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A Century of Water Supply Companies and Their Influence on the Development of Spanish Society (1842–1942)

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Abstract: During a certain period in the history of Spain, in the years of the Second Industrial Revolution, water companies played a very important role in managing a public service as necessary and complex as the supply of drinking water to the population. This article describes the emergence of these companies in the economic framework of the second half of the 19th century, as well as their expansion and territorial distribution, their evolution towards large companies that unified and monopolised the sector and their progressive decline in the 20th century, characterised by an increase in municipal control and influenced by different national and international war conflicts. The data collected in the different statistical yearbooks allows us to study these companies, and identify the characteristics of the modern drinking water system in Spain, together with the importance of foreign investment and the influence of these companies on the economic development of the time.

Keywords: water management; water supply companies; foreign investment; modern drinking water system

1. Introduction

The widespread development that took place due to the second industrial revolution brought about a remarkable urban growth, which led to a great increase and diversification of the demand for collective services. The development of these services was characterised by technological advances and by the required process of organization and regulation that allowed these new activities to be regulated.

Within the development of collective services throughout the 19th century, the change in the city water supply systems should be highlighted. It is precisely at this time that the model changed from a classic system to a modern drinking water system [1].

The classic system was characterised by the scarce consumption per capita, the different types of supply, both collective (ditches, aqueducts) and individual (wells, cisterns), the technical limitations, which translated into difficulties for the supply both in quantity and quality and the limited organization established by the city councils.

This situation gave rise to a series of problems that led to the emergence of different solutions and new approaches when it came to supplying the population, which determined the change in the paradigm and in the management system.

The modern drinking water system is characterised by the high consumption per capita, the modern technical resources used (system working in pressure, control of the quality of supply ...), the almost

total predominance of collective networks (reach to the whole population, important flows, design according to needs . . .) and the organization of the service, tending to a growing specialization [2]. The clearest differences between the modern system and the classical one are based mainly on the levels of supply and demand derived from an urban growth that demanded the appearance of collective networks supported by important and new technical resources. This evolution of the urban model from pedestrian city to networked city led, in the case of water supply, to new requirements in relation to the quality of the service (potability), new ways of providing the service (home and network pressure) and new forms of collection [3].

In terms of demand, growth occurred in two directions; on the one hand, the development of the city itself and the new way of organizing the territory caused by the increase in population density produced by the second industrial revolution led to an increase in consumption. Moreover, contributing to this increase was the social change produced that required more water uses due to the greater interest in hygienic issues (watering of streets, new urban services) and leisure and ornamental issues (watering of parks and gardens, leisure areas, etc.) On the other hand, the industrial sector also contributed to the increase in demand as water was a key element for productive development, regardless of the sector under consideration. This increase was evident in the average allocations of the cities that went from between 5 and 15 L per inhabitant per day in the mid-19th century to 80 and 300 L per inhabitant per day at the end of the century [4].

The demand for quality in drinking water became more evident at this time due to the hygienist trend that defended the quality, potability and sanitary control of water in order to prevent it from transmitting diseases and epidemics.

Another defining feature of the new system is that the supply reached households and was pressurised. The individualised supply of water to houses came about thanks to new technical and organizational perspectives, which were developed mainly in the second half of the 19th century. The immediate consequence was a more direct and precise control of consumption through the use of meters, both for the expenditure made by private citizens and for that originating from the activity of public institutions and collective spaces [4].

Finally, the development of urban networks was favoured by technical innovations, both in the elements needed to carry out the supply (large infrastructures to bring water from more distant sources, pumps to bridge gaps, methods of potabilization and treatment) and in the materials used (cement, steel, etc.).

This process of change in the water management model was developed in Europe according to a pattern very similar to the one originated in Great Britain in the Victorian era [5], marked by the possibility of household supply thanks to continuous supply systems in the cities. The new supply techniques implemented in London spread through the large cities of France (in Paris the supply network was promoted with the work of Haussmann between 1862 and 1874) and later to other European nations like Germany or Belgium [6,7]. In the United States, this adaptation to the new model began in the 19th century, with running water in the country's sixteen main cities as far back as 1860 [8,9].

This growth in demand and the modernisation of the water supply service meant that it lost its character as a public good, to the extent that individualised pricing and collection of household consumption took place. All of this meant that the water supply gradually fell outside the scope of municipal capacity, both in terms of management and financing, with private companies being responsible for carrying out the transport and distribution of drinking water to the population [10].

In Europe, since the 19th century, the role of private companies in the management of water services was evident, with Great Britain and France being the pioneer countries in the development of the sector, despite their divergent models; while in the British case it was characterised by the predominance of municipal management complemented by the presence of water companies [11], the French management model gave greater weight to private initiative, with the public sector playing a predominantly coordinating role [12].

Water companies and their role in the management of water supply as a public service are of great importance and relevance, since they constitute a key piece in the set of options through which the water supply is revitalised and implemented to the population. The function of water companies as managers or operators in the urban water cycle encompasses compliance with the established objectives and quality levels, providing the necessary measures and means to carry out their function under maximum efficiency criteria. The historical review of the role of companies in water management and more specifically its evolution and development in Spain since its appearance in the mid-19th century allows us to understand the context in which these companies emerge as an alternative to the public management of the resource and the difficulties, challenges and opportunities they encountered in the development of their activity, serving as an example in current situations in which more than 50% of the sector's management can relies on private participation.

2. Materials and Methods

Given that the objective of the study is to characterize the set of water supply companies that carried out their activity in Spain in a given period of time, the methodology to be followed is based on the search for information related to these companies and their activity at the business level. For this purpose, different sources have been consulted, which are listed in Table 1. These publications are statistical yearbooks produced in Spain that compile data from various sources and whose objective was to offer a quantitative reflection of the economic and social reality of Spain (see Figure 1). The unification of the information from the different yearbooks, as well as the comparison between the companies in the sector itself and in different sectors, allows conclusions to be drawn about the behaviour of water companies in the historical context after the Second Industrialisation in Spain.

Table 1. Sources consulted on water companies.

Title of Publication	Abbrev.	Period of Publication	N° of Publications Until 1942	Nº Consultations	% Consultations
Reseña Geográfica y Estadística de España	RGE	1880–1914	35	3	9
Anuario Financiero de Bilbao	AFB	1914–1972	29	20	69
Anuario Financiero y de Valores Mobiliarios	AFVM	1916–1917	2	2	100
Anuario Financiero y de Sociedades Anónimas de España	AFSAE	1918–1980	25	22	88
Anuario Riera	AR	1881–1911	31	11	35
Anuario Técnico e Industrial de España	ATIE	1911–?	9	6	67
Estadística de la Contribución sobre las Utilidades de la Riqueza Mobiliaria	ECURM	1901–1933	33	25	76
Anuario de Sociedades Anónimas García Ceballos	GARCEB	1918–1923	6	5	83
Anuarios Regionales	AREG	1931–1932	2	1	50

(**a**) (**b**)

Figure 1. (**a**) Reseña Geográfica y Estadística de España (1914); (**b**) Anuario de Sociedades Anónimas García Ceballos (1921–1922).

In addition to these sources, the Catalogue of Drinking Water Supply Companies compiled by Matés [13] is relevant, in which, in addition to many of the yearbooks indicated, the existing memoirs in the archives of the Ministries of Finance and Public Works, as well as the municipal ones, especially those of Madrid and Barcelona, the Journal *Revista de Obras Públicas*, as well as official Reports and Statistics of the time, annual reports of the companies, reports and different commemorative books were use [14]. All this information has been complemented with a search of data in the existing bibliography in recent years on the different water companies.

The historical analysis shows that several stages can be defined in the management of water supplies. This evolution is appreciated only in certain countries where the presence of private companies has a long tradition, such as France or Great Britain. Generally, in Europe, public management of the drinking water supply service has predominated, being this domain absolute in some countries such as Austria, Denmark, Greece, the Netherlands or Luxembourg. Other countries, such as Portugal, Sweden, Italy, Belgium, Finland or Germany, have counted with the participation of private companies in water management, but practically in a testimonial way [15,16]. A first stage (1842–1880) in which an increasing presence of water management companies in the area of large cities is noticeable.

In a second stage (1880–1930), a coexistence between private enterprise and municipal management begins to be appreciated. The high investments to be made to satisfy the ever-increasing demands, together with the political prices imposed on water, with very low tariffs, made the normal development of these business activities difficult. The large cities still have important companies in charge of water supply, which is profitable in terms of turnover, yet many city councils are beginning to take over the management of the service. Between the end of the first stage and the first years of the second (1860–1890), there was a notable interest from different French, Belgian and British companies in expanding their field of action to other countries and taking charge of the water supply, especially in the large urban centres. At the end of this second stage, in some countries, a turning point occurs, with the gradual loss of importance of private companies, as was the case in the United States, where in the 19th century the overwhelming predominance of private management was reduced to barely 31.4% in 1915.

