibility of the question (Senti. 2011).
The subsequent referendum that took place on 12 and 13 June 2011 therefore led to the repeal of Article 23a and Article 154 of Legislative Decree 152/2006, limited to the part of the text that provided for the "return on invested capital". The repeal of Article 23a was then clearly followed by the fall of the implementing regulation 168/2010 and the direct applicability of EU legislation (Sent. 2011).

D) *The situation after the referendum*
While the economic consequences of the referendum repeal are still difficult to foresee, on a legal level the legislator intervened almost immediately to restore the discipline of local public services despite the Court had already in the ruling accepting the referendum excluding the existence of a regulatory vacuum following the repeal of the provisions of article 23 bis of the legislative decree n. 112/2008, given the direct applicability of EU legislation (Sent. 2011).
This is how through article 4 of Legislative Decree 138/2011, the Monti government has attempted to reintroduce a discipline substantially identical to that provided for in Article 23a, but expressly excluding the integrated water service from the scope of application so as not to contrast the popular will expressed by the referendum (d.l. 2011). Despite this provision, however, the rule has been the subject of several appeals by the regions of Puglia, Marche, Lazio, Umbria, Emilia-Romagna, and the Autonomous Region of Sardinia, which complained of the violation of art. 75 and 117 paragraph 4 of the Constitution, that is, respectively, the violation of the prohibition of repurposing legislation repealed by referendum and the invasion of the sphere of regional legislative competence. Taking advantage of the context of uncertainty

that had arisen as a result of the referendum, the regions sought with this appeal to claim new and wider spaces to legislate on local public services, spaces that they had already sought in the past but that the previous jurisprudence he had denied them, sanctioning the legitimacy of the contested state legislation as it complies with the exercise of the exclusive legislative power of the State in the matter of protection of competition (Corte Cost. 2010).

Despite the Government's intentions were to guarantee with the new legislation the "adaptation of the discipline of local public services to the popular referendum and to the legislation of the European Union", the Consultation has actually found that the contested rule contained a new regulation of local public services of economic importance characterized by the same ratio as the repealed regulation, and moreover literally reproducing various provisions of the repealed article 23 bis and its implementing regulation (Presidential Decree 168/2010). This rule in fact, on the one hand made the hypothesis of direct assignment of services even more unlikely by limiting in general, in a similar way to art. 23 bis, "the attribution of exclusive rights to the hypotheses in which, based on a market analysis, the free private economic initiative is not suitable to guarantee a service that meets the needs of the community" (d.l. 2010), and on the other hand made any assessment by the local authority and the Region was in vain, providing for a threshold commensurate with the value of the services (€ 200,000) beyond which the exclusion from the possibility of direct assignment was automatic. In this way, among other things, the legislation went far beyond what is required by the European Union for which direct management of public services is always possible when certain conditions are met (Lepore, 2012).

Accepting the appeal, the Court thus punctually ruled in the sentence 199/2012, declaring the illegitimacy of the provision for violation of article 75 of the Constitution. On the one hand, ascertaining the violation of article 75 of the Constitution, future constraint on the state and regional legislators to respect the referendum outcome. On the other hand, not detecting anything in relation to the violation of art. 117 of the Constitution, on the other hand, did not place any constraints in terms of competences and in doing so the sentence did not produce any conformative effect in the relations between state legislative power and regional legislative power. This means that the boundaries between state and regional legislative power have remained those established by the judgments of the Court that previously ruled on the division of competences (in particular the judgments n.325 of 2010 and n.272 of 2004) stating that the

State it has the possibility of legislating on local public services since in this way it exercises its exclusive competence regarding the protection of competition (Bercelli, 2013).

The sentence of article 4 posed some problems with regard to the existing and future credit lines that could take place in this transitional phase. Regarding the existing credit lines, however, compliance with their natural deadline seems peaceful since, having the repeal only effective in the future, the credit lines granted according to the previous rules are not called into question. As regards, however, the assignments that could take place in this phase in which there is the absence of a national regulation, the applicable legislation, pending a new intervention by the legislator, is that constituted by the rules and general principles inferable from the direct application of European Union law, and in particular on the basis of Articles 106 and 14 TFEU (Lepore, 2012).

2.2.4 Consequences of the referendum and current situation

On June 12th and 13th 2011 over 27 million people voted YES at the two referendums promoted by the Italian Forum of water movements. An extraordinary result resulting from widespread work and widespread awareness (Bersani, 2011), which had its prodromes in the presentation of a popular initiative law (over 400,000 signatures) in 2007 and in the record result of the collection of signatures for the referendums themselves (over 1.4 million) in 2010. The data that more than any other gives the figure of that experience is what shows that over 16% of those who came to the polls declared that they had participated in the referendum campaign, considering as a minimum level of participation "having distributed material in their condominium ": it means that over 4.3 million people, in different ways and forms in terms of time and intensity, took action to win the SI in the referendums: And, among these, 60% were at their first experience of social activism (Diamanti, 2011).

They are numbers that speak for themselves. Through which, the Italian people decided to repeal decree 135/2009 (so-called Ronchi decree), which obliged local authorities to privatize water and local public services and eliminated from the water service tariff the portion relating to the "Return on investment" (D.Lgs, 2006). To put it in the most authoritative words of the Constitutional Court (2011): "(...) the purpose is clearly pursued to make government and water management extraneous to the logic of profit".

That the referendum was not an opinion poll, but a sovereign popular decision that directly affected the interests of the financial lobbies interested in the water business, was made clear by the reaction of successive governments to lead the country.

The first attack on the referendum outcome took place almost immediately: in August 2011, the then Berlusconi government approved the Legislative Decree 138, which, in article 4, provides for the substantial re-proposal of the obligation (this time with the exclusion of the "Integrated water service") to the privatization of local public services. Attack blocked in July 2012 by a sentence of the Constitutional Court, which reaffirms the need to proceed on local public services taking into account the referendum outcome.

Again in 2011, the conferral to the Authority for Electricity and Gas of the new competences on the integrated water service and the consequent approval (December 2012, Monti government) by the same of the new tariff system which reintroduces, under various headings and in total disregard of what was established by the referendum, the "return on capital invested" in the management of the water service. But it is with the Renzi government that the attack on the referendum vote has become more decisive, with the clear intention of closing once and for all with the anomaly of the water movement in Italy. This time, the government's action does not take place through an explanation of the stakes: there are neither direct public announcements, nor a targeted bill, but the combined provision of different rules, which have a single explicitly stated objective: deliver the entire management of the integrated water service in the hands of 4-5 multi-utilities listed on the stock exchange, to make them national players that can also compete on international markets (Renzi,2015). In this direction, the first approved measure is the decree "Unblock Italy" of September 2014, converted into law on November 5 of the same year, which, in art. 7, amends the Consolidated Environmental Text (Legislative Decree 152/2006), introducing the transition from the "unity" of management within the ATO (optimal territorial scope) to the "uniqueness" of management, with the progressive imposition of a single manager for each Ato.

At the same time, the 2014 Stability Law imposes a series of limitations on the in-house management of local public services, making them burdensome for Municipalities and encouraging privatizations through:

a) the obligation, for the local authority making the "in house" choice, to set aside "pro quota in the first profitable balance" and every three years an amount equal to the financial commitment corresponding to the expected equity;
b) the possibility, in the event of mergers and acquisitions, of extending the concessions for the incoming manager, as well as being able to see the qualitative criteria of the service offer redetermined;
c) the priority in the allocation of public funding to private managers selected through tenders or to those who have approved corporate combinations;
d) the possibility for local authorities to spend, outside the constraints of the stability pact, the proceeds from the disposal of the investments; this provision does not apply to expenses relating to the purchase of equity investments, or it will not be possible to use this incentive to buy back shares from private individuals and therefore republish.

In the meantime, all the Regions are reviewing the reorganization of the Ato and many of these are moving towards the single regional Ato.
The design determined by all these provisions therefore appears clear: a single operator for each Ato; the Ato that, in the meantime, are being rethought with a regional dimension; very strong incentives for mergers and the disposal of public company shares; penalty for any "in house" management by local authorities. But since, despite the facilitations, the privatization mechanisms continue not to have an easy life, thanks to the resistance that the movement for water continues to practice in all the territories, finally here is the further regulatory move: the law delegates Madia "Reorganization of public administrations" (4 August 2015), which delegates the government to proceed freely and quickly in this direction. With which we try to definitively close the circle, by delivering water management to the multiutilities listed on the stock exchange and already located on the starting lines: A2A, Iren, Hera and Acea.

Years after that blue tide it's time to take stock. Because the "no profit" promise not only would not have been kept, but according to those who studied the economic accounts of the service managers, the Area plans, the tariffs applied in recent years in Italy and paid by citizens to use water of the tap, she would even have been betrayed. In a context where the public actor - as a local authority, shareholder of companies or regulatory body - continues to wear the clothes (and behavior) of the private individual. Paolo Carsetti, the soul of the Italian Forum of Water Movements (acquabenecomune.org), is convinced of this and cites some "evidence" to demonstrate the referendum contradiction: "Over the past ten years, water service tariffs have

increased by more than 90 % against a 15% increase in the cost of living, data from the CGIA of Mestre in hand ". And again: “If we analyze the financial statements of the four large multi-utilities listed on the stock exchange which also manage water - A2a, Acea, Hera and Iren - we can see that between 2010 and 2016, the impact of investments on gross operating margin at 40%. Evidently there has been no increase in the insured investments. And of all the profits produced by these four companies, over 91% were distributed as dividends. " In addition to this first assessment, there is the photograph taken by Istat on the state of water losses of the municipal drinking water distribution networks. "The percentage ratio between the total dispersed volume and the total volume injected into the network - said the Institute at the end of 2018 - is the most frequently used indicator for measuring the losses of a distribution network". Result: “In 2015 this value was 41.4% (or 3.4 billion cubic meters), an increase of four percentage points compared to 2012, the year in which the total losses were at 37.4%, confirming the the state of inadequacy in which the water infrastructure and the scarce investments in terms of maintenance and development are facing”.

The picture could be overturned by a bill created on popular initiative 12 years ago and now finally under discussion in Parliament. The main objective of the text is the "republishing" of the service, a phenomenon that in the last 15 years has led to over 235 experiences in 37 countries of the world, mostly European, as demonstrated by the cases surveyed by Emanuele Lobina, researcher at the Public Service International Research Unit of the University of Greewich (Psiru, psiru.org). An authentic revolution that also affects our country closely.

2.3 The situation in the world

Demographic evolution, growing urbanization and climate change are factors that contribute to subjecting water resources to unprecedented stress, in the world, in Europe and in Italy. Water therefore becomes a scarce and increasingly strategic resource: 25% of the world's population is already in a condition of water stress.

Water will increasingly be a scarce and strategic resource. The Organization for Economic Cooperation and Development (OECD) has estimated that, by 2050, 40% of the population will be exposed to the risk of water stress. By 2030, water scarcity in some arid and semi-arid places in the world will force between 24 and 700 million people to move. Even in Europe, in a scenario of global warming of +2 ℃, the number of people suffering from water scarcity could

go from the current 85 million up to 295 million (about 40% of the European population), mainly in the Mediterranean countries , starting from Italy.

Of the 6,000 billion m3 of water withdrawn globally in 2018, 4% is attributable to the European continent (214 billion m3 in 2018). Currently 1 billion people in the world do not have access to drinking water and 750 million people obtain water from unsafe sources, as shown in figure 3.1. The current pressure to which the water resource is subjected threatens the resilience of some areas of the world and generates strong imbalances in access to water, which increasingly result in local conflicts or international tensions for the control and management of the resource.

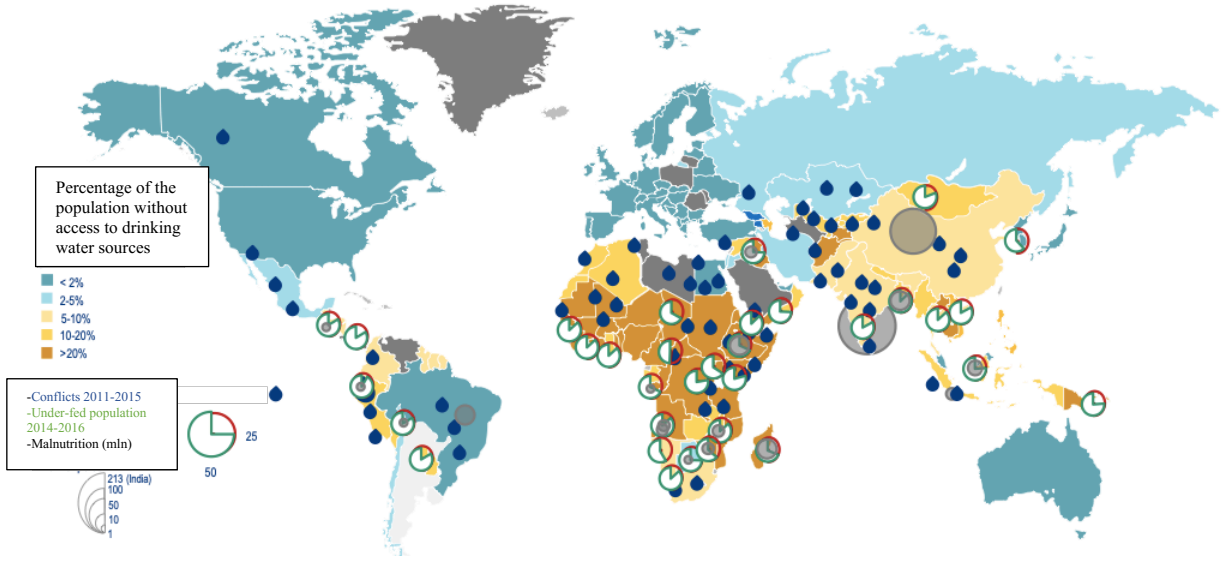


Figure 1 - Population without access to drinking water sources in relation to malnutrition or under-nutrition phenomena or the number of water-related conflicts (% values), 2011-2015. (The European House – Ambrosetti, 2020)

The availability of water resources is very heterogeneous between the different areas of the continent. The richest water resource country is Norway, with 371,000 million m3 of water per year, approximately 5,000 times higher than the availability of water in the driest country in Europe, Malta (84 million m3 of water per year. year). Leaving aside a general principle according to which "without water there can be no life" and contextualizing the effective function of the resource within a complex economic system, it emerges that the water resource

is the enabling element for the generation of 287.2 billion of value added in Italy, equal to 17.4% of the country's GDP.

- The value generated by the extended water supply chain in Italy is comparable to the GDP of Ireland (283.8 billion Euros) and Denmark (279.6 billion Euros) and is more than 30% higher than the GDP of the Finland (€ 213.9 billion).
- The same multilevel methodology has been adopted to reconstruct and dimension the extended water supply chain of the other "Big-5" European countries (Spain, France, Germany and the United Kingdom). From this analysis it emerges that Italy is the 2nd country among the "Big-5" by dependence of the economy on the water resource, after Germany (incidence on GDP equal to 18.9%).

2.4 Water service management

The study conducted by Hall and Lobina on the privatization of water showed that the vast majority of operators in the world are publicly owned: in this regard, it is estimated that around 90% of the main cities in the world are served by public organizations (Hall , Lobina, 2008, 2010). Also with regard to the European continent, most of the water service operators remain publicly owned; moreover, in the last 4 years, there have been no significant privatization procedures in the water sector. Nevertheless, in Europe it is possible to distinguish the presence of some nuclei of very distinct countries.

On the one hand, the countries of the European Union where there are limited, if not zero, prospects for the development of privatization: this is the case of Belgium and the Netherlands, where a national law has established water management as exclusively public; alongside these, Switzerland has also declared water as an exclusive state monopoly. On the other, a group of states where the privatization of water is characterized by a small presence, namely Germany, Poland, Portugal, Romania, Slovakia and Italy. Finally, other countries where the privatization of water occurs significantly, namely the Czech Republic, Hungary, Spain and above all the United Kingdom and France. Precisely these last two states have pioneered the privatization of water, deciding in the eighties of the last century to have their water services managed by private individuals.The studies and research carried out on this topic have shown a marked increase in tariffs, an irrelevant improvement in the service and a failure to follow the planned

investment plan, that is exactly the opposite of what the respective Governments had set themselves.

The effects of privatization have been so negative that the city of Paris has decided to remunicipalise its water services. In 1984, the then mayor Jacques Chirac had decided to entrust the water management service in the French capital to the two multinationals Suez and Veolia, for a total catchment area of 8 million people. The outages were numerous and frequent, the rates have undergone high and constant increases, while the water quality has become increasingly poor. So when the twenty-five year concessions in favor of Suez and Veolia expired in January 2010, the current Parisian mayor, Bertrand Delanoë, has decided to return to the public management of the service, followed in this process by another 40 French municipalities. However, it should be noted that during 2010, Veolia managed to maintain its contract for the district of Ile-de-France, after the mayors of the municipal councils were persuaded not to vote for the remunicipalisation and beating the competition of Suez.
In England and Wales, although the privatization of water has favored a systematic increase in tariffs, not accompanied by a consequent improvement in services, but by a long series of abuses, inflated prices, cases of corruption and obsolete services, a global situation persists. of private water management, whose specific study allows to obtain a projection of what could be the future Italian situation.