In the third stage (from 1930 onwards), the general trend towards public management, mainly by the town councils, can be seen. There were several reasons for this. Firstly, many of the concessions granted expired during those years. The second was due to the problems of many municipalities in meeting the demands of a growing population and increasing quality standards. Faced with the difficulties of water societies to face the technological challenge and the actual maintenance of the networks, central governments encouraged support to municipalities through subsidies. This implies that water rates became a political price, which led to the disappearance of many societies. A third reason that explains this change to municipal management is the declaration of water supply as a public service, which translated into greater control, both of a technical and administrative nature, over the companies managing the service [17].

In Spain, because there has been no clear predominance of one sector or another in the management of local public services [18], this process has followed very similar lines to those described above. As a result, the water companies that emerged in the 19th century achieved a prominent role in a sector that expanded greatly both nationally and internationally [19,20].

The study of these companies is of particular interest for various reasons. Firstly, because of the growing role that these companies were playing. Secondly, because this business phenomenon was translated into a certain unique and characteristic typology, presenting new features that allow the ability to characterise the different forms adopted by the sector. Thirdly, the innovation introduced by these companies from the technological point of view and the significant concentration of investment (both domestic and foreign) that their creation brought about should be noted [21]. In addition, the study of the behaviour of the private sector in the face of the challenges posed in the management of a public service can help to understand what are the strengths and shortcomings that characterize these companies in the development of their activity within a certain socioeconomic framework, being able to apply this information to the analysis of subsequent situations.

The study period begins in the 1940s, as this was the decade in which, as a result of the first emerging movements to implement modern water services in the towns, the first known Spanish company, the *Mina Pública Aguas de Tarrasa* (see Figure 2), began its activity in 1842 and ends a century later (1942) in the years following the Spanish Civil War, when private companies entered a situation of decline that culminated in a change of cycle in the management of the supply service, in which the town councils took over directly.

(**a**) (**b**)

Figure 2. (**a**) Share of *Mina Pública de Aguas de Tarrasa* (1896); (**b**) company manhole cover.

3. Results and Discussion

Throughout the nineteenth century, the Spanish municipal system was characterised by a significant limitation of both municipal powers and the management possibilities of the municipalities, which caused many problems in order to meet the new urban needs. To overcome the situation, municipalities resorted to two alternative routes: the gradual expansion of their own powers and the use of private companies wherever their financial or management capacity was insufficient.

The extension of competences faced two main difficulties: the first was the need to attend to investments with own resources, and the second was the management of these resources under public administrative law, which, in practice, seriously limited the municipalisation of collective services that required an economic, industrial or commercial activity from the municipalities. As an alternative to this extension of powers, the municipalities resorted to the system of concessions to private companies, capable of mobilising resources and managing services under conditions that were unattainable for the municipalities of the time [10].

In the early days, competition was the rule and monopoly the exception. However, over time, mergers and takeovers occurred to form larger, monopoly prone groups. The competition generated by the diversity of offerings became less and less meaningful and was increasingly seen by the agents managing the service. In this new situation, the State (through aid and subsidies) and private companies (through investments) were the main agents that developed the Modern Drinking Water System [17]. Nevertheless, it should also be noted that this boost to private initiative did not become a general phenomenon, but rather occurred in medium and large towns, since, in smaller towns, the characteristic was that the town council took over these services, due to a lack of interest on the part of businessmen in the area or, at most, the intervention of a single company dedicated to water supply.

Finally, and above all, on the basis of the Municipal Statute approved by the Royal Decree-Law of 8 March 1924, the town councils were legally entitled to assume certain powers freely (Article 150 of the 1924 Municipal Statute states "is within the exclusive competence of the municipalities, subject only to compliance with the general laws of the Kingdom [. . .] in so far as it relates to the following objects: [. . .] 9º Water supply and destination of waste water, public laundry, trough, spas and similar services". In addition, Article 170 states that "water supply services may be municipalized as a monopoly . . . "). However, this freedom of management was in practice limited to maintaining the solvency and liquidity of the municipal corporation.

3.1. Implementation and Distribution of Water Companies

In Spain, since the second half of the 19th century, there has been a very important boom in private companies dedicated to water supply. Initially, the growth in the number of companies was slow but gradually this evolution took on an increasing pace that was maintained until the first third of the 20th century.

In 1861, almost twenty years after the start of the first water company, there were only five companies operating in Spain. It was from the 1870s onwards that the private initiative began to take off, with 60 water companies operating in 1900 out of the 111 that began their activities in this period (see Figure 3).

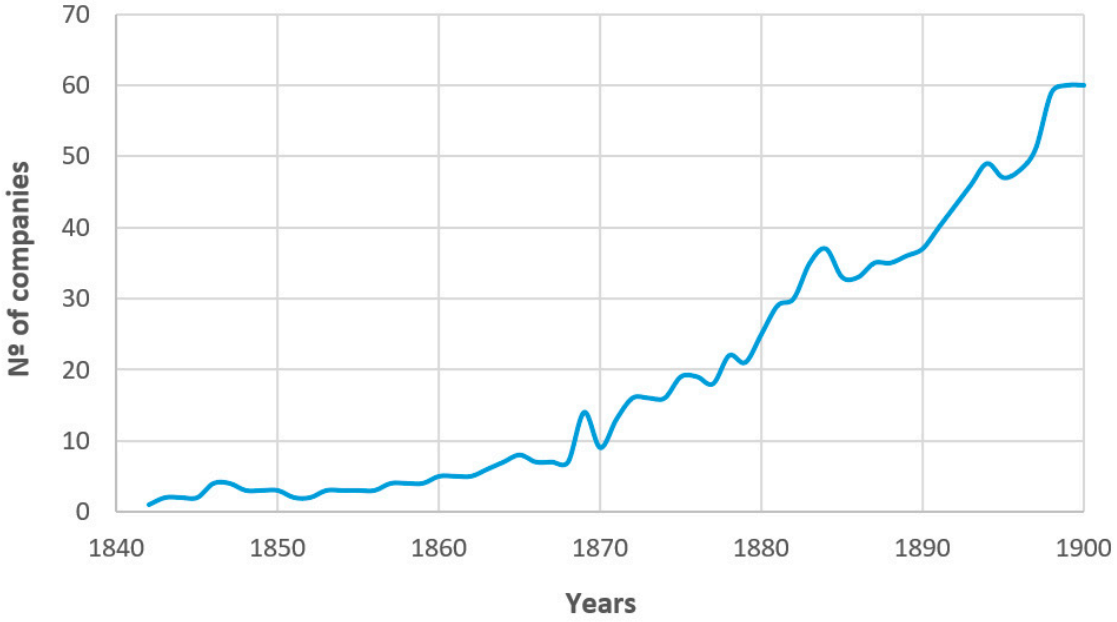

Figure 3. Evolution of the number of water companies from 1842 to 1900.

Initially, implementation took place in those areas most favourable to the development of the business, which were

1. The larger cities, which ensured a certain number of service demanders, as indicated by the fact that 55 per cent of the companies that operated in the nineteenth century were located in provincial capitals. If we review the other towns that had water companies in this period, we can see that in many cases they are important towns within the province, such as Elche (Alicante), Jerez de la Frontera (Cadiz), Reus (Tarragona), etc. Despite this trend, small municipalities also had water supply companies, which was a preview of the trend that would emerge in the early decades of the twentieth century.

   Of the ten most populated cities in Spain in 1900, most of them already had private water companies (Barcelona, Valencia, Seville, Malaga, Murcia and Cartagena), while cities like Bilbao, Granada or Zaragoza did not have stable private initiatives before 1900, and therefore, the city council was directly responsible for managing the service.

   In certain cities, there were tensions between the private and public sectors due to the obtaining of certain concessions in order to be able to supply specific areas of the cities. These disputes were more frequent in the big cities which generally had several companies. In medium-sized or small cities, this problem was almost non-existent due to the presence of a single company, and the conflict was limited to the city council and the concession company. The cases of Madrid and Barcelona are a clear example of conflict between public and private institutions. In both cases the situation was very similar, but the outcome was very different in each of them. In Madrid, the public option represented by *Canal de Isabel II* (The *Canal de Isabel II* was a special case because it functioned as a service assigned to the Ministry of Development [19,22]) triumphed over the interests of a private company (*Hidráulica Santillana*), while in Barcelona, on the contrary, it was the private company (*Aguas de Barcelona*) that prevailed over the aspirations of the city council.
2. Those areas that had an economic situation that offered investment opportunities were the first to host these societies which meant that, initially, the territorial distribution of the companies was characterised by a scope of establishment that was not too extensive.

In the 19th century, the 111 companies that were established were located in 65 towns in 31 provinces (62% of the total in Spain (Until 1927, the provinces of Las Palmas and Santa Cruz de Tenerife formed a single province (Canary Islands) although for statistical purposes and to give

coherence to the text we will always consider them as independent provinces.)) and the *Levante* or east coast, is the area where these companies had the greatest presence and importance. The economic dynamism of the Mediterranean area, together with the development of mining at the end of the 19th century in Murcia, led to a boom in the business sector and the establishment of companies from different fields, including companies dedicated to water supply. This meant that Barcelona, Alicante and Murcia were the provinces where almost half (49) of the water companies were located (see Figure 4).

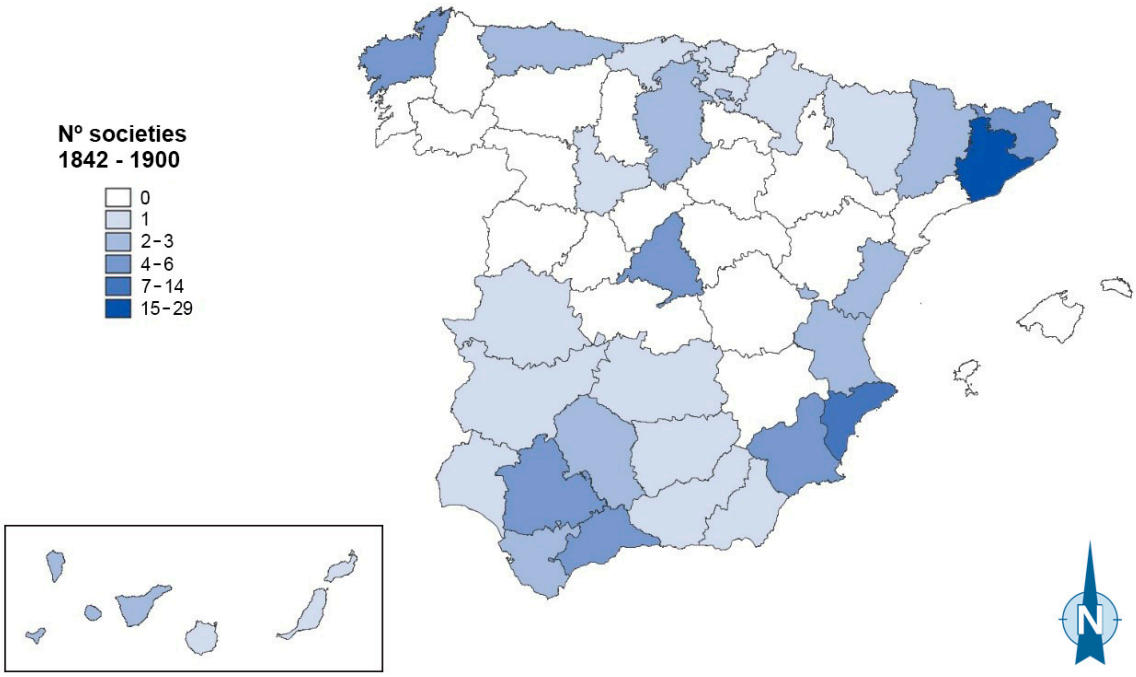

Figure 4. Regional distribution of water companies (1842–1900).

One of the characteristics of the water business in these first years was the short periods of operation of many of them that could not overcome the difficulties of a sector that was in full development. As examples we can see in Table 2 different companies that, having been founded in the 19th century, did not exceed 10 years of existence.

Table 2. Examples of companies established in the 19th century that were liquidated in less than 10 years.

Name of Society	Province	Duration
Canal de Alicante	Alicante	1871–1879
Enrique Caucourte y Joulliot	Alicante	1892–1897
Juan Leach Giró	Alicante	1885–1891
Aguas Potables de Montaña	Barcelona	1883–1890
Palau, García y Cía.	Barcelona	1857–1865
The Cadiz Water Works Cº Ltd.	Cádiz	1872–1876
Luis Petit	La Coruña	1863–1866
La Aurora	Madrid	1846–1847
Compañía Internacional de Aguas	Madrid	1892–1894
Compagnie Continentale des Eaux	Málaga	1880–1882

As previously mentioned, of all the companies that began their activities in the 19th century, only half of them survived into the new century, and on many occasions the same concession was operated successively by different companies that did not succeed in making a return on their investment.

This case occurred in Málaga where, in 1875, the Town Hall granted the concession for the water from Torremolinos to the French citizen Federico Gros Crouvés, and the water arrived in the capital in June 1876. However, the management of the service was plagued by irregularities and in 1880, a year after Gros's death, his heirs ceded the concession to the *Compagnie Continentale des Eaux,* a company incorporated in Paris and which was soon declared bankrupt. This led to the sale of the concession at judicial auction to Jonathan Aldons Mays and Adam Scott, both originally from London, who in 1883 formed the company *A. Scott y Compañía*. Different administrative and management problems led to the transfer of the concession and the provision of the service by the *Luna y Morales Company* from 1891 onwards [23].

At the beginning of the new century, the growing trend in the number of water companies continued, although it was from the first decade of the 20th century that the definitive take-off took place, reaching its greatest development in the 1920s. Specifically, it was in 1923 when the maximum value was recorded, with 168 water companies operating in Spain (see Figure 5).

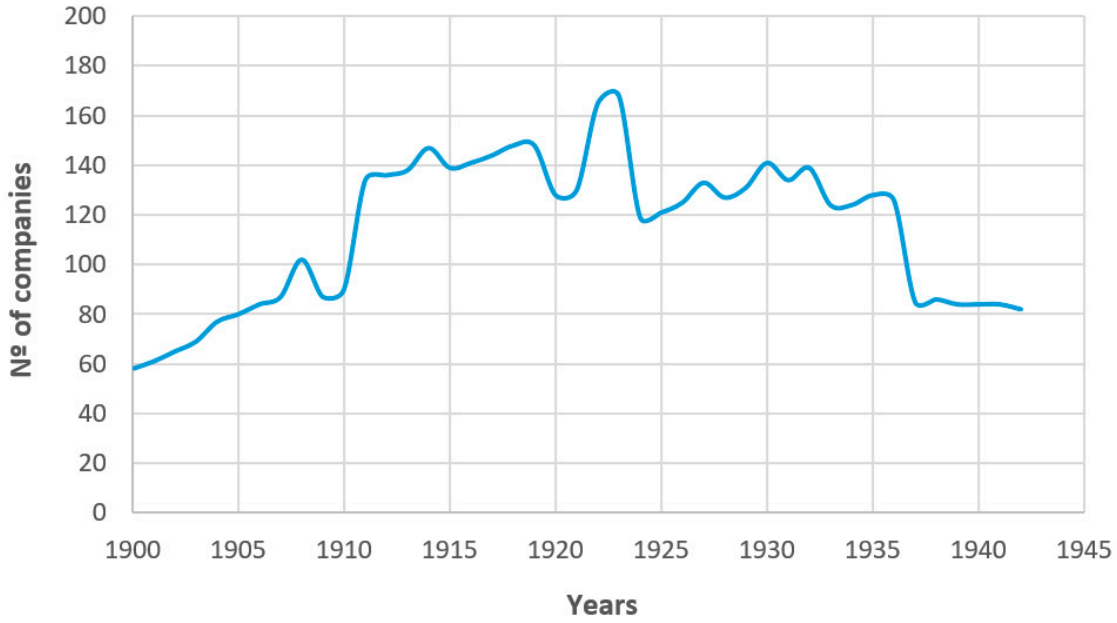

Figure 5. Evolution of the number of water companies from 1900 to 1942.

From 1900 to 1942, the total number of companies operating in Spain was 315, serving 204 towns in 44 provinces (13 provinces more than in the previous century), which meant an 88% business presence at provincial level (only Salamanca, Palencia, Soria, Orense, Guadalajara and Cuenca did not have water supply companies). Of all these companies, 17% (57 companies) had begun their activity in the 19th century, which indicates the great boom that the sector experienced at the beginning of the new century.