For example, in the United Kingdom, Scotland and Ireland represent two distinct cases compared to England and Wales as regards the management of the water service, in fact in Scotland, the management of these services remained linked to the local communities In Ireland, on the other hand, the management of the resource is controlled by the Ministry of the environment and is therefore completely centralized. The Anglo-Saxon model is known in Europe for being the only case in which the participation of private companies is privileged both as regards the management of the water service and as regards the ownership of infrastructures and plants. The reasons behind the different evolutionary trajectory followed by the English model compared to the majority of other European countries, are justified on the one hand in the history and institutional structure of the country, on the other hand have been influenced by the uneven distribution of demand and the particular structure of the hydrological system, characterized by the absence of "natural storage" capacity (glaciers, underground aquifers, etc.), elements that, combined together, have required the need for huge investments since the first developments in urbanization (Massarutto A., 2009, pp. 31).

As for the legal aspects, the first important observation to make is that British law is historically based on the use of the resource and not on the public or private appropriation of the water asset (Colangelo G., 2003, pp. 1159). In England, unlike Italy, there is in fact no public or private property as regards water resources, but the so-called "coastal rights" exist, an ancient common law institution which provides for the possibility for coastal subjects to use courses of water without affecting the interests of other parties. Despite this, even in England, at the beginning of the twentieth century, it was mainly the municipalities that initially took charge of the management of the water service in favor of the local communities, mainly practicing management in economy. However, over time, this system encountered numerous limitations mainly of an economic nature (high management costs in the face of scarce municipal resources), so much so that starting in the 1950s, the changed conditions led to the progressive limitation of the role of the municipalities (Bracchitta l., Stefanini e., Tarzia a., 2007, pp. 861). In fact, the major administrative reform of 1945 intervened in the sector and then the Water Resource Act of 1973, which ordered the regionalization of the service, establishing ten administrations at the level of the river basin, the Regional Water Authorities (RWA), owners of the infrastructures and competent on all the functions related to water management. In addition to these RWAs, the National Water Council had also been set up, responsible for harmonizing the activity of the RWAs. The effects of the regionalization were however criticized as on the one hand they showed a substantial inefficiency of this system, above all because of the coincidence between controllers and controlled entities, and on the other hand they aroused the discontent of the local communities as they were deprived of control over the service (Cerroni M., 2013, pp. 650). Despite this, the model proved to be radically innovative compared to the past since the management of services was entrusted exclusively to the ten regional Authorities, which also dealt with the measures relating to the conservation and protection of the resource. One limitation of the system designed by the Water Resource Act, however, was that relating to the difficulties in finding the investments necessary for the evolution of the sector. In this respect, in fact, the 1973 law provided that investments be subject to the central government's tax control (OFWAT, 2006, pp. 16).

The need to raise capital for investments, as well as the ideological context of the 80 (Cerroni M., 2013, pp. 650), led to a restructuring of the English water sector, which took place in 1989 following the issue, during the Thatcher government, of the Water Act, the regulatory act by which the British water industry was privatized. As a result of this law, the RWAs were alienated (and with them the ownership of the networks and plants), transformed into publicly

traded companies and became the protagonists of the management of water services in the country. These companies operated under a monopoly in the territories under their jurisdiction and were subject to the control of some Non Departmental Public Bodies, i.e. independent regulatory and supervisory authorities which were essentially intended to guarantee users from the abuse of a dominant position by companies monopolist. The three main authorities were the National Rivers Authority (NRA), with police duties and authorization to collect water and discharge wastewater, the Drinking Water Inspectorate (DWI), with tasks related to the supervision of the health of water and its quality for human consumption and finally the Office of Water Service (OFWAT), in charge of controlling the economic management of operators, determining the prices of water and checking compliance with the service conditions envisaged within the instruments of appointment, that is, the concessions issued by the Secretary of State for the environment, containing the limits and controls to which these companies had to comply. Since the issue of the Water Act, the English regulatory model has therefore found itself to be essentially centered on the private law relationship that binds users of the service and private managers. To reduce the imbalance of this relationship and in particular to balance the contractual weakness of users, the intervention of OFWAT was envisaged through the possibility of regulating the rates of return on capital and imposing maximum price caps. The OFWAT also had the task of supervising compliance with the Competition Act of 1998. This is the English competition law, issued to adapt the internal system to the competition policy provided for by Community law. Following the complete privatization of the sector, the main feature of the English system therefore lay in the weakness of the role of local communities compared to what otherwise happened in the rest of Europe.

The 1989 Water Industry Act was later replaced by the 1991 law of the same name. However, significant innovations in the system were introduced through the 2003 Water Act. The new law introduced competition in the water service, in particular the application of a regime of competition in the market, through the obligation for infrastructure owners to allow access to the network for potential entrants and the revision of the licensing system by OFWAT. In particular, the licenses provided are of two types depending on whether they provide for the purchase of a certain quantity of water from the local company (retail only license), or which also provide for the right to extraction (combined license). The same law also carried out a restructuring of the OFWAT, by replacing the single general manager with a new regulatory authority with a collegiate structure (Water Services Regulatory Authority) and established another independent authority for the protection and protection of consumers , the Consumer

Council for water. The new structure outlined by the Water Act, entailed the revision of the conditions of concessions (instruments of appointments) attributing the task to OFWAT. Following the changes introduced by the law, especially with regard to the competitive structure imposed, the trend has recently been seen by companies to consider the possibility of separating the ownership of the networks from the provision of the service. Another trend that is registered is that of the reduction in the number of companies following mergers, the first wave of which concerned the acquisition of some companies by French multinationals, which in some cases, however, were hampered by the Competition Commission (body also responsible for deciding in the event of appeals by companies against OFWAT's decisions) on the basis of art. 34 par. 3 of the Water Industry Act. The interventions of this authority are justified by the need, already foreseen by the Water Industry Act of 1989, to preserve a certain number of operators in the sector to favor the so-called yardstick competition, i.e. the mode of competition around which the entire sector is based and which presupposes the presence of a certain number of operators in the market in order to allow the regulator to evaluate and compare the efficiency of the various companies (Amato A., Bottasso A., Conti M., 2006, pp. 95). The analysis of the English water sector more than twenty years after privatization presents lights and shadows (Massarutto A., 2009, pp. 38). On the one hand, in fact, numerous empirical research shows a significant improvement in water quality and service, even if the research itself does not provide an unequivocal answer as to how much these improvements are directly attributable to privatization itself (Amato A., Bottasso A., Conti M., 2006, pp. 115).

On the other hand, however, there have been significant tariff increases not entirely attributable to the investments made in the sector and which could instead be an indicator of some gaps in the regulation system (Amato A., Bottasso A., Conti M., 2006, pp. 93). Furthermore, at the moment there are only a few spaces for the entry of new operators into the market which therefore does not present a competitive structure but rather an oligopolistic profile in which, due to barriers to entry and current concessions, competition is substantially non-existent (Cerroni M.2013, pp. 653).

In conclusion, England represents the only example of total privatization of the water service in Europe, characterized by a central role of the regulatory authorities and vice versa, by a weak role of the local municipalities that make this model ascribe to the typology of the regulated monopoly (Rubino P., 2008, pp. 24).

However, it is worth pointing out that the sector is currently at the center of a debate that considers a reform of the entire structure necessary which, despite the divestment of public management, still appears to be little competitive. Already in December 2011, the British government presented the White Paper Water for life, an ambitious reform project that has as its main aim the introduction of effective competition in the market through the separation between infrastructure management activities and service provision , so as to create competition in the retail sale of water. However, this reform requires a modification of both the licenses and the relevant laws and therefore a complex process appears which will require a time horizon long enough to be completed (Cerroni M., 2013, pp. 649 ss.).

2.5 Tariff analysis

The provision of services through public management has the relevant characteristic of not being exclusively oriented towards the pursuit of profit maximization, but of being inclined towards the pursuit of social objectives aimed at maximizing the well-being of society.
Such a consideration should translate into a fair pricing policy, which takes into account the social, economic and environmental aspects. An example of this approach in the pricing policy of water services has been adopted by the South African authorities, in which the main objective of the pricing policy is to improve access to water services. This policy attempts to guarantee access to the service for all families, with a per capita quantity of 50 liters per day; under these conditions, the price system tries to encourage the consumption of water when it is less than 50 liters and to discourage it if it exceeds 200 liters (Eberhard, 1999). If the revenue objective is to cover the total costs of the operating, maintenance and investment operations, as underlined by the principle of total cost recovery, this may not preclude a priori forms of cross subsidies or government aid to municipal authorities or directly to consumers. The interpretation of the principle according to which the consumer had to bear the entire cost of the service was therefore excluded.

In the Ministerial Declaration of The Hague it was in fact established that prices should tend to reflect costs, while taking into consideration the principles of equity and the essential needs of citizens in economic difficulties. This interpretation reflects more the concept of water as a public good (Ministerial Declaration of The Hague, 2001). The role of state subsidies seems to be indispensable in transition and developing countries, i.e. in those contexts where consumers are unable to bear the full cost of water supply.

A report on the water services of newly independent countries such as Georgia, Kazakhstan, Moldova, Ukraine and Russia highlights the fundamental role of public finances in supporting reconstruction through new investments.

Under these conditions, international financial organizations must allow the country to accept part of the cost that falls to consumers through its finances (Ministerial Conference on Water Management, 2000), favoring not only the water service, but also other important services provided by the public sector, such as transport, education, health, defense.
If a comparison is made between the tariffs applied by the public operator and the private operator, it is possible to observe how the tariffs applied by the public operator tend to be lower than those of the private individual; this consideration applies both if the comparison takes place between different states, and within the same country. It shows how the States in which the public management of the water service prevails, that is, the Netherlands, Japan and the United States, have lower prices when compared with France and the United Kingdom, where although the private model prevails in different ways.
The analysis of the price level in France, considered by economists to be the model of privatization of water par excellence, allows us to note how public tariffs are still lower than private tariffs, although they have grown more than them or mixed management since 1994 to 1999.

This trend is further reflected in the Swedish case, where water services are in public hands, with most of the management assigned to municipal companies. The water service tariffs in Sweden are particularly low, thus excluding the possibility of obtaining an excess of profits for the public operator. If a comparison is made between Sweden and France, the price of water per cubic meter in France is 30% higher (DGCCRF, 2000)

On the other hand, by comparing the costs of water supply in some Swedish and English cities, the data show how the Swedish public water management system operates at costs lower than the 100% English private service; moreover, it emerges that the average rate of return on invested capital is positive and allows total coverage of costs, despite representing only a third of the English one (Hall, 1998). Sweden is able to provide a low cost but high quality service, although it cannot take advantage of economies of scale due to a numerically limited population with a low density rate (about 20 inhabitants per Km2).

The public management model of water services proves to be competitive not only when compared to foreign models, but also when compared with the privatization operations that took place in Sweden itself. In 1987, the city of Vaxholm, north-east of Stockholm, launched a tender for the management of the infrastructure of the water system, won by a private company. After five years, it was verified that the prices charged in the previous municipal management were lower than those of the new private management. As a consequence, it was established that the system would again have to switch to public management, implemented through a consortium of municipalities (Gustafsson, 2001). Nevertheless, too low a price level is not desirable: in fact, if on one hand this can be a guarantee for greater access to water, a too low tariff cannot transmit a correct value of the water and therefore can encourage waste .
Furthermore, it is important to emphasize that too low a tariff does not present itself as an attractive element for investors.

For example, the fact that Europe's lowest tariffs are present in Italy cannot be considered as the result of efficient system management. Companies that decide not to intervene in Italy complain about the repercussions that too low tariffs continue to have on infrastructure investments and on the attractiveness of our market towards capital for water service in the EU area. In cases where a restructuring of the system is necessary, the tariff method is, in fact, one of the fundamental elements for the reorganization of the water service and for its start towards the levels of efficiency, effectiveness and economy. Where a restructuring of the water system was carried out through the reorganization of the public management system, a tariff increase was observed.

In Tegucigalpa, Honduras, the public water services management company, Saana, was characterized by a centralized management, in which coordination between the various operating units was lacking, a development strategy was absent and the productivity rate was very bass. A report by the Inter-American Development Bank highlighted the possibility of privatizing Saana as the only solution to privatize it (Saana, 1998). The company administration decided rather to carry out an internal reorganization, thus obtaining the support of the union representatives. The restructuring took place along two main lines in which the workers themselves also participated directly; on the one hand the revaluation of human resources and on the other the increase in operating efficiency. The management system has been decentralized and the staff considered redundant has been laid off, thus reducing the employees from 2400 to 1600, equal to a decrease by 35%, while the pursuit of the principle of total cost

recovery resulted in a 100% price increase in three years. From 1994 to 1998, the company's financial situation improved markedly: the losses of the water network decreased and its extent was increased.

The case of Saana has been recognized by the United Nations as an example of a self-development model (Saana, 1998). As indicated, the restructuring that took place through ownership and public management increased the efficiency of the system, but nevertheless entailed social costs, such as the reduction of staff and the increase in tariffs, i.e. the same costs that would have behaved if privatization had taken place.
Therefore, restructuring a company can have similar consequences whether the management is public or private; in this case, the costs and benefits that both solutions can bring must be evaluated. If, on the one hand, a low tariff level can constitute an obstacle in attracting investments, on the other it can be the result of a precise political choice and the reflection of an efficient management of the system. In fact, the state could decide not to attribute the cost of the service to the community; it is in fact the political responsibility of a government to determine under what conditions to offer its citizens a public service, evaluating whether to request a reduced or even zero contribution when providing the service.
Decisions of this type, precisely because a commercial relationship with equivalent services is not established between the public administration and citizens, do not necessarily imply inefficient management (Tecco, 2004).

2.6 Private bankruptcies and protests

Attempts to privatize water management have not always been successful. One of the reasons is the withdrawal of the companies which, by reassessing the costs and risks, in some cases have decided to withdraw the contracts. This is particularly the case in the poorest and most drought-affected countries, such as Sub-Saharan Africa. “Saur, for example, sold its shares in a consortium from Mozambique; Bi water has withdrawn from a project in Zimbabwe " (Ann-Christin Sjolander Holland, pp. 112-113). However, the reasons that most induce governments to abandon the private solution are the disproportionate increase in tariffs and the dismissal of many workers who were previously employed in the public service.
"In Manila, Suez and United Utilities promptly cut jobs as soon as they took control of the water services; in Buenos Aires, under Suez management, the water workforce was reduced from 7400 to 4000.

Enron is known for vehemently opposing union positions in the UK, Argentina, Guatemala and India. " (Maude Barlow and Tony Clark., P. 144). Guinea is usually considered an example of how privatization can lead to positive results. In 1989, Saur and Veolia signed a contract with which they were awarded the management of water for ten years. In this period, the efficiency of the service and the quality of the water improved considerably but, despite this, the government, at the expiry of the contract, decided not to renew it. The reason for this choice, which may seem inconsistent, was the increase in prices which, in the decade in question, went from 60 to 880 Guinean francs per cubic meter.

The difficulties faced by private companies in the management of water resources are well known in South Africa, where there is a clear inequality between white citizens and black citizens, as regards the supply of drinking water and the construction of sewage systems. Foreign companies that enter into contracts in this country sometimes have to deal with a boycott of payments as consumers are unable or unwilling to pay. This is because in South Africa the practice of paying for public services is not well established and because often, local authorities are unable to guarantee an efficient supply. Municipalities therefore tend to widen the participation of private individuals, trusting in the arrival of new capital to expand the service. In Nelspruit, in the north of the South African state, one of the first contracts was signed with a foreign company: here, in 1999, Bi water (Anglo-Dutch company now renamed Cascal), obtained a 30-year contract for the provision of water services and sanitary.

In the city, unemployment and poverty rates are high and many do not have the money to pay their bills. Other consumers, who instead could afford it, do not pay it because they believe that water, as a primary and fundamental good, should be free. Bi water then found itself having to solve the problem of non-payments and removed the old meters, which worked with a prepaid card, with the aim of reducing abusive connections. This measure, however, did not obtain the expected results, but on the contrary, it worsened the situation that led the company to change its strategy, focusing on information, that is, trying to make citizens aware that it is necessary to pay to obtain a public service, as it is. drinking water supply. In 2001, the government decided to introduce a measure that guaranteed the free distribution of 6000 liters of water per month for each family and Bi water was on the verge of breaking the contract, but simply refused to extend the supply to other surrounding areas (decision that accelerated the multiplication of illegal connections).

In this period, the situation is slightly improving and it seems that the payments have increased together with the awareness that it is right to pay to have a public service. A possible withdrawal of the company would be risky for local authorities who would find themselves having to pay off the debts contracted by Bi water with the Development Bank of South Africa (from which most of the funding comes).

What happened in Nelspruit is not an isolated case, but it is one of the many cases that led to the development of a real protest movement against privatization attempts.
In Nairobi, in the framework of the seventh World Social Forum, held from 20 to 25 January 2007, representatives of various social movements and unions from over thirty African countries participated in a series of seminars on water. The result of these meetings was the birth of the African Water Network, "a continental network to connect the different national experiences of struggle and to build common mobilization objectives around them". (Marco Bersani., P. 80). On the one hand, this body fights against any form of water privatization and against forms of water supply through the pre-payment method; on the other hand, it strives to ensure that water is included in national constitutions as human rights, is managed publicly with the participation of citizens and that its access is considered a national project, to be resolved exclusively within the public sphere. The privatization of the water sector also began in Uruguay in 1992, when an Uruguayan company obtained the concession to manage drinking water in the Maldonato department. In 2004, during the second presidency of Julio Maria Sanguinetti, a government measure was issued authorizing the private management of water by companies in the provinces of the whole country.

In the following years, the privatization attempt continued which particularly affected the companies Agua de Barcelona (branch of Suez Lyonnaise des Eaux) and Agua de Bilbao.
These projects provoked strong opposition from civil society: people mobilized in defense of the right to water and the citizens of Maldonato managed to block the implementation of the provision for unconstitutionality for five years, collecting 34,000 signatures. Until now, the battle against the commodification of water has been fought locally, but things have changed since the new president, Jorge Battle, took office in 2000. The government took immediate action to start concessions, including in the Maldonato department, where water management was sold to some companies linked to Agua de Bilbao. In the department, the tariffs and water consumption increased dramatically, but no remediation work was done.

Meanwhile, in 2002 the National Commission for the Defense of Water and Life (CNDAV) was born, made up of unions, associations and citizens, which had the aim of making the management of the country's water resources public again. In addition to the increase in supply rates, the presence of bacteria responsible for various gastrointestinal diseases was also detected in the summer.

In 2004 in Uruguay, he won the elections, a progressive coalition that created the first center-left government in the country's history. On the same day, 65% of citizens (1,440,006 voters), through a popular referendum, voted for a reform of the constitution, with which the drinking water supply and reclamation service would return to state management. The first battle was thus won, but the Uruguayan government did not seem willing to indulge the will of the citizens, in fact, intimidated by the reimbursements that the multinationals could have asked, had expressed its intention to confirm the concessions already granted. However, Uruguay's is the only case in the world, where citizens have said that water is an essential human right, through an instrument of direct democratic participation, such as the referendum. The presence of market failures highlights the problems of using economic instruments in the management of the water service. Among the market failures in the sector in question, the following must be considered:

1. Externalities;
they occur when the production or consumption activity of a subject influences, in a negative or positive way, the well-being of another subject, without the latter receiving compensation (in the event of a negative impact) or paying a price (in in the event of a positive impact) equal to the cost borne by the benefit received.
The externality therefore indicates the effect of an activity that falls on subjects who have had no decision-making role in the activity itself; externality depends on an individual economic activity, but is not assimilated to goods and therefore lacks a market price;
They can therefore be defined as the advantageous or disadvantageous effects caused by the production and / or consumption activity of a person or enterprise, on the production or consumption activity of another person or enterprise, which are reflected in the prices paid or received.
The production of external economies is maximum in the case of pure collective goods and minimum in the case of pure private goods.

An externality occurs when the price of a good cannot fully reflect the costs and benefits associated with its consumption.

The allocation of scarce resources through market mechanisms works only if prices are able to summarize all economically relevant information; this consideration suggests that, from the point of view of efficiency, the virtues of the market fail in the presence of externalities.
In the case of water, this is a very relevant problem: for example, in determining their willingness to pay for water consumption, individuals do not take into consideration that adequate use of the resource not only reduces the risk of disease per se themselves, but also the possibility of epidemics for the whole community; in this case the supply at a price lower than that which will be formed on the market will be preferable, because it would encourage the consumption of water, reducing the risk of epidemics: in this case it is a positive externality.
However, indiscriminate use of the water resource by some users can produce congestion effects, i.e. a reduction in the benefit associated with the use of the resource by other consumers, as well as negative environmental externalities where it is not possible to guarantee the continuous reproduction over time of the resource itself. The use of water does not directly imply its consumption: for example, water can be used upstream to wash minerals and subsequently to irrigate the fields downstream; evidently those who manage the mine could ignore the pollution of the water damaging the farmer who uses the water to irrigate.
In this case, economic theory suggests that one of the possible solutions is to integrate services within the same company, which by managing the water for both the washing of minerals and for irrigation, would have the incentive to demand behavior responsible by all its users.

2. The natural monopoly;
In microeconomics, and in particular in the perspective of neoclassical economics, the theorems of welfare economics constitute one of the main arguments in favor of the free market and against state intervention in the economy or in general central planning solutions (Kreps, 1990). The first theorem requires that markets have precise characteristics; one of these is the presence of a large number of sellers of the goods, none of which are large enough to influence market prices. The collection, storage, treatment and distribution of water require a huge amount of initial capital and present a network of interconnections of systems and components subject to economies of scale: these elements represent sufficient conditions for the existence of a monopoly natural.

As a consequence, a single firm may be able to provide the service more economically than any other combination of two or more firms. Some studies suggest that economies of scale in water supply persist at every stage of the process; however the evidence that emerged from the study in other sectors, such as telecommunications, underlines how this principle may not exist in some phases. According to a study conducted by Rees, if the supply operations of the water service were divided into distinct functions, only those concerning the construction of the infrastructures and the services concerning the maintenance of the distribution and collection networks can admit forms of competition, while for the other functions remain the structure of the natural monopoly (Rees, 1997).

Inevitably, the monopolist will be oriented towards maximizing his profit, an attitude which will lead to an inefficient allocation of the resource, of which a smaller quantity will be provided at a higher than optimal price.
Therefore, in the face of monopoly situations or cases where there are companies in the sector with substantial market power, the achievement of economic efficiency makes careful monitoring and public regulation indispensable, aimed at avoiding unfair business behavior private.

3. Failure to assign property rights;
An exact definition of property rights assumes very important importance for an efficient market allocation (Coase, 1960).

- low transaction costs;
- defined property rights.

The study of the water resource allows us to underline how the transaction costs (irrigation) tend to be high, while the definition of property rights is difficult to establish as it represents a homogeneous product. Water is considered both a renewable resource, with reference to all those situations in which it is renewed, and non-renewable, as for example happens in desert regions with closed water basins.

In considering water as a renewable resource, it is denoted as a regime of free access which tends to support the determination of equilibriums that are difficult to sustain, inefficient and unstable in the exploitation of the resource; on the contrary, a regime in which property rights have been assigned to the resource seems to favor the development of sustainable, efficient and

stable balances. The exploitation of a renewable resource by a monopolist can therefore lead to an inefficient situation: in fact, the monopolist will be mainly interested in exploiting the resource in smaller quantities, applying higher market prices than the solution considered socially optimal.

4. Water as a public and meritorious good;
The characteristics of partial non-exclusion and partial non-rivalry allow water to be defined as an impure public good. Inevitably, water represents a merit good, which responds to a need that must be satisfied regardless of the individual consumer's ability to pay; therefore, reasons of equity and political opportunity push to guarantee their satisfaction at least at subsistence levels (Tecco, 2004).

2.7 Bottled water

In addition to granting private individuals the use of springs, wells, aqueducts and canals, the commercialization of water also follows another path: that of the consumption of bottled water. The mineral water industry is a very profitable sector, in constant growth (every year in the world 100 billion dollars are spent to buy bottled water) and it is also controlled by large private companies that derive huge profits from the exploitation of a state property which, as such, is part of the state's inalienable heritage. Swiss Nestlè (which owns more than 260 mineral water brands worldwide), alone it represents around 16% of the world market, followed by the French Danone with 12% and by Coca-ColaCo and PepsiCo.

Italy is the world's first consumer of bottled water, which is purchased regularly by around 64% 41 of households. A survey conducted by Eurisko-Panel Service, regarding mineral waters, shows that in Italy "the sector closes 2006 positively with a production of 12.2 billion liters, an increase compared to the previous year and a turn of total business (from the manufacturer to the retail store) of 3.2 billion euros ". (Cecilia Cirenei, 2007.) Among the reasons that induce people to prefer bottled water, the best taste, the greater safety but above all the health aspect stand out: according to this survey, most of the interviewees believe, in fact, that bottled mineral water is an indispensable product for health.

How far can you say that bottled water is safer than tap water? The legislator does not consider mineral water as drinking water, but as therapeutic water, used for specific purposes, by virtue

of some of its physical-chemical characteristics. For this reason, the controls envisaged to monitor the health of mineral waters do not coincide with those carried out in the aqueducts but are rather more permissive: they require fewer control parameters are carried out monthly (while for aqueducts there are two checks per day) and there is no obligation to report all substances on the label, some of which (such as arsenic and cadmium), can be contained in higher quantities than drinking water.

In February 2000 Italy received a warning from the Commission of the European Union, because in Italian mineral waters there were quantities of toxic substances higher than those required by EU regulations. Just a year later, amid the disinterest of the media and the political world, the Istituto Superiore della Sanità invited the government to lower the limits of some toxic substances, but in the meantime the investigations of the judiciary continued.
In 2002 excessive quantities of vanadium, arsenic and nitrite were found in Bari in some mineral batches and in 2003 a batch contaminated with chloroform was also discovered in Turin. It was therefore decided to broaden the investigation and the Ministry of Health launched an investigation, which revealed that 112 of 149 controlled brands were contaminated with poisons. Another point against bottled water is that more than 80% of it is plastic, the cost of disposal of which falls on the regions and is often higher than the poor profits that they derive from the water management fees applied to businesses. .
A study carried out by the WWF in May 2001, denounces how "the bottled water industry uses one and a half tons of plastic a year, which releases toxic chemicals into the atmosphere both in the production phase of the bottles, both when the latter are disposed of as waste " (Maude Barlow and Tony Clarke, p. 167). In the meantime, while people harassed by advertisinġ consume more and more bottled water, the maintenance of public and private infrastructure, especially in the poorest countries, is often put on the back burner. In these cases, unfortunately, it cannot be guaranteed that the water analyzed in the aqueduct has the same characteristics as that which arrives at the taps of the house, through kilometers of battered pipes.

Recently, some cities on the planet are asking their citizens to drink tap water instead of bottled water. For example in New York, where tap water control is among the best in the world, a campaign has started to reduce the use of plastic bottles and in California, many restaurants only serve tap water. Even the municipality of Rome, after analyzing the water of the city through 250,000 withdrawals from the aqueducts, said that this is good, fresh and costs much less than that in the bottle.

In fact, if it cannot be said with certainty that mineral water is purer and healthier than drinking water, it is however certain that the former is up to 1000 times more expensive than the latter. Costs have the greatest impact in southern countries with little or no running water available. It is here that multinationals find market niches for their waters or drinks, which are sold at an excessive price, as the only alternative to thirst.

In Pakistan Nestlè has introduced Pure Life water for some years, raising awareness among the population on the question of the importance of the quality of the water drunk. The fact is that only a few Pakistanis can afford to buy it: the average annual income of a worker is 495 dollars and drinking Pure Life, 243 of these would be spent only on water.
The same happens in Mexico, where a liter of Ciel (Coca-Cola) bottled water costs almost three times a liter of gasoline.

Also Nestlè, in Brazil had to deal with protests from citizens who oppose its actions. In Sao Lourenco, city movements for water denounce the over-exploitation of a spring located in a natural park, after having already seen two other aquifers dry up, with consequences for the ecological balance of the region. The Brazilian movement has also made its voice heard through the Swiss media, denouncing the facts with articles and television surveys. In January 2004 Nestlè finally retired from the park of Sao Lourenco. Similar incidents against the Swiss company also occurred in the United States, the Great Lakes region and Michigan, where Nestlè was forced to close its doors in the face of popular pressure.

CHAPTER 3

INTEGRATED WATER SERVICE IN ITALY

Water plays a central role in all aspects of the life of the planet, with inevitable repercussions on the environment, the well-being of the population, the economy and politics. In recent decades it has become increasingly evident that due to a constantly increasing demand, essentially linked to the increase in the world population, to new consumption and lifestyle models, to the growing urbanization process, to transformations and pollution of water bodies, the scarcity of fresh water is becoming a threat to sustainable development of society. Added to this are the impacts of climate change which are increasing the pressure on water bodies, making some territories more vulnerable to phenomena of water scarcity, especially at certain times of the year. In this context, the aim is to give a first overview of the use of water resources in Italy starting from the data collected and processed by Istat.

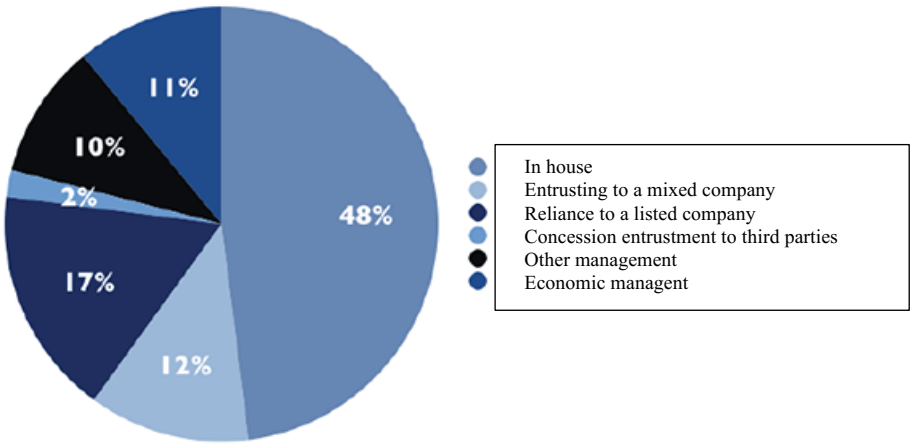
3.1 Water service management in Italy

According to the estimates of some authoritative economic information newspapers, the national water service management business is roughly around 10 billion euros (Senta, 2006). With regard to the investments necessary to modernize the Italian water networks, it is estimated that the operation can only be carried out using a figure that varies between 40 and 60 billion euros. These simple assessments help to strengthen the cliché that increasingly compares the term "water" to the concept of "blue gold".

The studies conducted on the trend of tariffs in the last 10 years have shown a substantial increase of 61% (just think that inflation, in the same period, was 25%). In addition, the data processed by the Ministry of Economic Development reveal that starting from 1995 and for the whole following decade, there has been a 2/3 drop in investments by water service managers: more precisely, the use of capital in absolute terms, it went from € 2 billion a year to around € 600 million. On this topic, it should be stressed that there is no guarantee authority. From an economic point of view, the logic that accompanies the privatization of water management seems evident: a private entity that offers services, such as water, has the primary objective of increasing profits; it is for this reason that the water service management plans foresee a 20% increase in water consumption in the next twenty years.

However, this trend is in stark contrast to resource saving policies; the progressive scarcity of water caused by the climate crisis could also lead to a water crisis and this should lead to the planning of water rationalization policies, not to an increase in consumption.

As we have mentioned, the typical forms of SII management, classified with reference to the methods envisaged by the European legal system and by our local legislation on the organization of local public network services of economic importance (D.lgs 152/2006),are: I) the assignment in house; II) the awarding of concessions to third parties, deriving from public tender; III) assignment to a mixed company. To these are added: IV) the assignments to listed companies (consequence of the listing on the stock exchange of some former municipal companies); V) economic management; VI) other residual forms of management. Of the different types of custody provided for by current legislation, the most common is direct custody, which affects approximately 48 percent of the Italian population. Direct assignment is only possible in the presence of managers with entirely public capital, or subjects with partially private capital following the identification of an industrial partner selected through a tender or following the listing on the stock exchange. The in house is particularly widespread in the North-West, where it affects 70 percent of the population. The large regional operators in the South also have direct credit lines (Graphic 2 and Figure 2).



Graphic 2 - Percentage distribution of the population by management model (Blue Book, 2018)

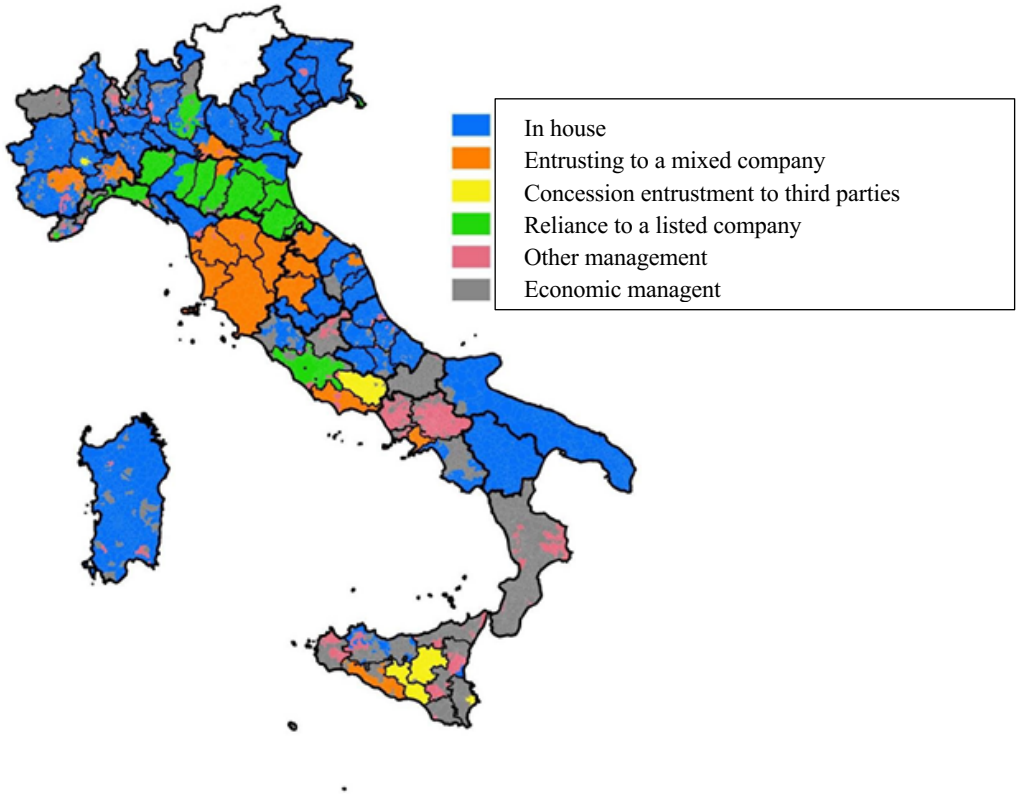


Figure 2 - Geographical distribution of operations by model (Blue Book, 2018).