In the twentieth century, at regional level, the following regions stand out for their high concentration of companies: Catalonia (71), Andalusia (51), Valencia (36) and Murcia (13), whereas in other areas, their presence was very scarce and of little importance, as is the case of Aragon (6), Extremadura (4) and Asturias (3). During these years of growth in the sector, there were even water companies operating in Spanish overseas territories, for example, the *Hidros Company*, based in Melilla or *Aguas de Ceuta* (see Figure 6).

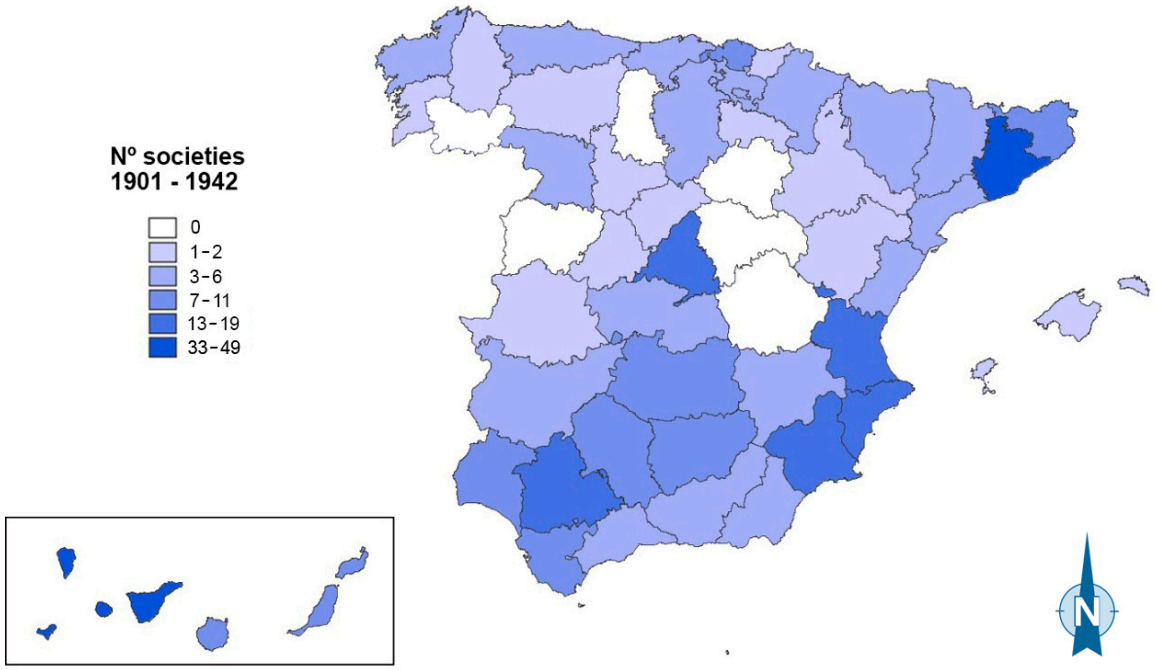

Figure 6. Regional distribution of water companies (1901–1942).

A separate case in the study of water companies is found in the Canary Islands, where at the time there were different forms of exploitation, each with its own characteristics. Water companies could be classified into communities, public limited companies, regular collective companies and trade unions, with the first figure being the most widespread, followed by public limited companies. Of the latter, 40 companies were registered, distributed between Tenerife (82%) and Las Palmas (18%) [24].

Another characteristic of these years is the registration of water companies in areas other than those supplied, taking advantage of the business opportunities that were generated, highlighting two provinces: Guipúzcoa and Madrid. In Guipúzcoa, seven companies were founded during the first half of the 20th century, of which only one (*Aguirre and Nazábal*, from Beasain) had its headquarters in the town that was supplied. The rest were companies dedicated to supplying towns outside the province such as Santiago, Ciudad Real, Pontevedra, Calahorra, etc. The same happened in Madrid which, supplied by the *Canal de Isabel II* and other smaller companies (*Hidráulica Santillana*, *Agua y Saneamiento*, *S.A.*, etc.) had ten water companies based in its territory that supplied localities such as León, Murcia, Almería, Villarrobledo, etc.

With the arrival of the 30s, the decline of the water companies began, which would become more evident with the Civil War (1936–1939). During the conflict, the situations experienced by the companies were very diverse; although the intention of most of the companies was to continue supplying, conditions forced many of them to leave the business due to unsafe conditions and economic difficulties. Others, such as the case of *Aguas de Córdoba*, were municipalized in order to guarantee supply to the population [21]. In Madrid, the *Canales del Lozoya* (name that the *Canal de Isabel II* adopted during the Second Republic) remained in operation, maintaining their public status, and even alternative water supply projects were planned, and the network was unified with that of Hidráulica de Santillana, a private supply company that also operated in the city. In Barcelona, where the collectivisation of companies and services were extended, the *Sociedad General de Aguas* became *Aguas de Barcelona Empresa Colectivizada* (ABEC). The workers organised themselves in an assembly way and unified the price of water, eliminated permanent contracts and promoted a minimum of free consumption, among other reforms that combined the drive for social justice with improvements in the efficiency of the service.

After the Civil War, private companies entered a languid situation that culminated, in many cases, with the progressive municipalization of the service by the town councils. In the case of Madrid and Barcelona, although the administrative structures returned to the pre-war situation in the case of Barcelona and pre-republic in the case of Madrid, the two companies received a remarkable legacy as a result of the war period, such as improvements in management and termination of anachronistic privileges of some users.

3.2. Foreign Capital in the Water Business

Some of these companies had their origin in foreign capital, mainly British, French and Belgian [25]. This fact confirms the trend that existed during the 19th century regarding the arrival of foreign capital in almost all sectors of Spanish economic activity, with this establishment being most notable in the railways and in the first gas, tram and electricity companies [10,26–28]. In the case of water supply, the establishment of these companies in Spanish cities was an undoubtedly attractive field of activity, both because of the lack of competition from national industry and because of the possibility of introducing both material and technology from the countries of origin.

In general, foreign companies were characterised by their establishment in clearly monopolistic sectors, by maintaining their decision-making centres in the countries of origin and, especially those dedicated to the supply of drinking water, by the important fixed capital that was required [29].

The investments carried out in the 19th century by the water companies, with total or partial participation of foreign capital were quantified at 40,670,400 pesetas, the majority of which was French capital with 48.6%, followed by British capital (34.56%) and Belgian capital (16.82%) [30].

These values contrast with the numerical distribution of these companies, since, of the 31 water companies with foreign capital that were established in Spain in the 19th century, 15 of them had British participation (48%), 8 had French capital (25%) and 6 had Belgian capital (20%) (In addition to those mentioned, two companies with German capital were registered to supply Vitoria and Huelva). This mismatch between the number of companies and their capital is due to the heterogeneity in the size of the companies and their success. Companies such as *Scott & Cia.* (Málaga) or *The Cadiz Waterworks C^{o} Ltd.* were attempts to solve the problem of supply from British capital which proved unsuccessful after a few short years of operation of the water service.

However, it was not only the pure investment effort that led foreign companies to establish themselves in the Spanish market. Another important reason was the establishment of new markets for their technologies and products, since most of the water supply concession companies were, in turn, manufacturers of elements in the countries of origin, as was the case of the French company *Société Générale d'Eaux de Barcelona*, which was part of the *Bonna group*, using pipes manufactured by companies in the group on its infrastructures [31].

In any case, the total investment made by foreign companies in the water sector was lower than that of other sectors related to urban services such as gas or electricity, mainly because water supply required less investment in fixed capital and the possibility of expanding the business was clearly lower.

The first company with foreign participation (French capital in this case) was the *Sociedad de Aguas de Morón y Carmona* (Seville) in 1853, subsequently others appeared, such as the *Compagnie Continentale des Eaux* (1880) established in Malaga with French capital, *The Seville Water Works Company Ltd.* (1883) with British capital or the *Société des Eaux d'Alicante* (1898) with Belgian capital.

The number of these societies gradually increased until they stabilised at the end of the 19th century, with figures that would remain in the early years of the 20th century. In total, 31 water foreign companies were established during this period, with different capitals and durations (see Figure 7).