The Blue Book drawn up each year by the Utilitatis Foundation, set up by FederUtility and Federambiente, officially records a geography of 72 "prevailing" assignments, making them coincide with the territorial areas (the AATOs would however be 92: in some, in fact, the service is not entrusted , but managed directly by local authorities). For each individual AATO, which almost always coincides with the province, the agreement is therefore considered which involves the largest number of inhabitants and the largest part of the territory.

Looking at the numbers, of the 72 credit lines taken into consideration:

- 34 follow the in-house model: the local authority manages the service on its own, without resorting to the external market but by setting up a company with total public control (affects approximately 41% of the Italian population);
- 13 are stipulated with companies listed on regulated markets: this is the case of Hera, which like many others has mostly public shareholders. 19% of Italians are under this model;
- 12 are entrusted to public-private joint venture companies: this is the case for 17 out of 100 Italians;

- 7 are multi-management contracts, with different operators within the same Ato (5% of the inhabitants);
- 6 are entrusted under concession to third-party companies: they are totally private managers, they concern 5% of the population.

The vast majority of the population - over 28 million Italians in 4,146 municipalities - are served by in-house companies. The second most common form of assignment, management by listed companies, reaches 10.1 million inhabitants in 547 municipalities, followed by the assignment to a mixed company, involving almost 7.5 million people in 677 municipalities. Economic operations are present in 1,634 municipalities for a total of 6.6 million citizens, custody under concession to third parties concerns approximately one million individuals in 126 municipalities and other managements just under 6 million inhabitants in 590 municipalities.
Overall, therefore, about 41 million Italians (68.7 percent) are served by entirely public managers, while the remaining 31.3 percent (18.7 million) receive the service from entities that have the participation of private capital . The first category includes in-house companies, economic management and "other forms of management". The second category includes mixed companies, listed companies and third party credit lines. The only truly private control operations are those that fall under the label entrusted to third parties. They concern a small minority of people (around 1.1 million, corresponding to 1.8 percent of the population): 76 thousand in Piedmont, 469 thousand in Lazio and 550 thousand in Sicily.

In mixed and listed companies, in fact, the public shareholder maintains control. To maintain the conservative estimate, we will adopt a restrictive definition - that is, we will classify only companies for which the public shareholder holds the majority of the capital as "public". Under this constraint, it can be estimated that at least three quarters of the population served by mixed companies (5.6 million people) receive the service from "public" realities, while the remaining 1.8 million from "private" entities. As for listed companies, public shareholders always have a majority.

3.1.1 The losses of the water network

There is no water distribution process carried out without any loss along the way from the tanks to the end users. Sources of water supply are often far from where it is needed. This requires taking water from the source and transporting it to the point of delivery or use. The water supply and distribution system for drinking use can, on the whole, include thousands of kilometers of

pipes. In most Italian cities, water infrastructure is subject to severe aging and deterioration. In part, the dispersions are physiological and related to the extension of the network, the number of connections, their density and operating pressure, in part they derive from critical issues of various kinds.

The actual water losses of drinking water, obtained as the difference between the total and apparent losses, are estimated in 3.2 billion cubic meters in 2015, about 100 thousand liters per second, equal to 144 liters per day per inhabitant. All the regions of Northern Italy, with the exception of Friuli-Venezia Giulia, have a level of total percentage losses lower than the national one (Figure 3).

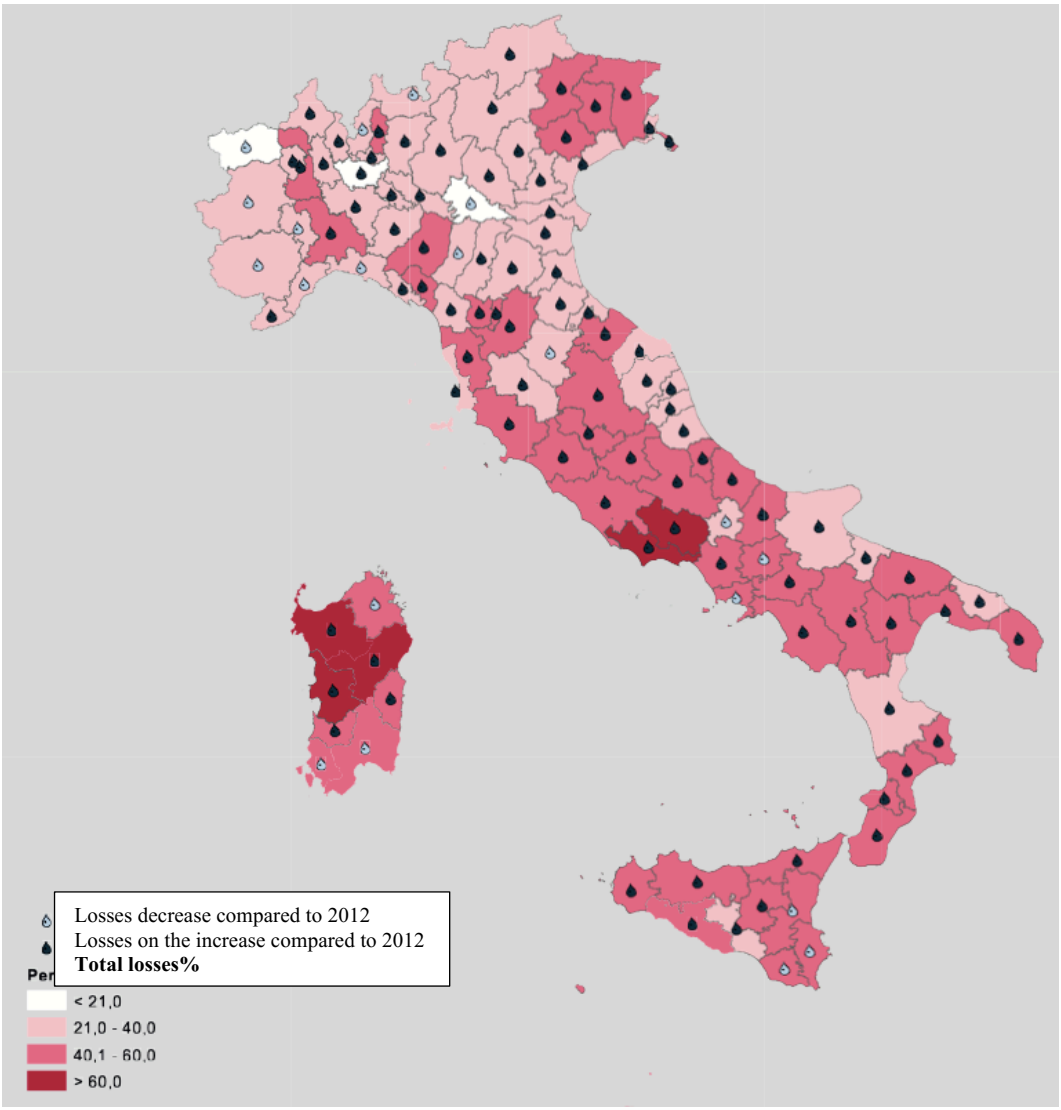
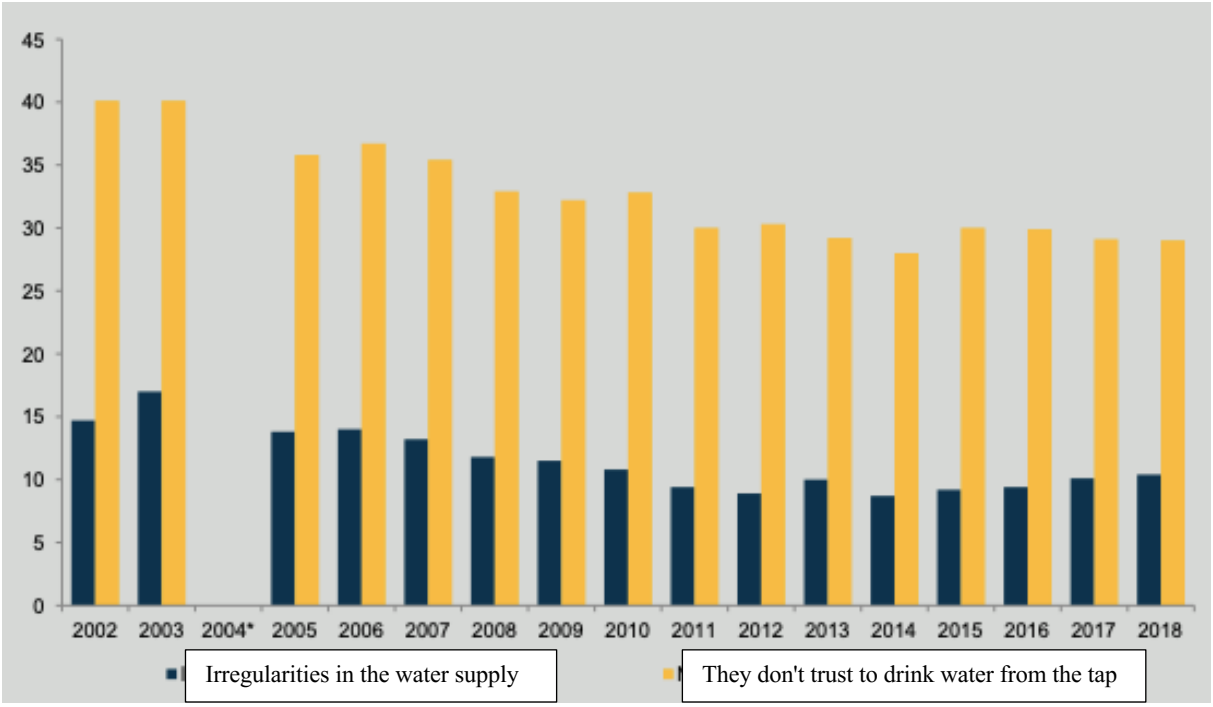


Figure 3 - Total water losses in municipal drinking water distribution networks by province (Istat, 2015)

3.1.2 The quality of the drinking water supply service

In 2018, the percentage of Italian families complaining of irregularities in the water supply service in their homes stands at 10.4 percent. This value, stable compared to the figure recorded in 2017, is still far from the peaks recorded since 2002, especially from that of 2003 (17.0 per cent). The disservice affects all regions differently and affects almost 2.7 million families; of these, just under 1.8 million, equal to 65.4 percent, live in the southern regions. The region most exposed to water supply problems in homes is Calabria, where 39.6 percent of families complain of this inefficiency. Families who do not trust to drink tap water are still a considerable share, despite a progressive decrease. From 40.1 percent in 2002 they drop to 29.0 percent in 2018, for a total number of families of 7.5 million, as shown in graphic 3.



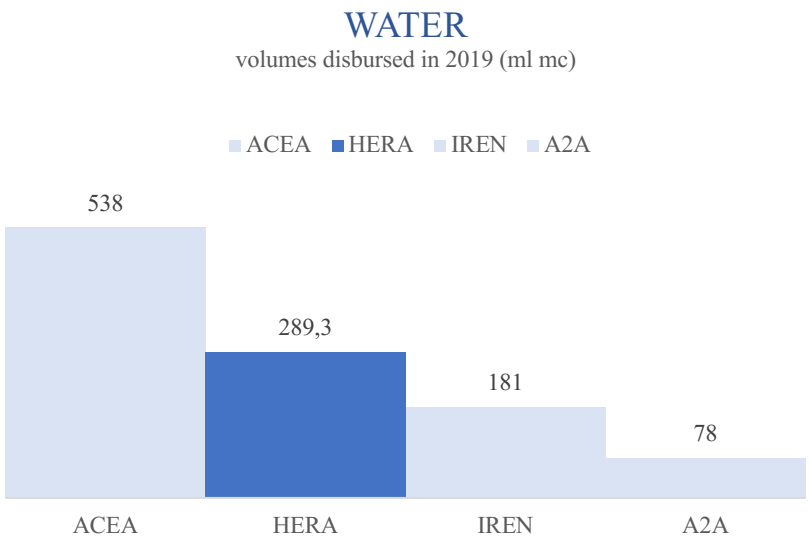
Graphic 3 - Families who complain of irregularities in the supply of water and who do not trust to drink tap water, per 100 families. (Istat, 2002-2018)

Compared to the 2017 value, there is no change. The phenomenon shows a marked territorial variability: it ranges from 17.8 per cent in the north-east to 52.0 per cent of the islands, with the highest percentage in Sicily (53.3 per cent). Follow the families of Sardinia (48.5 percent) and those of Calabria (45.2 percent).

3.2 Hera spa

The analysis of managers operating in the Italian water service sector allows us to affirm that there are 4 companies for which the privatization process of water management represents a very important development opportunity. These are A2A, IREN, HERA and ACEA, mixed multiutility companies listed on the stock exchange. Analyzing the ownership structures of the 4 most important companies operating in Italy in the SII sector helps to understand the investment opportunities that are offered to individuals.

Graphic 4 shows the market positions of the main multi-utility companies operating in the Italian water sector.



Graphic 4 shows the market positions of the main multi-utility companies operating in the Italian water sector (Hera, 2019)

HERA (Holding Energia Risorse Ambiente) was born on 1 November 2002 from the merger of 12 multi-utility companies active in the provision of public services in neighboring areas of Northern Italy, mainly in Emilia Romagna. The objective declared by the union of the companies was to improve the quality of services to citizens in key sectors such as energy, water and environmental services, as well as to achieve significant synergies and efficiencies made possible by this operation.

The founding members of HERA were 111 Municipalities in the provinces of Bologna, Ravenna, Rimini and Forlì-Cesena, located from Bologna to the Adriatic Sea.

The HERA group has a fairly large shareholder base; the structure in fact includes 198 public shareholders, divided into Municipalities of the province of Bologna for 11.66%, in Municipalities of the Province of Modena for 7.85%, in Municipalities of the Province of Ferrara for 1.88%, in Municipalities of the Provinces of Trieste, Padua and Udine respectively for 3.73%, 3.10% and 2.96% and in other Municipalities of the Provinces of Romagna (Ravenna, Forlì, Cesena and Imola) for 15.39%. In addition to public bodies, the share capital of HERA includes over 24,000 private investors.

In June 2003 HERA started the procedures for the listing on the Milan stock exchange; as a consequence, this process led the Company to be partially privatized: it is estimated that 53.4% of the equity capital is currently in the possession of private individuals. The development of HERA was characterized by a solid path of economic expansion and constant territorial development: the growth by external lines, through mergers and acquisitions with other multi-utilities, in fact continued on a regular basis during the first three years of life, contributing the doubling of the Ebitda (value that indicates the profit before interest expense, taxes and amortization on tangible and intangible assets) compared to that realized in 2002. In 2004 HERA acquired Agea, a multiutility company in the neighboring province of Ferrara, thus proceeding to extend the northern borders of its market.

In 2005, on the other hand, there was the merger with Meta, an event that represented the first Italian merger between multi-utilities listed on the Stock Exchange and which produced the expansion of the territory served up to 70% of the Emilia Romagna region, allowing the Group to gain leadership market in the main businesses managed and creating further performance opportunities. Many other consolidation and growth operations were carried out in 2006, 2007 and 2008; the process of expanding the core business of the HERA group has in fact continued with external growth characterized by mergers and acquisitions of other Italian multi-utility companies in the energy, water and gas distribution sector. In the first part of 2006, the HERA Group acquired a 49.79% stake in the multi-utility Aspes Multiservizi of Pesaro and 46.5% of SAT, a multi-utility operating in the province of Modena. Also in the same year, the Group signed a memorandum of understanding with Enel, Edison and Sonatrach; this agreement led to the annual purchase of one billion cubic meters of natural gas, transported through the gas pipeline of the Galsi consortium, which also includes HERA itself. In 2007, on the other hand, it was characterized by the approval of the merger between Aspes and Megas of Urbino, by the

birth of Marche Multiservizi, in which HERA is equal to 41.8%, and subsequently by the merger by incorporation of SAT S.p.A.

In 2013 Acegas-Aps became part of the Hera Group. An industrial project aimed at creating the second national group among local utilities, with a production value of over 4.5 billion euros, thanks to the over two million customers served, and good financial strength. Alento Gas, the Abruzzo gas sales company, was acquired in 2015 by the Hera Group. Thanks to these operations, the Hera Group further expands its corporate perimeter and aims to be more competitive by supervising the various customer segments in a more structured manner. In 2018, on the occasion of the sixth edition of the Top Utility Analysis, the Hera Group was selected as the best company in Italy for sustainability, among the 100 main public service companies in the country. In addition, in the same year, he won the 2018 budget Oscar. In 2019, multiutility entered the main index of Borsa Italiana, which includes the 40 largest stocks in Piazza Affari in terms of capitalization, liquidity and trading volume. This milestone is supported by Hera's uninterrupted growth path, launched 16 years ago and based on a multibusiness model that combines internal growth with external development and which shows a mix of activities resilient to the main macro variables of the scenario.

The HERA Group deals with the provision of the main public services and, according to management's intentions, having such a balanced business portfolio allows you to significantly reduce your exposure to risks due to any changes in the political, economic and climatic scenario. The development of the Group was possible thanks to its organizational structure, divided into a parent company and operating structures in the area, which places the company as an "open system" for the entry of new members. It is a highly innovative model that to date has no equal in Italy, but that other companies in the sector are starting to emulate. Holding HERA S.p.A. deals with establishing strategies and conducting main activities, playing a role of direction and coordination through its seven divisions: Environment, Services, Sales and Market, Distribution, Large Plant Design, Electrical Distribution and Heating.

The HERA Group operates in the following 5 different strategic organizational units:
1. management of environmental services, such as the collection, disposal and treatment of municipal and special waste, urban hygiene, waste-to-energy and composting, that is, the recycling of household waste.

The HERA Group deals with the management of the entire recovery and recycling cycle of the material, through the synergy between the environmental operating services (waste collection, street sweeping and washing) and those for waste treatment (recovery and disposal), for a total of about 7,175 thousand tons of waste treated in 2019. The Group also favors waste energy recovery initiatives through waste-to-energy plants, cogeneration and biogas production, so as to limit the disposal in landfills to that limited part which cannot be recovered in the form of material or even energy. HERA owns 86 plants, of which 7 are WTE, ie energy recovery;

2. management of services related to the water cycle, such as drinking water, distribution and sale of water, purification and treatment of waste water. HERA manages the entire cycle, from collection to purification and return of water to the environment, and is the second Italian operator in the sector. The aqueduct services include the phases of: water collection, ie the withdrawal of water from the supply source; water purification treatment; adduction of drinking water to the distribution network; distribution of drinking water to users through a system of tanks and pipes;

3. management of services related to the gas energy sector, such as the distribution and sale of methane. In the energy sector, the main activity is represented by the distribution and sale of natural gas: with approximately 9.9 billion cubic meters of gas sold in 2019, HERA represents the third national operator in the market for the sale to end users. The Group also offers district heating services and provides heat management services for public and private entities;

4. management of services related to the energy sector related to electricity, such as the distribution and sale of electricity;

5. management of other services, such as district heating, public lighting and traffic lights. HERA has become one of the largest Italian multi-utilities with a turnover of over 7.4 billion euros in 2019 and a customer base of around 3.3 million customers. The Group aims to become the "best Italian utility" by pursuing an industrial plan to 2023 which sets the growth target of the Mol at + 3.9% annual average.

Currently, the HERA Group occupies important positions in the main businesses in Italy:
1 ° in the Environment sector;
2 ° in the water sector;

3 ° in the Gas sector;

4 ° in the Energy sector.

3.2.1 Rate analysis with the normalized method

The data offered on the HERA website allow a study to be carried out on the change in the water tariff from 2005 to 2010. From 2005 to 2010, the SII bill increased due to new regulations, the increase in energy costs, inflation and investments made. Nevertheless, according to what was stated by the top managers of the HERA Group, the interventions carried out made it possible to contain an even greater increase in service costs. 2005 was the first year in which the SII tariffs were determined by the area authorities with the new standardized method provided for by the Ministry of Public Works Decree of 1996.

Starting from 2008, the tariffs are determined on the basis of the criteria established by the Emilia Romagna Region, contained in the "Tariff method for regulating the determination of the tariff of the integrated water service in Emilia-Romagna". From 2005 to 2010 the rates applied by HERA increased by 31% from 1.31 euros per cubic meter to 1.72 euros per cubic meter. This increase is partly due to the increase in overall costs, increased by 25%, and partly from the reduction in volumes sold, which accounted for 6%. It is important to note that the above tariff increase has translated for an average family of 3 with an annual consumption of 130 cubic meters, in an increase in the bill of 36 euros in the five years considered, about 7 euros per year per family, 2 euros and 40 cents per year per citizen (data referring to the average of bills applied by HERA in the provincial capitals). The change in tariffs was also affected by the introduction of the per-capita tariff in certain Municipalities. In fact, in some Municipalities of the provinces of Bologna, Modena and Ravenna the competent area authorities have introduced a tariff for domestic use which takes into account the number of family members (per-capita tariff) to encourage water saving and facilitate large families .

With the per-capita tariff, the amount of the bill is calculated taking into account the number of family members: the tariffs are facilitated for low consumption and instead penalize consumption that exceeds the quantity set for each person on the basis of the savings objectives of the Protection of the waters of the Emilia-Romagna region (a basic allocation of 150 liters per day or 55 cubic meters per year has been established). The per capita endowment, as well as the consumption ranges, vary according to the number of family members, thus facilitating large families who necessarily have a greater consumption. It is applied only to domestic users

and, in 2011, it was in force in 55 municipalities located in the provinces of Bologna, Modena and Ravenna, where 39% of the population served resides.

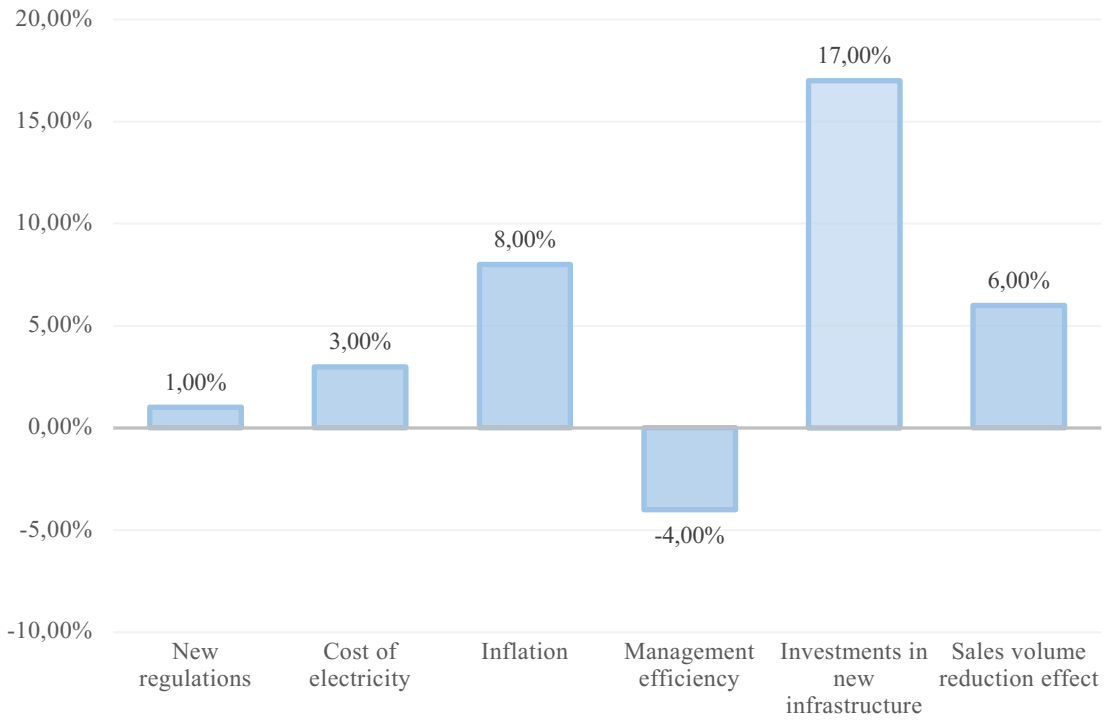
From 1 January 2019, however, the national reform of water tariffs for domestic use came into force. The reform was defined in 2017 by the Energy, Networks and Environment Authority (the former energy authority). For 2018, a transitional period was maintained, where residential users were all equated to a family of 3, but with 2019 the reform enters into full swing and water companies must issue invoices with the new tariffs. Take Bologna, for example, where the manager (Hera SpA) offers such structured brackets: we start with 37 cubic meters per year (about 100 liters / day) for each resident, supplied at a subsidized rate, and then we progressively pass and others brackets of variable amplitude as per capita consumption increases (as shown in the following table 1).

Table 1 – Water supply service

Water supply service				
Per capita resident home use	Consumption brackets by family member (m3/year)		Unit of measure	Single basin rates
For a family of N components, the band volumes are calculated by multiplying the water supplies of the single component by N	From mc/year	To mc/year		
Discounted rate	0	37	€/m3	0,49931
Base rate	38	55	€/m3	0,796274
Rate 1st surplus	56	80	€/m3	1,789716
Rate 2nd surplus	81	Limitess	€/m3	2,993014

(Source: Hera)

Graphic 5 shows the main reasons that determined the change in the costs of the integrated water service over the 5 years and which, together with the decrease in volumes, determined the increase in the average HERA tariff, for an overall value of + 31% .



Graphic 5 – Causes of the increase in the tarrifs of the integrated water service between 2005 and 2010 (values in %).

The comparison of the situation in 2005, the first year of application of the new tariff determination method, with that of 2010 shows a reduction in operating costs net of extraordinary effects, testifying to the manager's efficiency.

Extraordinary effects, not included in the costs expected in 2005, include:

- costs for the treatment of rainwater;
- the increase in the costs of disposing of the sludge from the treatment plants (following the introduction of new regulations);
- l'inflazione;
- the increase in the cost of electricity.

The original planning, in fact, did not foresee the treatment of rainwater among the costs foreseen in the tariff since this service was paid separately by the municipal administrations. Regional Law No. 4 of March 2007 subsequently provided for the inclusion of rainwater management within the SII, making sure that the related costs were calculated in determining the tariff.

The regional legislation also provided for more stringent limits for the disposal of the sludge produced by the treatment of waste water; these limits dictated the use of alternative and more expensive disposal systems than had been foreseen in the planning stage.
These higher costs are also included in the tariff today. In partial compensation for these cost increases and the increase determined by the annual adjustment of the rate for inflation, the efficiency measures implemented over the years by HERA have led to an overall saving of 11.3 million euros. In addition to the change in operating costs, the change in depreciation linked to the dynamics of investments made in new infrastructures is added.

Between 2005 and 2010, HERA made investments for water management for 600 million euros, in compliance with what is defined by the competent authorities, with the aim of guaranteeing a complete and efficient service to users of the area. In the period considered, most of the investments were made in reference to the aqueduct, for a total of 260 million euros; followed by investments in sewerage, equal to 147 million euro, and for sewage treatment, equal to 103 million euro. The investments common to the three services, such as for example the new remote control center, the analysis laboratories and the operating offices, cost 90 million euros for the share attributable to the IBS.

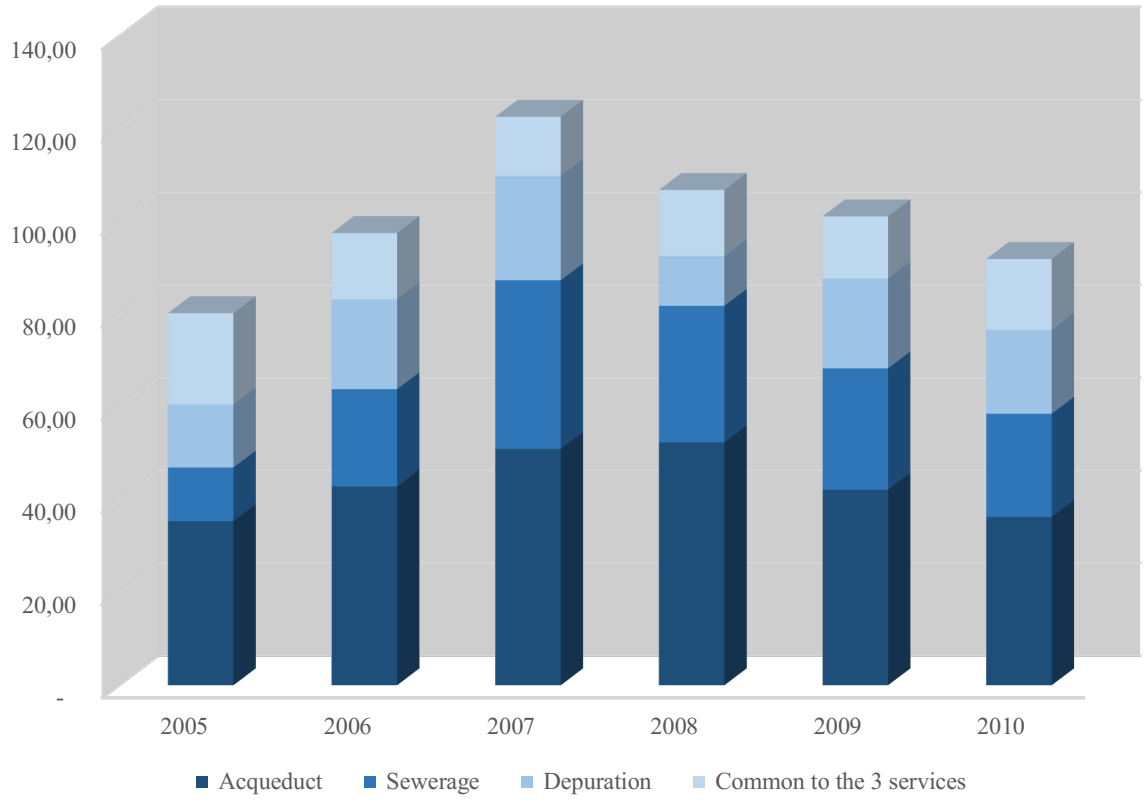
It is interesting to note that the overall level of investments has remained high in all the years considered, thus representing a positive impact on local employment which is more appreciable in recent periods of economic crisis. The investments made by HERA are reflected in the depreciation item within the tariff.

The investments made by HERA in the period 2005 - 2010 are shown in table 2 and in the relative graphic 6.

Table 2 - Investments made (in millions of euros)

Years	Acqueduct	Sewerage	Depuration	Common to the 3 services	Total
2005	35,40	11,60	13,60	19,70	80,30
2006	42,90	21,00	19,40	14,30	97,60
2007	51,00	36,40	22,50	12,80	122,70
2008	52,40	29,50	10,70	14,30	106,90
2009	42,20	26,20	19,40	13,40	101,20
2010	36,30	22,30	18,10	15,30	92,00

(Source: Hera, 2010)



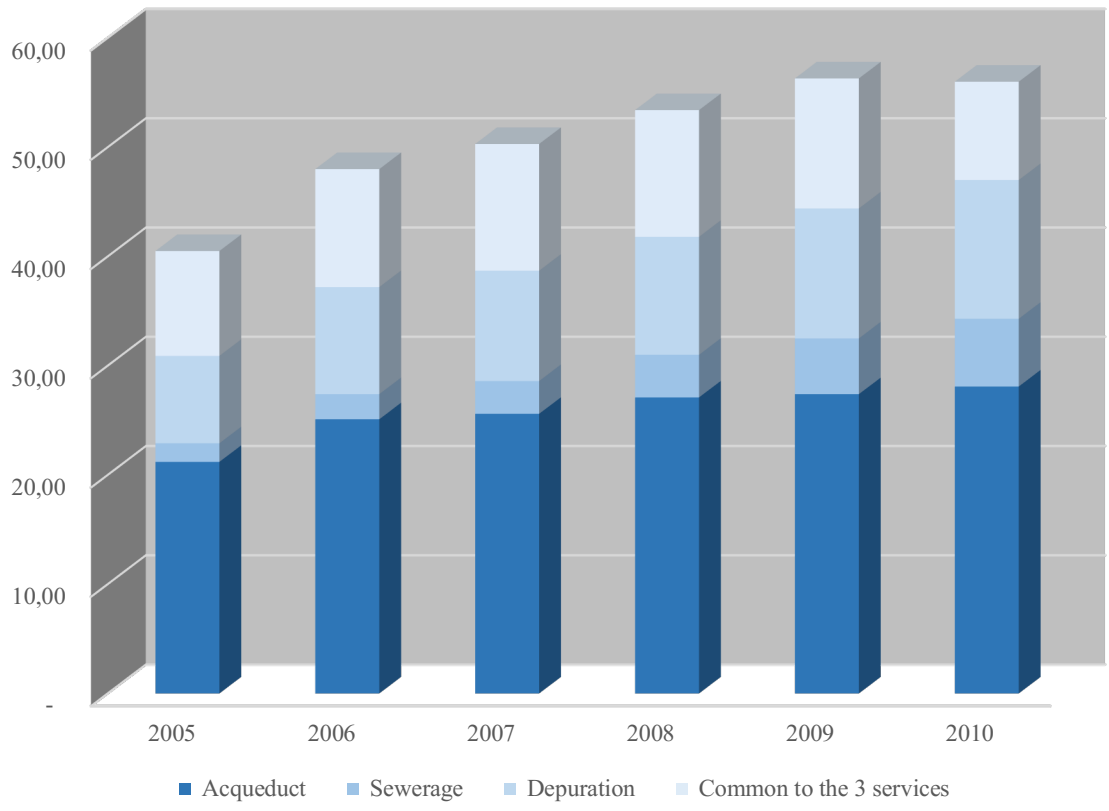
Graphic 6 – Investments made, in millions of euros. (Hera, 2010)

While the trend of depreciation in the same period is highlighted in table 3 and in the related graphic 7.