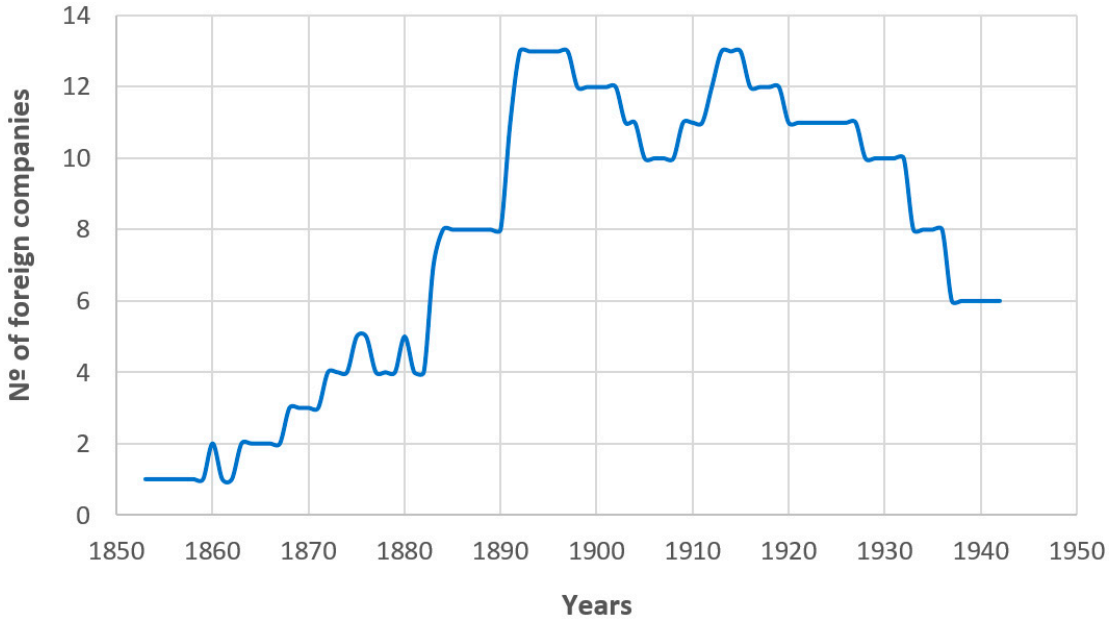

Figure 7. Evolution of the number of foreign companies from 1853 to 1942.

It is important to note that in the 20th century, only three companies with foreign capital were set up in Spain, while the rest of the foreign companies that operated in those years were founded in the previous century. These companies were *Schneider y Compañía* (German capital) located in Vitoria; *The Andalusía Water Company Cº Ltd.* (British capital) founded in 1912 to supply Algeciras and *City of Las Palmas Water & Power Cº Ltd.* (British capital), which has been operating in Las Palmas (Canary Islands) since 1913.

After the first decade of the 20th century, the presence of foreign capital began to decrease, mainly due to the problems generated by the outbreak of World War I (1914–1918) [32] and, subsequently, to the fact that the legislation enacted in Spain was of a markedly nationalistic nature, which made it easier for Spanish capital to take over a large part of the sector, even acquiring different foreign companies. An example of this was the Royal Decree of 30 April 1924 which, among other things, limited the foreign members of the board of directors of companies to one third or established that foreign capital could not exceed 25 per cent of the investment made.

Like so many other sectors, the water sector was enormously affected by the war. It is worth noting that in Spain there was a civil war at the end of the 1930s, which, together with the subsequent world war, marked the progressive withdrawal of foreign capital, with national investors or local councils taking their place and gradually regaining control over the city water supply sector.

In terms of their geographical location, foreign companies followed the general trend of seeking out those areas with the greatest business opportunities. On the one hand, they established themselves mainly in provincial capitals (73%) or were located in towns that were not so populous but were situated in economically developing areas such as, for example, *The Andalusia Water Cº Ltd.* with headquarters in Algeciras (Cádiz) or the company founded by George Clifton in Garrucha (Almería). Overall, the greatest presence of these foreign capital companies was in the Mediterranean area, where half of the companies present in Spain operated (see Figure 8).

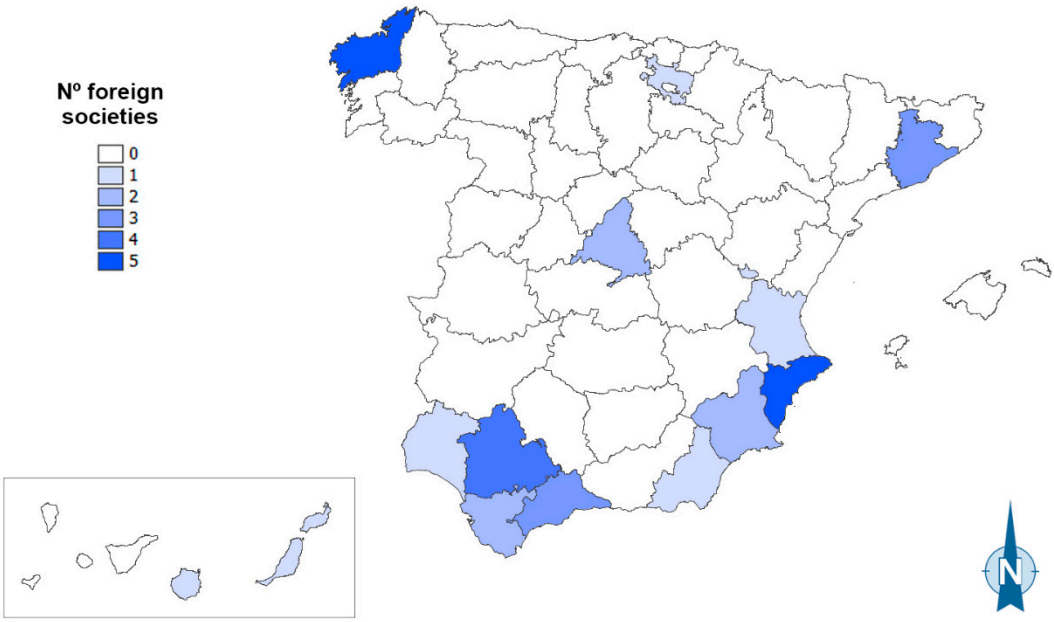

Figure 8. Regional distribution of foreign water companies (1853–1942).

3.3. Size of Water Companies and Their Relevance to Other Sectors

In general, the water supply companies were not characterised by their large size, although since the situations of service provision were very different, the variety of cases can also be considered a characteristic of the sector.

As we have seen in previous points, it is from 1870 when the development of the sector begins, and until then, the existence of small companies operating even in large cities was characteristic, and from 1880 an increase in the number of companies began to appear, among which companies of a certain size began to appear.

In order to identify the size of the companies, the data collected from three sources will be used: ECURM (1903–1917), AFSAE (1918–1929) and AFB (1930–1936). These yearbooks are those that systematically collect the capital of the different companies, and the period of study has been adopted as the one of greatest implantation of water companies in Spain.

From the beginning of the 20th century, the capital of the water companies remained stable at around 50 million pesetas, and from the half of the second decade of the century, a sustained growth began (with greater or lesser acceleration) that translated into figures close to 250 million in the years prior to the Civil War (see Figure 9). (It should be noted that in the yearbooks the capital of the water companies includes that corresponding to the irrigation companies, therefore, although the numerical values are not exactly those of the supply companies, they serve to characterize the development of the sector.)

This increase in capital contrasts with the decrease in the number of supply companies that took place from the mid-1920s, when the number of companies peaked. This can be explained by the gradual concentration of the service in larger companies which, especially in the major cities, were expanding their market thanks to their already proven experience and the need for a certain size to be able to guarantee a quality service to the population.