Table 3 - Depreciation trend (in millions of euros)

Years	Acqueduct	Sewerage	Depuration	Common to the 3 services	Total
2005	21,20	1,70	8,00	9,60	40,50
2006	25,10	2,30	9,80	10,80	48,00
2007	25,60	3,00	10,10	11,60	50,30
2008	27,10	3,90	10,80	11,60	53,40
2009	27,40	5,10	11,90	11,90	56,30
2010	28,10	6,20	12,70	9,00	56,00

(Source: Hera, 2010)



Graphic 7 – Depreciation trend, in millions of euros (Hera, 2010)

According to what was pointed out by the top management of HERA, the investments made and the ordinary management activities have enabled the supply of a quality service, expressed in particular in the following aspects:

- compliance with the quality standards set by the Service Charter: in 2010 HERA respected these standards in 98.9% of cases. The Service Charter defines the minimum quality standards to be respected for certain types of services, such as the times for providing a quote to the customer for simple interventions, the times for activation or termination of the supply. For all the parameters indicated in the Charter, automatic compensation is provided for customers (equal to 30 euros) if the quality standard provided for by the Charter has not been respected;

-the losses of the aqueduct network: in 2009 in the territory managed by HERA the non-invoiced water was 7.87 cubic meters per kilometer per day with a 7% reduction compared to 2006;

-the presence of the purification and sewerage service: in 2009 in the territory served by HERA the sewerage service covered 93.9% of the needs expressed in equivalent inhabitants (i.e. sum of resident inhabitants, production users transformed into equivalent inhabitants and attendance tourism) while the treatment service covered 92.9% of the needs of the area. The coverage rate of the aqueduct service, on the other hand, was 99.9% in 2010;

-the number of sewage treatment plants managed: HERA manages 377 sewage agglomerations with a total potential of over 4 million equivalent inhabitants;

-the quality of the purified water compared to the legal limits: in 2010 the quality of the water leaving the purifiers was 64% better than what was provided for by the law. This value refers to plants with more than 10,000 equivalent inhabitants (the volumes treated in these plants are equal to 75% of the total waste treated) and is calculated on the basis of the ratio between the measured concentration of the main pollutants required by Legislative Decree 152 / 2006 and the relative maximum allowed concentrations;

-the quality of drinking water is guaranteed by approximately 400 thousand checks and is comparable with the main mineral waters. The quality of the water is reported annually by

HERA with the report "In good waters" and every six months with detail by individual municipality through the website;

-the families who report problems related to irregularities in the water supply are less in Emilia Romagna than the national average: 5.5% compared to the national average of 10.8% (multi-purpose survey "Aspects of daily life" conducted by Istat in February 2010);

- the results of the customer satisfaction survey carried out annually by HERA show that the HERA SII in 2011 reached a score of 74 on a scale from 0 to 100 where the level of 70 can be considered equal to satisfaction. In all the annual surveys carried out from 2005 to 2011, the score for SII was always higher than 70. As for the comparison with the other Italian operators, it should be noted that compared to the Italian average, the water distributed by HERA costs more, in favor of a better service provided than the national average (as justified by the manager). The average expenditure recorded by the Cittadinanzattiva Observatory in the capitals served by HERA in 2009 was 18% more than the Italian average, or 319 euros per year for a consumption of 192 cubic meters of water per family.

Among the reasons provided as justification, it should be noted that the cost of providing water to customers' homes is influenced by a series of significant aspects, such as:
1. the morphological characteristics of the territory,
2. the availability and quality of sources of water withdrawal,
3. the state of conservation of the plants and networks;
4. the amortization of the investments made.

In particular:
-63% of the water that HERA withdraws needs more complex and expensive drinking water treatments than simple disinfection, against 32% of the national average;

-in 2007, in the territory served by HERA the sewerage service covered 92% of the needs of the territory, against a national average of 85%.
In 2008, the purification service covered 90% of the needs of the territory, against a national average of 75%;

-reports of problems concerning irregularities in water supply are lower in Emilia Romagna than the national average: 5.5% compared to a national average of 10.8% (multi-purpose survey "Aspects of daily life" conducted by the Istat in February 2010);

-HERA has a value of investments made in the water sector for 1,000 cubic meters of water invoiced more than double the average of the seven companies serving the main Italian municipalities;

-In 2008, HERA made 98% of the investments agreed with the area authorities while in Italy on average in 2007 only 56% of the investments planned were made;

-as regards water leaks from the aqueduct network, it should be noted that the longer the network managed, the more complex it is to contain the phenomenon of physical losses. Therefore, when comparing different companies, the length of the network should be taken into account. Thanks to limited losses and a very large managed network, HERA achieves a better performance than the average of the seven companies that serve the main Italian municipalities: 7.87 cubic meters of non-invoiced water per kilometer of network per day compared to 36, 59 cubic meters. Even considering the percentage of network losses compared to the drinking water introduced into the network, HERA records a lower figure than the national average: 25% compared to 35% in 2009.
Table 4 shows the major differences in the comparison between HERA and the Italian average.

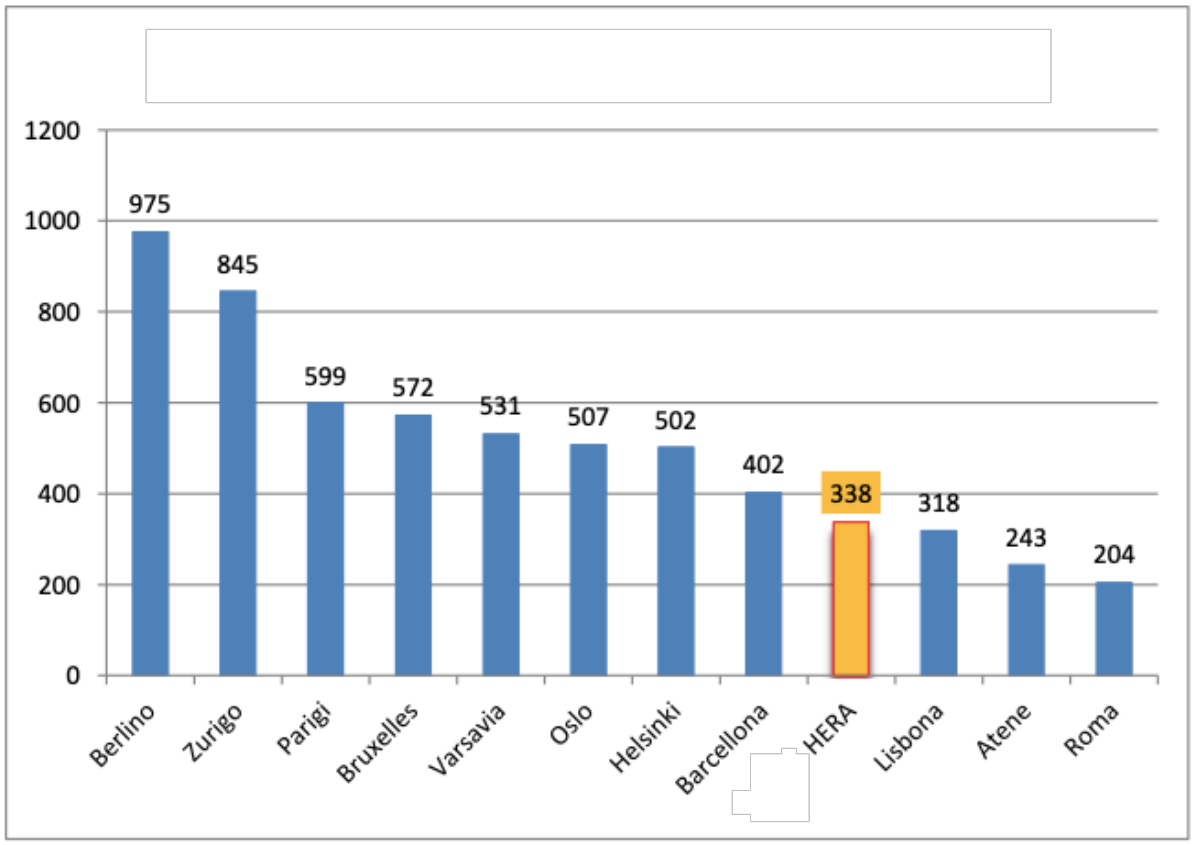
Comparison between Hera and the Italian average

	Hera	Italian average	Difference
Integrated water service bill, 2009	319	270	18%
Investments made, 2009	434	199	118%
Rate of realization of the investments, 2008	98%	56%	75%
Percentage of water withdrawn that needs to be treated, 2008	63%	32%	97%
Coverage rate of the sewerage service, 2007	92%	85%	11%
Coverage rate of the treatment service, 2008	90%	75%	33%
Water network losses, 2009	24,80%	35%	-29%
Water not invoiced per kilometer of network, 2009	7,87%	36,59%	-79%

(Source: Cittadinanzattiva,2011; Relazione annual al Parlamento, 2009; Istat, 2009; Blue Book, 2010; Bilancio Hera,2010)

The comparison with the European reality shows instead that the water distributed by HERA costs much less than the continental average, even if in general the tariffs of the water service in Italy determine on average a lower level of expenditure than that of other countries. Considering a consumption of 200 cubic meters per year, the average expenditure in 11 European capitals is equal to 518 euros per year, while for the same quantity, the expenditure in the territory served by HERA is equal to 338 euros. The average cost of water abroad is 2 euros per cubic meter with values close to 5 euros in Berlin and values above 3 euros for the cities of Warsaw, Zurich and Paris.

As for the Italian situation, according to the "9th national sample survey on SII tariffs" published in 2010 by Federconsumatori Modena, the average Italian cost for a consumption of 200 cubic meters was in 2010 of 311 euros with significant differences in the 90 provincial capitals analyzed: ranging from 115 euros in Milan to 478 euros in Florence; in the provincial capitals served by HERA, the average expenditure in the same year was 363 euros. Graph 8 shows the total annual cost for each user, in some important European cities and in the area served by HERA, for a water consumption of 200 cubic meters.



Graphic 8 – Total annual cost for each user. (Hera, 2010)

The analysis of the cost of water allows us to affirm that it also depends on the territorial characteristics, such as the ease of access and extraction of the water, the quality of the extracted water and therefore the complexity of the drinking water activities and the state of publicly owned plants and networks. The average expenditure for the SII can be different in the various territories, in some cases significantly, and this depends on the different cost structure of the various territorial realities, also due to the need for water supplies from third-party suppliers and the tariff structure approved by the 'Competent authority, which can affect more or less on domestic use.

The main factors that influence the cost of water are:
• the quality of the water at the origin: the better the quality of the water at the origin and the less expensive will be the potabilization treatments to be carried out;
• the proximity of the withdrawal source used to the consumption points: closer it is the source of withdrawal used and the water transport costs will be lower due to the lower consumption of electricity;
• concentration of users: the greater the presence of customers with the same length of the network and the costs will be lower since it will be possible to distribute the fixed costs on a greater number of users;
• the investments made: in particular those relating to the adaptation of sewer networks and purification plants to environmental regulations such as those provided for by Legislative Decree no. 152 of April 3, 2006.
This legislation provides for more stringent obligations on the quality of the water returned to the environment after being collected in the sewer and after the purification process.
In 2010, the HERA user paid € 1.74 per 1,000 liters of water on average. This value includes all activities related to SII: from extraction to drinking and water purification, from maintenance on the network and on plants to administrative management.

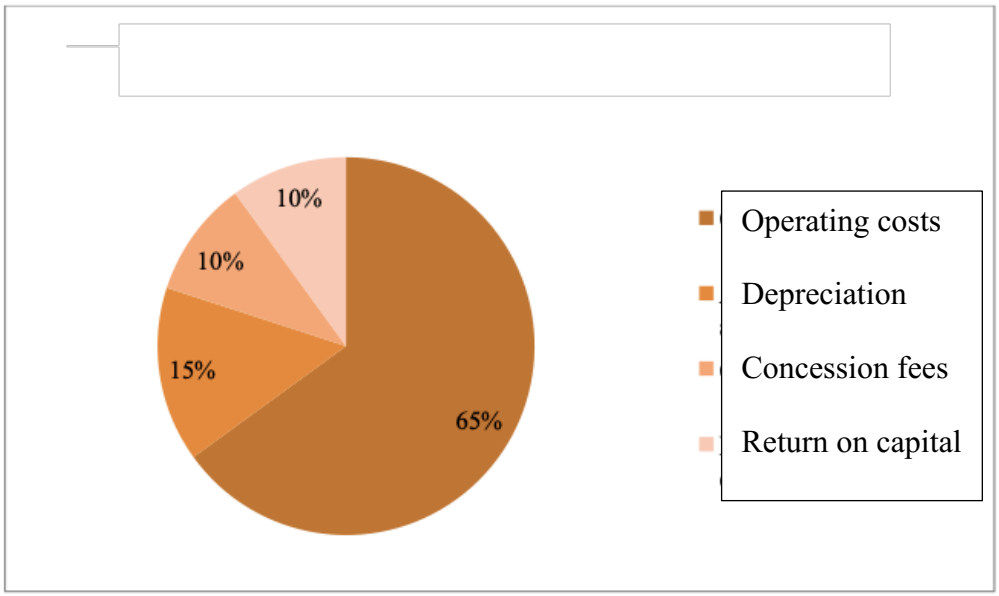
Specifically, the average HERA tariff in 2010 was influenced by the following factors:
1. operating costs, the 65% share of which has had the greatest impact on the tariff. These are expenses incurred by the operator to ensure that the entire water management service is carried out and include costs for the purchase of raw materials and energy components, for personnel, for the purchase of materials and services and for provisions;

2. the investments made by the operator on networks and plants, attributable to the depreciation item together with the provisions, which affected the tariff for a portion equal to 15%.
The investments are defined by the Optimal Territorial Authority within the Economic-financial Plan and may derive, for example, from the need for new infrastructures in the aqueduct, sewage system or water purification, expansion systems or replacement of obsolete material. The manager is required to make investments according to the defined plan; otherwise, it will be subject to pay a fine to the Optimal Territorial Area Authority. Investments play a significant role as regards the determination of the tariff: the more new infrastructures are needed, the more the investments increase, the more the depreciation increases and consequently the tariff and, therefore, the bill. Depreciation represents the share of the cost of investments on the network and on the plants attributed to the various years: the investments, in fact, contribute for many years to the company's activities and it is therefore necessary to share the costs incurred in one year also in the following years in operation the years corresponding to the useful life of the asset realized through the investment;

3. the concession fees paid to the Municipalities of reference, which account for 10%.
The concession fees are the consideration paid by the operator for the use of all the capital equipment not owned by him, fundamental and necessary for the provision of the service. The legislation states that ownership of the water service networks and plants is public. In cases where the operator is required to pay a fee for the use of the water service goods, this fee is paid to the Municipality and therefore "returns to the citizen";

4. the return on capital also accounts for the remaining 10% of the total, or 17 euro cents per 1,000 liters delivered; this is the part of the tariff that repays the cost of capital borrowed from third parties or financed by the company's own means without resorting to external debt. In fact, if the investments are made by borrowing externally, the manager will have to pay interest on this debt; the return on capital invested in this case covers these costs. If, on the other hand, the investments are self-financed by the manager, therefore making use of the company's internal financial resources, the manager himself renounces to use those resources for alternative uses that would guarantee him income; the return on capital invested in this case pays for this loss of income of the manager. The remuneration is calculated as a percentage value of the capital invested by the manager and is therefore greater the higher the investments made.

Graphic 9 highlights the percentage of incidence of each single factor on the average HERA tariff in 2010.



Graphic 9 – Elements that affected the Hera average rate in 2010. (Hera, 2010)

It is essential to remember that the tariff is relative to the SII (consisting of the aqueduct service, the sewerage and the waste water purification) and in the territory served by HERA, it is established by the relevant Area Authorities per territory, made up of the Municipalities of each province, in December 2011. 59% of the operating costs of the SII of 2010 relate to the aqueduct service, consisting of all the water withdrawal, drinking water and distribution systems up to the end customer. These costs are therefore used to operate plants that take water from springs, wells or surface waters, plants that purify it, when necessary, and to manage the entire distribution network. 12% of the total operating costs relate to the sewerage service which is used to collect and convey the domestic and industrial waste water produced to the treatment plants. Lastly, 29% of operating costs relate to the purification service.

Sewage treatment plants improve the characteristics of waste water by ensuring that its discharge does not alter existing natural ecosystems. The main cost items of the SII include personnel costs (9%), costs for the purchase of electricity (10%) and the cost of purchasing raw materials, in the territories where HERA does not manage the withdrawal of the water resource (11%).

Electricity costs are directly related to the availability and proximity of the water supply sources or to the morphology of the area. For example, the withdrawal of water from wells requires higher electricity costs to raise the water; even in cases where the sources of withdrawal are distant from the inhabited centers it is necessary to consume more electricity to transport it. Finally, as regards the sewerage, it is necessary to raise the waste water to lead it to the treatment plants. Consuming tap water instead of mineral produces both environmental benefits and economic savings: as far as economic savings are concerned, with 1.74 euros you can buy 6 bottles of mineral water at the supermarket or 1,000 liters of tap water.

3.2.2 Rate analysis nowadays

The long-term analysis indicates that the bills recorded in the Emilia-Romagna region served by Hera between 2006 and 2019, an average compound annual increase lower than that in Italy: + 2.0% compared to +3 , 4% recorded nationally (Source: Istat). This gap is even more markedly in favor of Hera customers of the water service and the waste service. For the water service, there was a decrease compared to 2018 following the introduction of the new tariff defined by Arera, as shown by the following table 5.

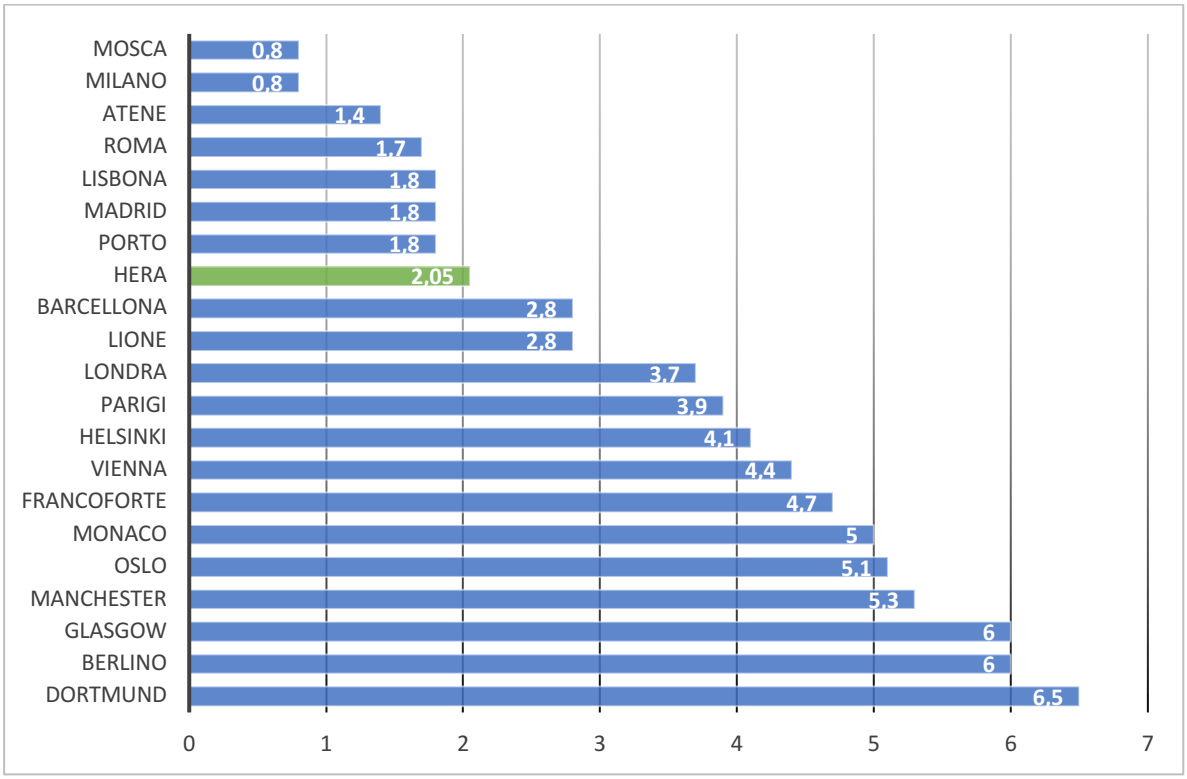
Table 5 – The water service bill

The water service bill			
	2017	**2018**	**2019**
Aqueduct	115,52	110,82	109,83
Drainage	34,05	34,45	33,73
Depuration	86,35	84,81	83,36
Fixed quote	21,25	17,82	15,58
Iva 10%	25,72	24,79	24,21
Total	**282,89**	**272,69**	**266,71**

(Source: Arera, 2018)

The average expenditure for the integrated water service is different in the territories in which Hera operates and this depends on the different structure in particular of the sources of supply of the various territorial realities, due to the availability of the water resource and the proximity of the source of withdrawal.

Furthermore, in graphic 10 we can see how the rates vary in some European cities.



Graphic 10 - Hera tariff comparison with tariffs in some European cities (euro per cubic metro).

As can be read in “In good waters, sustainability report”, the investments in the water sector made by Hera are 20% higher than the national average and in 2018 alone they reached 158 million euros, 52% destined to aqueduct, 31% to sewers and 17% to sewage. The report In good waters provides precise guarantees on the quality of the water managed by Hera which, controlled by almost 3 thousand analyzes per day, complies with the law in 99.9% of cases. Furthermore, for the more attentive consumers, the report offers the possibility to consult the water label, with the detail - territory by territory - of the main reference parameters, from the examination of which a quality comparable to that of mineral waters emerges in trade. The water label is updated every 6 months for each municipality served and the results are sent to citizens via the bill. The Group thus confirms its commitment to transparency. Growing compared to the previous year, these investments reach 178 million euros, including works financed by third parties and those carried out or financed by Romagna Acque and, for the Group, consolidate a long-term trend, which from 2002 to today has highlighted a commitment not lower - on average - to 100 million euros per year.

The high degree of infrastructure of the integrated water service, in fact, requires continuous and substantial interventions, to face which important planning and executive skills are needed, precluded to the many small operators that distinguish a sector still too fragmented. This explains the many infringement procedures concerning sewerage and purification opened by the European Union against Italy. Multiutility performed well, covering 91% of the total needs of the treatment service in the areas served.

Table 6: Operational investments in the integrated water cycle

Integrated water cycle (mln / euro)	**mar-20**	**mar-19**	**Abs. Var.**	**Var.%**
Aqueduct	22,4	20	2,4	12,00%
Depuration	4,5	4,8	-0,3	-6,30%
Drainage	8,5	10,4	-1,9	-18,30%
Total gross integrated water cycle	**35,4**	**35,3**	**0,1**	**0,30%**
Capital account contributions	3,2	3,6	-0,4	11,10%
of which for new investment fund	2,7	2,9	-0,2	-6,90%
Total net integrated water cycle	**32,2**	**31,7**	**0,5**	**1,60%**

(Source: The European House – Ambrosetti, 2018)

The European House - Ambrosetti carried out research on water tariffs in some European countries in 2018. In Italy, the cost of water stands at 1.87 euros per cubic meter compared to 3.67 in France, double, and 4.98 in Germany, just under three times. Even higher imbalances if you look at the data relating to individual cities: for example in Rome the cost is 1.7 euros per cubic meter while in Berlin it is 6 euros per cubic meter. Consuming tap water instead of mineral, in addition to environmental benefits, also produces economic savings: considering in fact an average consumption of one and a half liters per day for a family of three and the average price of 27 cents per liter of some mineral waters natural on the market, the expense for mineral water is around 440 euros per year. The expense for the same amount of water from the aqueduct would instead be 2.05 euros per year (value calculated as the 2019 average of the bills of the main nine cities served by Hera). Italy ranks third in the world for bottled water consumption with 190 liters of water per capita consumed in 2018 after Mexico and Thailand (Source: Bottled water reporter 2019).

3.2.3 Strengths compared to national data

In Italy, access to water is not guaranteed for everyone, in particular, the most critical issues are found in the part of the system that regards sewers and purification, for which Italy has also

been sanctioned by the European Community, since 25% of citizens are not connected to sewers and 30%, in practice, 1 citizen out of 3 discharges wastewater to the sea, with serious environmental damage (in Sicily, 47% of the population is without the purification service). But in this context there is also a lack of suitable infrastructure to collect water and ensure supplies, especially in periods characterized by less rainfall: from June to September 15% of the population is below the minimum daily threshold estimated for water needs, 50 liters and 9.3% of families in Italy complain of irregularities in water supply, with peaks of around 32% in Calabria. Federutility data. In the country, the guarantee of continuity in the water service, opening the tap and having access to water is therefore not obvious for everyone.

In this context, Hera invests on average around € 100 million annually in the water cycle, mainly in network extensions, remediation and upgrading of networks and plants, as well as for regulatory adjustments concerning in particular the sewerage and purification sectors. Thanks to this huge commitment, Hera ranks among the first places for cubic meters of non-invoiced water per km of network, equal to 8.36. The longer the network managed, the more complex it is to contain the phenomenon of water losses, therefore to compare different companies this parameter is the most suitable because it is most representative of the effectiveness and efficiency of the distribution system. In addition, Hera's sewerage and treatment service covers almost all the needs of the territory, respectively 95 and 94%, values much higher than the Italian situation and reachable with constant work to improve the service always with the objective of environmental protection of the territory.

The service is characterized by a high presence of infrastructures (networks and plants) used throughout the water cycle, from the collection of the resource to the purification. These require continuous and substantial interventions of monitoring, maintenance, adaptation, design. To implement them, the Group places innovation and the use of the most modern technologies, such as drones, airplanes and aquatic systems, and satellite scanning of the ground first.
To support customers in adopting good savings practices, multiutility has created the water consumption diary, which allows everyone to monitor their water consumption over time by comparing it with those of customers with similar consumption and virtuous customers .
In addition, the constant awareness actions towards citizens are bearing fruit: currently about 35% of Hera customers choose to drink tap water, avoiding the production and transport of 250 million plastic bottles and the related environmental impact. Economic savings are evident: a family of three who choose tap water instead of bottled water can save almost 440 euros a year.

By returning to the environment a water compatible with the ecosystem, the Hera Group thus confirms, also in the context of the integrated water service, its orientation in favor of a circular and regenerative economy. In particular, by adhering to the requests of the United Nations Global Compact on the sustainable management of water resources, the multiutility confirms its commitment to a continuous innovation of the service, aimed at its progressive decarbonisation. As a result of all this, by 2022 multiutility aims to reduce its water consumption by 10%, a measure equal to 134 thousand cubic meters - that is to the consumption of a thousand families. Moreover, Hera is not satisfied with fulfilling the legal obligations foreseen today, giving life to large-scale infrastructure projects that put the territories served in the conditions to withstand, even in the near future, the effects deriving from climate changes that are subjecting the networks and systems of the water service with increasingly strong stress.

Finally, the report In good waters provides precise guarantees on the quality of the water managed by Hera which, controlled by almost 3 thousand analyzes per day, complies with the law in 99.9% of cases. Furthermore, for the more attentive consumers, the report offers the possibility to consult the water label, with the detail - territory by territory - of the main reference parameters, from the examination of which emerges a quality comparable to that of the mineral waters in business. The water label is updated every 6 months for each municipality served and the results are sent to citizens via the bill. The Group thus confirms its commitment to transparency.

3.2.4 Wastewater and Covid-19

An ISS study found viral RNA in Rome and Milan: "No health risk". The analysis will be extended to other regions also with the support of Hera. Cnr, MM and Brianzacque survey on the treatment plants of Monza and the Lombard capital

Scientific research on the relationship between Covid-19 and wastewater is also underway in Italy and water managers are collaborating with institutions to investigate this aspect (QE 7/4). The ISS, for example, will shortly publish the results of a study done on the discharges of Rome and Milan and will soon extend the analysis to other regions, including Emilia-Romagna with the help of Hera.

In Lombardy, in addition, MM and Brianzaque conducted tests at the entrances of the treatment plants in Milan and Monza together with Cnr-Irsa di Brugherio and the laboratory of clinical

microbiology, virology and diagnostics of the bio-emergencies of the Asst Fatebenefratelli Sacco. Also in this case, gene material attributable to Sars-CoV-2 has been found.
"We have selected and analyzed eight waste water samples collected from 3 to 28 February in Milan and from 31 March to 2 April in Rome," explains Giuseppina La Rosa of the water quality and health department Iss. “The presence of RNA of the new Coronavirus was confirmed in two samples collected in the sewerage system in the western and central-eastern area of Milan. In the case of Rome, the same positive result was found in all the samples taken in the eastern area of the city. We are now extending the research to other samples of waste water from a collection network in different regions, built over the years as part of a project funded by the Ministry of Health's National Center for Disease Prevention and Control ".

The finding of traces of the virus, underlines Luca Lucentini, director of the ISS water quality and health department, "has no risk. The result reinforces the prospects of using urban center sewage control as a non-invasive tool for early detection of infections in the population. In phase 2, surveillance can be used to indirectly monitor the circulation of the virus and to detect its possible reappearance early, thus allowing to recognize and circumscribe any new epidemic outbreaks more quickly. A strategy that is already being used for other viruses, such as polio. Having found viral RNA, which therefore does not necessarily represent an infectious virus, in waste water is a result that is not surprising and does not imply any risk to human health. As highlighted in a recent document published by the Institute, the integrated water cycle is certainly safe and controlled with respect to the spread of Covid-19 as well as other pathogens". Finally, according to the president of the ISS, Silvio Brusaferro, this project "could be helpful in controlling the pandemic. Our results are associated with those of other research groups that in Holland, Massachusetts, Australia and France have to date found traces of the virus in the discharges ".

As for Hera, the utility will collect weekly waste samples at the end points of the sewer networks of Modena, Bologna and Rimini, which will be analyzed in the Heratech laboratory. "We moved in advance to obtain the equipment and reagents necessary to carry out the analyzes without taking resources from the health system", assures Roberto Barilli, general manager of operations of multiutility. "Now we are ready to support the ISS in this effort that will make a major contribution to understanding the spreading trends of the virus".

Finally, the preliminary analyzes conducted by the Cnr in Lombardy "have shown the presence of genetic material (RNA), however unable to reproduce independently". Furthermore, "the results confirm the absence of this gene material in the effluents of the investigated purifiers, indicating that Coronavirus cannot be dispersed in the aquatic environment". Further "preliminary investigations, which are still ongoing, are indicating that the vitality of the virus is completely negligible even upon entering the treatment plants", comment Fabrizio Stefani (Cnr-Irsa), Sara Giordana Rimoldi and Maria Rita Gismondo (Sacco hospital unit). In the future, concludes Franco Salerno of Cnr-Irsa, "we would like to extend the sampling in strategic and key points of the urban sewer network".

CONCLUSION

The regulation of a public service has rarely aroused such keen interest in public opinion and heated debates among social science scholars, mainly among jurists and economists.

Unfortunately, however, the contribution provided by most of the authors has not so far been conclusive, because it has been spoiled by a more or less evident inability to analyze the problems of the integrated water service from a different, broader perspective.

In addition, in recent years, the debate on water resources has stalled on the nature of the manager and on the methods of entrusting the service, avoiding a deeper analysis of the causes of the slowdown in investments and the general inefficiency of the sector.

Vice versa, the water problem is not exclusively linked to the form of "ownership" of its management: it is not correct to speak of the intrinsic inefficiency of public or private management of the service.

In fact, even if we recognize the nature of the essential and primary good of water - as the Italian electoral body did during the 2011 referendum -, it cannot be ignored that its management requires capital and technologies, organized according to a logic of enterprise.

Providing the water service today means having the ability to guarantee very high quality levels and, therefore, knowing how to use specific techniques and equipment and being able to take advantage of professionalism. It is also necessary to demonstrate ability to adapt the solutions generally identified to the specific needs of the territorial area in which it operates.

Gaining awareness of what has just been said would allow to set the debate on the restructuring of the sector in a radically different way compared to what has been done in the most recent past: one would avoid fossilizing on the public / private combination and being influenced by such a sticky factor as is the strong point ideology.

Indeed, the "state" and the "market" should not be seen as antithetical solutions, but as complementary and coexisting terms. Moreover, the "public" nature of the interests at stake does not imply that a public entity is always, by reason of its nature, capable of obtaining better results.

We should place ourselves in a second best perspective, that is, a compromise, between the different opposing needs to overcome market failures and minimize the distortions caused by public intervention and the absence of competition. In this perspective, the ownership of the company matters little, what really matters is the quality of the regulation system in which the companies operate.

Finally, the problem of the lack of financial resources necessary both for the construction of new infrastructures and for the modernization of existing ones should be addressed once and for all. To this end, a tariff method capable of stimulating investments should be used, at the same time guaranteeing manager and user accountability, due to the scarcity of the resource.
In particular, considering that the network and the plants necessary for the provision of the water service have a very long useful life and that, therefore, the payback time of the initial investments is very dilated and discourages investments, an attractive remuneration for the capital should be offered invested.
If we look at the situation worldwide, we can see how excellent performances can be obtained by both public and private enterprises.
In the thesis, an attempt was made to highlight the benefits and costs of the practical case of privatization, from which it appears that the private company, although having a cost for the final consumer not much higher than the Italian average and in any case lower than the average of many European countries, has however an investment rate 20% higher than the national average.
Often, the choice in favor of one management model or the other has the traits of a decision more motivated by precise ideological and political positions, rather than by a careful analysis of the possible implications of the different forms of ownership or management in the service sector water. Those who claim the right to water as a public good in all respects, an asset of primary importance, are against the privatization. On the other hand, the front of those in favor of privatization, who in the face of the recurrent inefficient water management, believe it is right to entrust it to private entrepreneurs, certainly less inclined to waste because they would not derive any economic advantage.
In view of this, an adequate system of governance must necessarily be prepared, according to the brocard according to which “if the rules are good and the regulator knows how to do his job, private companies also operate well; if they are bad and the regulator does not exist, public enterprises can also operate badly ”.
In conclusion, it seems unforgivable both the inattention that for decades has been reserved to a primary need of all public services, what is the regulation, and the continuous and exasperated search for punctual and defined ways to entrust the services themselves without guaranteeing the quiet regulation and, therefore, the investments, which the sector absolutely needs in order to progress.
We are aware: there are no magic formulas and universal remedies. However, efforts should be made to find the best solutions; the connection between the choices and the results to be

achieved in terms of economic and employment growth, a reduction in public expenditure and an increase in the quality of the service provided must always be evaluated.

It is therefore hoped that - by interpreting in the best way the role of regulators that the rules attribute to it - the Authorities at central and peripheral level will find, in a short time, new and fruitful balances between public property, collective interest and entrepreneurial autonomy.

These conclusions are generally in line with the provisions of the Kyoto World Water Forum, which underlined how, once the model has been chosen from public, private or mixed, the important thing is then to ensure a regulatory and governance system that ensures the quality of the service and the economic and environmental sustainability.