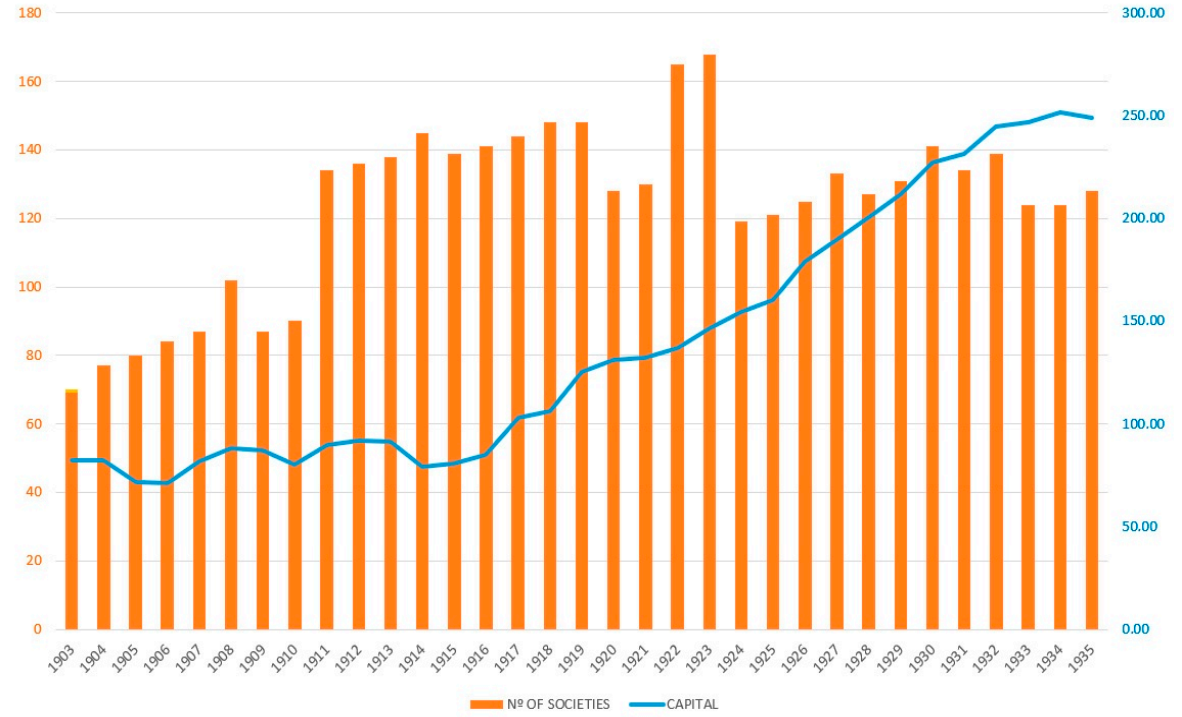

Figure 9. Capitals and number of water companies in Spain (1903–1935).

Within the study of the capitals of water companies, the role of foreign companies is remarkable since the trend indicated in the general framework of companies in Spain is the same that took place with foreign companies years before. These companies had their moment of maximum presence in Spain (in terms of number of companies) between the last years of the 19th century and the first of the 20th century, and then, their number gradually decreased. This decrease in the number of companies contrasted with the increase in their capital due to the concentration of companies. As an example, it should be noted that in the early years of the 20th century, three foreign companies concentrated more than 90% of foreign capital in the water sector: The French company *Sociedad General de Aguas de Barcelona*, leader in the sector, accumulated around 70% of the declared capital, the English company *The Sevilla Water Works C.º Ltd*. followed it, accumulating around 20% and, finally, the Belgian company *Société de Eaux d'Alicante*, whose capital represented 5% of the group [29]. As happened later with Spanish capital companies and the Civil War, the activity of foreign companies was greatly affected by their activity by World War I, which together with nationalist legislation marked the decline of many of them that were acquired by Spanish financial groups or by the councils themselves which gradually took control of the water industry (As an example, the Sociedad General de Aguas de Barcelona, which in June 1920 was acquired by a group of Spanish banks for 45 million pesetas, and the Société de Eaux d'Alicante, which in 1921 sold 90% of the capital to the Sociedad General de Aguas de Barcelona).

It is important to position the supply companies within the group of companies that were developing their activity at that time in order to provide the appropriate perspective on the data and characteristics of a sector that, over time, has become increasingly important.

For the study of the two first decades of the century, we will use the data collected in the ECURM between the years 1903 and 1919. This yearbook collects and catalogues the data on companies from different sectors, giving a view that, although it may not be complete in terms of numbers, it does allow an adequate characterisation of the different sectors in the economic activity of the period of study.

The ECURM yearbook divides the description of the companies into different categories: credit, water, sugar factories, canals and ports, manufacturing, railways and trams, gas and electricity, metallurgy, mines, shipping, production and various companies (pharmaceutical, printing, telephone,

automobile, etc.) (There is also a section for monopolies and another for municipal and provincial companies, which have been considered inside the category "Various".)

Table 3 shows the distribution in percentages of the capitals of the different sectors at the beginning of the 20th century.

Table 3. Percentage distribution of the capitals of the different sectors between 1903 and 1910.

	1903	1904	1905	1906	1907	1908	1909	1910
Credit	22.71	23.02	22.91	23.11	18.83	25.54	25.39	24.89
Water	2.39	2.45	2.20	2.25	2.52	2.08	2.06	1.91
Sugar Companies	0.57	6.75	5.38	6.19	5.82	4.62	4.66	4.65
Canals and Ports	0.73	1.03	0.66	1.08	1.15	0.73	0.87	0.56
Manufacturing	8.26	9.15	8.55	8.84	5.34	6.41	8.58	10.10
Railways and Trams	27.09	27.54	29.83	25.75	29.62	23.80	23.87	23.78
Gas and Electricity	4.15	3.93	4.13	5.15	5.40	4.74	5.51	6.36
Metallurgical	1.98	2.08	1.14	3.08	3.17	2.43	2.36	2.51
Mines	8.34	8.93	9.42	10.43	13.63	10.92	11.15	10.51
Navigation	2.20	3.09	3.44	4.51	3.87	3.31	2.44	2.58
Production and Consumption	0.00	0.00	0.11	0.03	0.04	0.20	0.23	0.20
Recreation	0.26	0.34	0.32	0.22	0.27	0.14	0.20	0.16
Insurance	7.93	3.86	7.24	4.94	3.19	7.55	7.67	6.99
Various	13.40	7.85	4.68	4.42	7.15	7.53	5.02	4.79

The importance of the different business sectors throughout this decade maintained a similar trend. The top positions in terms of capital corresponded to credit companies, railways and trams, and companies dedicated to mining. Compared with the 855 million average nominal capital of credit societies (23.3%), or the 952 million of railway and tram companies (26.4%), the 80 million average nominal capital of water companies (2.2%) indicates that, despite being a necessary service and experiencing gradual growth in those years, it was still below sectors such as metallurgy or insurance, although it already exceeded similar sectors such as public works.

In the second decade of the 20th century, the rank of the water companies in relation to the different sectors remained in a similar position, although little by little, it lost its share in the group (1.48% average) despite reaching 85 million average nominal capital (see Table 4).

Table 4. Percentage distribution of the capitals of the different sectors between 1911 and 1919.

	1911	1912	1913	1914	1915	1916	1917	1918	1919
Credit	22.86	22.70	22.31	21.86	28.58	28.06	24.67	26.83	24.88
Water	1.81	1.83	1.80	1.49	1.36	1.44	1.30	1.17	1.10
Sugar Companies	3.82	3.99	3.98	3.96	3.38	3.25	3.14	2.99	2.69
Canals and Ports	0.63	0.77	0.76	0.59	0.54	0.53	0.59	0.54	0.48
Manufacturing	9.27	8.71	9.30	8.00	8.54	8.31	9.98	8.84	12.18
Railways and Trams	21.17	21.15	20.87	20.70	18.56	19.06	17.96	16.58	15.24
Gas and Electricity	7.99	8.15	8.12	8.05	7.44	7.87	7.82	7.58	7.45
Metallurgical	2.59	2.56	2.63	3.32	2.38	2.61	2.25	4.67	4.37
Mines	12.68	13.47	13.60	12.72	12.21	10.22	10.86	9.24	9.51
Navigation	3.07	2.97	3.19	3.14	2.86	3.27	6.80	6.08	5.95
Production and Consumption	0.06	0.04	0.06	0.03	0.05	0.05	0.05	0.05	0.06
Recreation	0.19	0.24	0.25	0.28	0.21	0.28	0.19	0.23	0.22
Insurance	6.26	5.12	5.14	5.02	4.53	4.43	5.16	2.93	2.93
Various	7.60	8.29	7.98	10.84	9.36	10.63	9.24	12.27	12.95

Matés (2014) carried out this contextual study in the 1920s, revealing a reorganisation of the most important sectors that already occupied these positions in the previous decade, highlighting electricity companies (14.9%), banks (11%) and the railways (10.8%) as the most developed sectors for capital

purposes, together with new sectors such as telephone communications (9.3%) that were beginning to emerge at the time [21]. Water companies in this decade were always moving around 1% of the total capital, which meant being in a category that included companies such as trams, insurance, sugar factories, shipbuilding, etc.

The similarity between the situation of the water companies and the tramway companies, a typically municipal service, indicates that the supply companies moved in similar parameters to those described in other public services. In other words, they were not out of step with other sectors that could to some extent be representative of the economic situation at the time [10].

Therefore, it can be pointed out that, within the context of companies of the time, water supply companies played a prominent role which, although not as important as those of certain sectors (electricity, banks or railways), did have some relevance in the economic context of the first third of the 20th century.

3.4. Characteristics of the Water Supply Sector

In relation to the data collected in the various statistical yearbooks and in line with other work carried out on the subject, it is possible to highlight some of the characteristics that define the drinking water supply companies that developed their activity in Spain between the end of the 19th century and the beginning of the 20th century [21].

The first is the influence that the concession regime for water supply to populations had on their stability. This regime was modified over the years, so that while in the early stages they were generally granted for an indefinite period, the period was gradually shortened, starting with the inclusion of the 99-year clause in the 1879 Water Act.

As reflected in the companies shown in Table 5, the vast majority of supply companies set up in the nineteenth century enjoyed long concession periods, which translated into stability and security for the companies, which were able to make significant investments, especially those located in locations that, due to their size or characteristics, offered business opportunities. This allowed these companies to extend their activity until well into the 20th century. Examples of these companies are *Aguas del Gévora* (1878), *Aguas Potables de Córdoba* (1891) and *Aguas de Cáceres* (1899).

Table 5. Examples of different concession periods granted to water companies.

Name of Society	Municipality	Foundation Year	Concession
Aguas del Gévora	Badajoz	1878	Undefined
Aguas de Santa Catalina del Monte	Murcia	1887	99 years
Société des Eaux d'Alicante	Alicante	1898	60 years
Tha Andalusia Water Cº Ltd.	Algeciras	1912	40 years
Hidráulica Carpense	El Carpio	1923	30 years
Aguas Potables de Ripollet-Sardañola	Ripollet	1917	20 years

In the first years of the new century, a change in the trend is beginning to be seen, with a gradual reduction in the concession periods that used to be established between 20 and 60 years, due to the growing interest on behalf of the city councils in reverting the concessions.

The second characteristic is the aforementioned instability of the companies in the first years of development of the sector due to the evident difficulties of the service implementation and the lack of experience. The constant growth in the number of companies dedicated to water supply between the end of the 19th century and the beginning of the 20th century hides a fact that should be highlighted which is the short duration of many of the companies that were established in those first years. Out of a total of 111 companies registered throughout the 19th century, only 60 were operating in 1900, barely 54% of the total (Figure 10).

Figure 10. Share of Sociedad General de Aguas de Barcelona (1897).

As Matés (2014) points out, a situation that was repeated many times during those years was the proliferation of failed attempts to solve the problem of supplying a population that was only finally solved when a company of a certain size and infrastructure took over the business, as was the case in cities such as Barcelona, Cadiz, Valencia, Cartagena, Murcia, Pamplona, Cordoba and Valladolid. In the case of these large cities, the initial attempts determined the appearance of a large company, while in smaller towns, the failure of the companies translated into the provision of the service by the city council [21].

Following the classification scheme proposed by Matés (2014) we can classify the companies established during the second half of the 19th century into (1) companies that managed to stay in the water market for less than 5 years, (2) companies that did not settle beyond 20 years and (3) companies that managed to surpass 20 years of activity.

Different water companies that were established in the 19th century and did not have more than five years of operation are shown in Table 6. Of the total of 111 companies that were founded at that time, only 31 (28%) did not achieve a minimum continuity in their activity and were forced to cease after a few years.

An example of this situation is the case of La Coruña where, in view of the impossibility for the municipality to provide a supply of water in accordance with the population's demand, in 1860 it turned to private initiative, specifically, to the company of Jean Bouchard (of French capital), which abandoned the project in barely a year. In 1863, a new concession was granted to another French citizen, Louis Petit, whose initiative barely lasted three years due to the financial crisis of 1866. It was not until 1890 when, after several failed projects and attempts, a concession for the supply was again granted to Ernest John Baylliss and Roberto Baldelló y Martínez who, in a clearly speculative manoeuvre, immediately transferred this concession to the British society, *The British and Foreign Trading C^{o} Ltd*.

This company, arguing difficulties of various kinds, also failed to materialise the water supply to La Coruña and the city council made several attempts to cancel the concession. Finally, in 1893, the British company transferred the concession to *The Corunna Waterworks C° Ltd*., created specifically for this business, also with British capital. The problems continued until 1903 when the *Sociedad Aguas de La Coruña* was formed and finally succeeded in bringing water to the city in 1908 [33].

Table 6. Companies established in the 19th century that did not operate for more than 5 years.

Name of the Society	Municipality	Year of Establishment
Compagnie Générale de Conduits d'Eaux	Alicante	1897
Nuevo Neptuno	Alcoy	1884
Asociación de Propietarios del Ensanche	Barcelona	1869
Explotaciones industriales	Igualada	1881
Melitón Reniú	Sant Just Desvern	1898
Mina de Can Travi	Horta	1869
Mina Serret	Sant Andreu	1898
Pablo Simón y Vives	Barcelona	1894
Pau Vintro	Barcelona	1869
Baylliss & Baldelló	La Coruña	1891
Jean Bouchard	La Coruña	1860
Empresa General de Conducción de Aguas y Gas	Lérida	1878
La Aurora	Madrid	1846
Compagnie Continentale des Eaux	Málaga	1880
Bernardo Díaz Vega	Nueva	1894
Compañía Internacional de Aguas	Sevilla	1892
Sociedad Internacional de Aguas	Écija	1891
Aguas de Tarragona	Tarragona	1893
Explotación y canalización de aguas de Tenerife	Tenerife	1883

The second group of companies, referred to in Table 7, is made up of those which, overcoming the difficulties of the first years, managed to provide service over a relatively long period of time (up to 20 years). These companies represented a similar percentage (31%) to that of companies with limited activity, and as in the previous case, the province that registered the greatest number of companies of this type was Barcelona.

Specifically, in the city of Barcelona, we can find examples such as *Palau*, *García y Cia.* who in 1857 had launched the project to divert the groundwater of the Dosrius valleys, although the lack of capital meant that it was finally acquired by the *Compañía de Aguas de Barcelona*, set up in Liège in 1867. This company obtained the declaration of public utility in 1868 and in 1871 was able to market the water. However, in 1881 the company's financing problems led to its acquisition by the *Société Lyonnaise des Eaux et de l'Éclairage*, which led to the constitution of the *Sociedad General de Aguas de Barcelona* [34].

In 1881, the *Compañía General Anónima de Aguas de Barcelona (Right-hand side of the Besós River)* was set up to exploit the waters of a plot of land located in Sant Martí de Provençals. After some years of precarious existence, the company succumbed under the weight of its debts, terminating its activity in 1890 [35].

Other cities that relied on these companies were Alicante (*The Alicante Water Works Ltd.*), Valladolid (*Sociedad del Canal del Duero*), Cartagena (*Aguas de la Suerte*), etc.

Table 7. Companies established in the 19th century and which did not operate for more than 20 years.

Name of Society	Municipality	Year of Establishment
Traida de aguas de Gorbea	Vitoria	1880
Canal de Alicante	Alicante	1871
The Alicante Water Work Ltd.	Alicante	1883
The Elche Water Works Cº Ltd.	Elche	1899
Aguas Potables de Montaña	Barcelona	1883
Compañía de Abastecimiento de Aguas	Tarrasa	1897
Compañía de Aguas de Barcelona	Barcelona	1867
Compañía de Aguas de San Martín de Provençal	San Martín	1878
Compañía de Aguas de Sants	Barcelona	1869
Sociedad Gral. Anónima de Aguas de Barcelona (ladera dcha del Besós)	Barcelona	1881
Compañía de Aguas de Burgos	Burgos	1889
The Cadiz Water Works Cº Ltd.	Cádiz	1872
La Ondense	Onda	1880
Antonio Folerá y Cia.	Ripoll	1897
Buenaventura Capdevila	Olot	1893
The Corunna Waterworks Cº Ltd.	La Coruña	1893
Furnells y Cia.	Lérida	1899
A. Scott y Cia.	Málaga	1883
Aguas de la Suerte	Cartagena	1880
Cantijoch y Ramírez	Montblanch	1897
Jaime Macnaughtan Cuninghan	Aljemesí	1896
Sociedad Valenciana para la conducción de aguas potables	Valencia	1846
Sociedad del Canal del Duero	Valladolid	1882

Finally, companies that were founded in the 19th century and that managed to survive for more than 20 years made up 38% of the total, indicating the variety of situations and proof that even in those initial stages there was a group of companies that managed to stabilise their situation and make the most of business opportunities (see Table 8).

Some of these companies reached the 1950s, such as the *Sociedad Industrial Castellana*, which managed the supply to Valladolid since 1876 and which ceded its rights to the city council in 1959. A similar situation occurred with the *Sevilla Water Works* (1881–1957) and *Aguas de Alicante* (1898–1956). Some other companies gave up the concession a few years earlier, such as *Aguas Potables de Villafranca* (1881–1921), *Aguas Potables de Cádiz* (1885–1927) and *Aguas Potables de Córdoba* (1891–1938) [22,36,37].