REFERENCES

- AA.VV., I servizi pubblici locali, Giuffrè, Milano, 2004, pp. 30.
- Agenzia Europea dell'Ambiente. Bathing Water Directive - Status of bathing water
- Amato A., Bottasso A., Conti M., La performance dell'industria idrica inglese: un'analisi critica a 15 anni dalla privatizzazione, in Economia e politica industriale, n. 2/2006, pp. 95.
- Amato A., Bottasso A., Conti M., La performance dell'industria idrica inglese: un'analisi critica a 15 anni dalla privatizzazione, in Economia e politica industriale, n. 2/2006, pp. 115.
- Amato A., Bottasso A., Conti M., La performance dell'industria idrica inglese: un'analisi critica a 15 anni dalla privatizzazione, in Economia e politica industriale, n. 2/2006, pp. 93.
- Amatori Franco, Forme brevi : "Testi e Interventi scrivendo di storia, L'impresa pubblica in una comparazione internazionale", Università Bocconi Editore, 2014.
- Ann-Christin Sjolander Holland, pag. 112-113.
- Art. 1, l 29 marzo 1903, n. 103.
- Art. 14, lettera c) e d), d.l. 269/2003.
- Art. 150, d.lgs.152/2006.
- Art. 3, r.d. 1775/1933.
- Art. 8, l. n. 36/1994.
- Asanga Gunawansa & Lovleen Bhullar, Water Governance: An Evaluation of Alternative Architectures, Edward Elgar Publishing, 2013
- Asian Development Bank, "Privatization: policies, methods, and procedures", University of California, 2008
- Bartolini A., Le acque tra beni pubblici e pubblici servizi, in POLICE A., a cura di, I beni pubblici: tutela valorizzazione e gestione, Giuffrè, Milano, 2008, pp. 227.
- Bercelli J., Servizi idrici, Dizionario di diritto pubblico, Milano, 2006, pp. 5513.
- Bercelli J., Servizi pubblici locali e referendum, in Giornale di diritto amministrativo, n. 2/2013, pp. 155 ss.
- Bersani M., Acqua in movimento. Ripubblicizzare un bene comune, Edizioni Alegre, 2007.
- Bersani Marco, Come abbiamo vinto il referendum, Edizioni Alegre, Roma, 2011

- Bianco M., Sestito P., I servizi pubblici locali. Liberalizzazione, regolazione e sviluppo industriale, Il Mulino, Bologna, 2010, pp. 144.
- Bonomo L., 2008. "Trattamenti delle acque reflue". McGraw-Hill Education
- Bos Dieter, "Privatization: A Theoretical Treatment", OUP Oxford, 2001
- Bosticco Paolo, "La responsabilità degli organi di controllo nelle società di capitali", Giuffrè Editore, 2009
- Bottasso A., Conti M., Una nota sul servizio idrico italiano dopo i referendum del giugno 2011, in Economia e diritto del terziario, 2012, pp.273-288.
- Bracchitta L., Stefanini E., Tarzia A., I servizi idrici in europa, in Diritto pubblico comparato ed europeo, 2007, pp. 861.
- Briganti R., Il diritto all'acqua tra tutela dei beni comuni e governo dei servizi pubblici, Edizioni Scientifiche Italiane, Napoli, 2012, pp. 130.Art. 23, R.D. 30 dicembre 1923, n. 3047.
- Bruno C., Erbetta F., Il servizio idrico integrato in Italia: Configurazione e aspetti economico-operativi dell'Autorità d'Ambito, Working paper n. 4/2011, in www.hermesricerche.it.
- Bruno F., Tutela e gestione delle acque, Giuffrè, Milano, 2012, pp. 217
- Caia G., Voce municipalizzazione dei servizi pubblici, in Enciclopedia Giuridica Treccani, vol XX, Il Veltro, Roma, 1991, pp. 1.
- CCN-Comitato Capitale Naturale. 2017. "Primo Rapporto sullo Stato del Capitale Naturale in Italia".
- CCN-Comitato Capitale Naturale. 2018. "Secondo Rapporto sullo Stato del Capitale Naturale in Italia"
- Cerroni M., La riforma del servizio idrico in Inghilterra: una prima lettura del Draft Water Bill, in Diritto pubblico comparato ed europeo, n. 2/2013, pp. 650.
- Cerroni M., La riforma del servizio idrico in Inghilterra: una prima lettura del Draft Water Bill, in Diritto pubblico comparato ed europeo, n. 2/2013, pp. 650.
- Cerroni M., La riforma del servizio idrico in Inghilterra: una prima lettura del Draft Water Bill, in Diritto pubblico comparato ed europeo, n. 2/2013, pp. 653.
- Cerroni M., La riforma del servizio idrico in Inghilterra: una prima lettura del Draft Water Bill, in Diritto pubblico comparato ed europeo, n. 2/2013, pp. 649 ss.
- Charles Vuylsteke, Helen Nankani, Techniques of Privatization of State-owned Enterprises: Methods and implementation, World Bank Publications, 1988

- Ciffarelli R., Il servizio idrico integrato tra liberalizzazione ed “incerta” privatizzazione, in www.amministrazioneincammino.it, 2010.
- Cirenei C., L’acqua minerale ha fatto il pieno, articolo pubblicato in La Repubblica del 6 luglio 2007.
- Coase R., “The Problem of Social Cost”, in “Journal of Law and Economics”, n. 3, pp.
- Colangelo G., I servizi idrici in Europa tra istituzioni e mercato. Annotazioni comparative a margine della riforma dei servizi pubblici locali in italia, in Rivista giuridica del Mezzogiorno, n. 4/ 2003, pp. 1159.
- Comitato Interministeriale per la Programmazione Economica, Trasformazione in s.p.a. di enti pubblici, 25 marzo 1992.
- Comma 1 dell'art.154 del D.Lgs. 152/2006
- Comma 1, art. 4, d.l. 138/2011.
- Comma 1, art. 4, D.P.R. 168/2010.
- Comma 13, art. 113, D.Lgs. 18 agosto 2000, n. 267.
- Comma 2, articolo 1, D.P.R. 168/2010.
- Comma 2, articolo 23 bis, d.l. 112/2008.
- Comma 2, articolo 4, D.P.R. 168/2010.
- Comma 3 dell’articolo 1 D.P.R. 7 settembre 2010, n.
- Comma 3, art. 22, legge 142/1990.
- Comma 3, articolo 14, d.l. 269/2003.
- Comma 3, articolo 23 bis, d.l. 112/2008.
- Comma 34, art. 4, d.l. 138/2011.
- Comma 4, art. 1, d.l. 135/2009.
- Comma 4, articolo 4, D.P.R. 168/2010.
- Comma 6, articolo 35, legge 448/2001.
- Corte Cost. Sentenza n. 24/2011, considerato in diritto 4.2.2.
- Corte Cost., n. 325 del 2010.
- Corte Cost., Sent. 25/2011.
- Corte Costituzionale, http://www.cortecostituzionale.it/actionSchedaPronuncia.do?anno=2011&numero=26
- Corte Costituzionale, http://www.cortecostituzionale.it/actionSchedaPronuncia.do?anno=2012&numero=199

- Corte di Giustizia, sentenza 21 luglio 2005 in causa C-231/03; Corte Giust., Sez. VII, sent. 10 aprile 2008 in causa C-323/07; Corte Giust., Sez. II, sent. 17 luglio 2008 in causa C-371/05.
- Cortesi A .D., Il servizio idrico integrato, in Trovi A., a cura di, La riforma dei servizi pubblici locali, in Le nuove leggi civili commentate, Cedam, Padova, 2003, pp. 67.
- De Nictolis R., La riforma dei servizi pubblici locali, in Urbanistica e appalti, n. 10/2008, pp. 1109 ss.
- Decreto Legge 15 Marzo 2012 n.21 , art. 2, comma 2
- Decreto Legge 15 Marzo 2012 n.21 , art. 2, comma 3
- Decreto Legge 15 Marzo 2012 n.21, art. 1
- DGCCRF (Direction générale de la consultation de la concurrence et de la répression des fraudes) (2000), "La Reforme de la politique de l'eau", Conseil Economique et Social, Journal officiel de la République Française, n.14, Novembre 2000;
- Di Dio F., "L'evoluzione giuridica della gestione del demanio idrico: verso il concetto di acqua come bene comune, in Diritto e Giurisprudenza Agraria, Alimentare e dell'Ambiente", n. 3/2006, pp. 156.
- Di Dio F., Dai privati alle multinazionali: il sistema idrico italiano in una prospettiva storico- giuridica, in Diritto e giurisprudenza agraria, alimentare e dell'ambiente, Tellus, Roma, n. 5/2011, pp.. 311.
- Di Dio F., Servizio idrico: la separazione dei servizi è incostituzionale (nota a Corte Cost., n. 307/2009), in Ambiente & sviluppo, 3/2010, pp. 250 ss.
- Di Gaspare G., La gestione delle risorse idriche e il servizio idrico integrato nel decreto legislativo n. 152/2006, attuativo della legge di delega n. 308/15 dicembre 2004, in www.amministrazioneincammino.luiss.it,2006, pp. 5.
- Di Lieto A., "Il diritto all'acqua nel diritto internazionale", in Rivista Giuridica dell'Ambiente, n. 5/2004, pp. 749 ss.
- Di Porto F., La disciplina delle reti nel diritto dell'economia, Cedam, Padova, 2008, pp. 107.
- Diamanti Ilvo, Mappe – Il movimento che rende visibile il cambiamento del Paese, Atlante Politico Demos& Pi, "La Repubblica" 27/06/2011
- Drusiani R., Spaziani A. (Coordinatori). 2015. "Il Rapporto generale sulle Acque: obiettivo 2020". Utilitatis.
- Drusiani R., Garotta V., Mazzola R., Spaziani A. (Coordinatori). 2017. "3° Rapporto generale sulle Acque: obiettivo 2030". Utilitatis.

- Eberhard E. “Supply Pricing of Urban Water in South Africa”, report for WRC – executive summary, IRDN network news n. 9, September 1999;
- Ennio Triggiani, Ugo Villani, “Studi sull’integrazione Europea, numero I – 2014 – anno IX”, Cacucci Editore, 2014.
- Fazioli Roberto, “Economia delle public utilities”, libreria universitaria, 2013
- Fioritto A., I servizi idrici a dieci anni dalla riforma, in Giornale di diritto amministrativo, n. 6/2004, pp. 687.
- Fioritto A., I servizi idrici, in CASSESE S., a cura di, Trattato di diritto amministrativo, Giuffrè, Milano, 2000, pp. 1880.
- Fonderico G., Il comune regolatore, Ets edizioni, Pisa, 2012, pp. 52.
- Fonderico G., Il comune regolatore, Ets edizioni, Pisa, 2012, pp. 58.
- Fossati Albero, “Lo Stato della Democrazia repubblicana: Elementi di diritto pubblico”, EDUCatti, Milano 2018.
- Geisser A., Fatti ed argomenti attorno alla municipalizzazione, Soc. Tip. Ed. Naz., Torino, 1909, pp. 14.
- Giliberti B., Perfetti L. R., Rizzo I., La disciplina dei servizi pubblici locali alla luce del D.L. 135/2009, in Urbanistica e appalti, n.3/2010, pp. 258.
- Grassi Nardi F., La pubblicizzazione delle acque isola o modello, Jovene, Napoli, 2009, pp.157.
- Gustaffson J.E., “Public Water Utilities and Privatisation in Sweden”,Working Paper, EPSU Public Service Conference, Brussels 12 December 2001;
- Hagen J., Halvorsen S., Global privatization and its impact, Nova science public, 2008.
- Hall D., ”Public sector water management – a necessary option”, PSIRU, University of Greenwich; 1998
- Hall D., Lobina E., “Water in Europe”, report tratto dal sito www.psiru.org, 2008
- Hall D., Lobina E., “Water privatisation”, report tratto dal sito www.psiru.org, 2008
- Hall D., Lobina E.,, “Water companies in Europe 2010”, report tratto dal sito, 2010 www.psiru.org;
- Hall, Lobina, Water companies in Europe, Greenwich: Public service international research unit, 2010
- HERA, “Bilancio di Sostenibilità 2010”, 2010
- Hibou B., “Privatizing the State”, Columbia University Press, 2004.
- Istat, “Censimento delle risorse idriche a uso civile”, 2009
- Istat, “Indagine preliminare sugli enti gestori dei servizi idrici”, Roma, 2000

- Istat. 2017. Statistica Report "Censimento delle acque per uso civile. Anno 2015"
- Istat. 2018. Statistica Report "Temperatura e precipitazione nelle principali città. Anni 2002-2016"
- Istat. 2019. "Rapporto SDGs 2019 informazioni statistiche per l'agenda 2030 in Italia. Letture statistiche" – Temi. https://www.istat.it/it/archivio/229565
- Istat. 2019. Statistica Focus "Giornata mondiale dell'acqua". https://www.istat.it/it/archivio/228753
- Kreps D., "A Course in Microeconomic Theory", New Jersey: Princeton University Press,1990
- Legge quadro sui lavori pubblici 2248/1865, art. 91, 132, 140
- Leonetti E., La disciplina del servizio idrico integrato: un quadro di sintesi, in Analisi giuridica dell'economia, n. 1/2010, pp. 90.
- Lepore V., La normativa sui servizi pubblici locali dopo la sentenza della Corte costituzionale n. 199 del 2012, in www.amministrazioneincammino.luiss.it, 2012.
- Lepore V., La normativa sui servizi pubblici locali dopo la sentenza della Corte costituzionale n. 199 del 2012, in www.amministrazioneincammino.luiss.it, 2012.
- Lettera F., I servizi idrici in Italia, Il diritto e l'amministrazione delle acque, Cedam, Padova, 1995, pp. 178.
- Lobina E., Hall D., From a private past to a public future? The problems of water in England and Wales, Greenwich, PSIRU, 2007.
- Lobina E., L'acqua pubblica è il futuro, Madeleine Bélanger Dumontier, 2015.
- Lucarelli A., Verso un governo pubblico partecipato dei beni comuni, in Analisi giuridica dell'economia, n. 1/2010, pp. 133.
- Massarutto A., La cultura del fare (e del disfare): il cantiere infinito della riforma dei servizi idrici, in Analisi giuridica dell'economia, n. 1/2010, pp. 104.
- Massarutto A., La regolazione economica dei servizi idrici, Università Bocconi, IEFE, 2009, pp. 31.
- Massarutto A., La regolazione economica dei servizi idrici, Università Bocconi, IEFE, 2009, pp. 38, in www.iefe.unibocconi.it.
- Maude B. e Tony C., Oro blu. La battaglia contro il furto mondiale dell'acqua, Arianna Editrice, 2004
- Merusi F., Cent'anni di municipalizzazione: dal monopolio alla ricerca della concorrenza, in Diritto amministrativo, n. 1/2004, pp. 39.
- Ministerial Declaration of The Hague on water security in the 21st century, 2001

- Ministero della Salute. Il Portale Acque, Acque di balneazione.
- Mohamad Mova Al'Afghani, Legal Frameworks for Transparency in Water Utilities Regulation: A comparative, , Routledge, 2019
- Muchlinski Petere T., Multinational Entreprises & the Law, OUP Oxford, 2007
- Napolitano G., Regole e mercato nei servizi pubblici, Il Mulino, Bologna, 2005, pp. 81.
- Nicoletti G., La proprietà di reti e impianti per l'erogazione dei servizi a rilevanza industriale, in Azienditalia, n. 9/2002, pp. 273.
- OFWAT, The development of water Industry in England and Wales, in www.ofwat.gov.uk, 2006, pp. 16.
- Pioggia A., Acqua e ambiente, Giappichelli, Torino, 2011, pp. 258
- Poligrafico dello Stato, "Libro verde sulle partecipazioni dello Stato", 1992
- Privatization Barometer: http://www.privatizationbarometer.it/
- Rees J., "Regulation and Private Participation in the Water Sector and Sanitation Sector", GWP Technival Advisory Commitee, Background Paper n.1, Stockholm, GWP, 1997
- Renzi M., 41esima edizione del Forum Ambrosetti di Cernobbio, 2015 https://www.youtube.com/watch%20v=MpWd7LyUQiU&list=PLmylRRKWMQaODc7oUdCTdqb-MnKaLdzUK&index=3
- Rizzo G., La concessione di servizi, Giappichelli, Torino, 2012, pp. 154.
- Robustella A., I servizi pubblici: tra liberalizzazione del mercato e prospettive di riforma, in dottrina banca dati Leggi d'Italia, 2001.
- Rubino P., L'evoluzione dell'esperienza economica dei servizi pubblici locali, in Mangiameli S., a cura di, I servizi pubblici locali, Giappichelli, Torino, 2008, pp. 24.
- Sarno D., L'impresa pubblica tra privatizzazione e regolamentazione, Franco Angeli, 1994
- Senta A., "Il servizio idrico in Italia tra privato e una concezione aperta di pubblico", http://www.ecologiasociale.org/pg/acquasenta.html, 2006
- Sjolander Holland A., Il Business dell'Acqua, Jaca Book Spa, 2006,
- Tecco N., "La privatizzazione delle risorse idriche", 2004
- The European House - Ambrosetti elaboration on FAO, Acqueduct - World Resources Institute, WHO, UNICEF and Pacific Institute data, 2020.
- Toninelli Pierangelo Maria, "Storia d'Impresa", il Mulino, 2006.
- Trattato CE, 25 Marzo 1957, Art.2.

- http://www.minambiente.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/rapporto_ capitale_naturale_Italia_17052017.pdf
- http://www.minambiente.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/II_Rapporto_Stato_CN_2018_3.pdf
- http://www.portaleacque.salute.gov.it/PortaleAcquePubblico/
- https://www.eea.europa.eu/data-and-maps/data/bathing-water-directive-status-of-bathing- water-10
- https://www.istat.it/it/archivio/207497
- https://www.istat.it/it/archivio/217402