The last characteristic of the drinking water business is the proliferation of companies that took place in the first quarter of the 20th century, which indicates a maturity of the sector due to the development carried out in the previous years at different levels (business, technical and administrative) that made it possible to solve the difficulties that, at other times, would have endangered the viability of societies [21].

During the first half of the 20th century, 315 water companies operated in Spain, of which 59 had already been doing so since the last century, which is only 19% of all companies. This figure indicates the large number of companies that were set up during the 20th century, demonstrating the coming of age of a sector that is clearly developing.

However, these overall figures should not obscure the influence of population size and growth on the development of societies. The vast majority of societies that, being founded in the 19th century, managed to continue their activity in the 20th century were located in cities of some importance with significant demographic development, which offered adequate perspectives and supply for the development of water companies. Examples are the company that supplies drinking water to Jerez de la Frontera, *Aguas Potables de Santa Catalina del Monte* in Murcia, the company that supplies water to Santander and the *Compañía Hidrofórica de Reus*.

Table 8. Companies established in the 19th century and in business for over 20 years.

Name of Society	Municipality	Year of Establishment
La Unión	Aspe	1871
Société des Eaux d'Alicante	Alicante	1898
Aguas del Gévora, S.A.	Badajoz	1878
Aguas Potables de Villafranca del Panadés	Villafranca	1881
Compañía General de Aguas de Barcelona	Barcelona	1882
Mina Pública de Aguas de Tarrasa	Tarrasa	1842
Compañía de Aguas Potables de Cáceres	Cáceres	1899
Aguas potables de Jerez de la Frontera, S.A.	Cádiz	1868
Aguas de Siles	Ciudad Real	1869
Empresa de Aguas Potables de Córdoba	Córdoba	1891
Herederos de Andrés Serrano Puértolas	Granada	1878
Sociedad del Canal de Jaca	Jaca	1882
La Fraternidad	Martos	1900
The Carthagena Mining and Water C^{o} Ltd.	Cartagena	1889
Aguas de Arteta	Pamplona	1893
Sociedad Popular Ovetense	Oviedo	1898
Abastecimiento de Aguas de Santander, S.A.	Santander	1881
Servicios de Aguas de Morón y Carmona	Morón	1853
The Seville Water Works Company Ltd.	Sevilla	1883
Empresa Hidrofórica	Reus	1843
La Hondura	Puerto de la Cruz	1898
Aguas Potables y Mejoras de Valencia	Valencia	1890
Sociedad Industrial Castellana	Valladolid	1899

This influence of the size of the population supplied is also reflected in the fact that in the 20th century the percentage of companies that did not exceed 5 years of activity did not decrease (29%), and this is due to the fact that the flourishing of the business led to the emergence of many initiatives in small towns that succumbed to the difficulties that the operation of the service required, for example, the companies *Aguas de Oñate* (Ochagavia, Navarra), *Mateo Ruiz Vilches* (Mengíbar, Jaén), *Aguas Potables de Malagón* (Ciudad Real) or *Aguas Potables de Amurrio* (Álava). On the other hand, the cities with the largest populations had water companies during the 20th century that guaranteed a service that was not free of difficulties; in most cases, a single large company managed the supply, as was the case of Zaragoza (*Aguas Potables de Caudé*), Valencia (*Sociedad de Aguas Potables y Mejoras*), Cartagena (*The Carthagena Mining and Water C^{o} Ltd.*) or Seville (*The Seville Water Works Company Ltd.*).

In summary, it can be pointed out that in Spain, the moment of maximum boom of the companies took place in the 1920s, with a gradual growth since the middle of the 19th century in the number of companies, which reflected the development and modernisation of the sector. The role of private initiative was key in these years, due to the business opportunity that arose due to the growing demand that resulted from the urbanisation and industrialisation processes. The concession system allowed public administrations to maintain ownership of the activity at the same time that they transferred its management to a private company. In the European context, around World War I, the trend towards greater administrative interventionism was gaining weight, which resulted in the decline of the concession system for the benefit of direct public management, so that municipalities, as responsible for the supply of water, were assuming the management of the service and the accomplishment of the necessary works, with the legal and financial support of the State. The decrease in business opportunities and the drop in profitability explain this new situation in which the companies that operated in large cities were the ones that were mostly able to continue their activity, while the role of municipal management increased. This situation of coexistence between public and private initiative has reached our days, in which the regulations allow the management of the urban water cycle not to be exclusive to a local entity, but to be carried out jointly or delegated to a private or mixed company. Thus, in recent years, Spain has been verifying a diversity of water management models. According to

data from the Spanish Association of Supply and Sanitation (AEAS) of 2016, the provision of water services is divided into four figures: 34% of the population is supplied by public entities, 34% by private companies, 22% by joint ventures and 10% by municipal services.

The existence of private companies in charge of water management is not an exclusive reality in Spain. As discussed in the section, there were numerous companies from other countries that intervened in the water business in Spain by providing both their capital and their expertise. That is why the study of the role of water companies in other countries is of great importance to know how the water sector has evolved and what were the conditions, proposals and opportunities that these companies had to face, as well as the differentiating elements of the type of exploitation depending on the area to be supplied. Finally, the opportunity to establish similarities between water management in countries with similar characteristics (such as the Mediterranean countries) raises the possibility of deepening our understanding of these companies and how they faced the challenges of water supply based on the conditioning factors and characteristics of the different zones.

4. Conclusions

The role of water supply companies was highly relevant between the mid-19th and mid-20th centuries within the Spanish economic and social framework and, despite not being among the most capital-intensive sectors of the time, the importance of their activities for the growth and development of society at the beginning of the 20th century is unquestionable.

Since the establishment of the first water company in Spain in 1842, the proliferation of companies dedicated to the management of drinking water has grown, slowly at first, but from the 1870s onwards, increasingly, until the beginning of the second decade of the 20th century, when the largest number of companies in Spain was established. Subsequently, there was a gradual decrease in the number of these companies, which was not related to the loss of importance of the sector but rather to the concentration of the service in larger societies that guaranteed the quality of the service, above all in the cities with the largest populations, where the exploitation requirements were more demanding.

Initially, these companies were established in areas that favoured the development of the business, such as large cities and areas of high economic activity, places that were suitable for the development of the business in its most incipient phase, although the need for the service meant that the presence of companies was not uncommon in other areas, a prelude to what would happen in the years to come. The Mediterranean was the area where the boom of the sector in the last years of the 19th century was most noticeable, thanks to the economic dynamism and the abundant existing investment, both national and foreign. In these initial years, it was common to see societies with a short lifespan due to the difficulties of the sector, which was still in full development. It was common for different companies to take advantage of the same concession and succumb to the task of making the business profitable.

The period in which water management companies reached their peak was during the first decades of the 20th century, with an almost generalised presence throughout the whole of Spain, including the islands and Ceuta and Melilla (only six provinces in Spain did not have this type of company), with the vast majority of these companies appearing during the century itself, which indicates not only the appropriate conditions at the time for the development of the business, but also the growing importance of the sector within the Spanish industrial panorama. The decline of the sector began in the 1930s when, in addition to the economic consequences caused by the Civil War, factors such as the end of concessions, the inability of companies to meet the technological challenges of supply and national legislation that favoured the concept of water supply as a public good led to the conditions imposed on concession companies becoming more stringent. Thereafter, a time came when it became very difficult to carry out the activity, changing the trend towards municipal management of the drinking water service.

The presence of foreign investors was very noteworthy. Thus, taking advantage of the favourable situation and the opportunities offered by the market, they chose to establish themselves in Spain within the drinking water sector. Between the middle of the 19th century and the first years of the

20th century, up to 31 water companies with foreign capital (mainly British, French and Belgian) were established, making the market more dynamic, introducing not only new criteria for exploitation but also technical improvements from the different countries of origin. Their presence was more or less constant until the first decade of the 20th century when the instability caused by World War I and the subsequent obstacles imposed by Spanish legislation made their continuity unfeasible.

The study of the drinking water sector in Spain during these years highlights the importance of private initiatives in the development of the first public services and, in particular, of the companies in charge of managing the water supply. Although within the business context of the time, these companies did not have a very high value in terms of capital, the implementation of the Modern Drinking Water System by these companies contributed to the technological and management progress related to the urban water cycle and, consequently, to the development of modern society.

Today, the water supply sector continues to undergo transformations, and the role of business remains particularly important. Within the current trend to consider the management system in a comprehensive way and with the difficulties inherent to urban supply due to the increase in demand, both in quantity and quality, the study of companies and their relationship with the public sector continues to be a tool that sheds light on the current trend in organizational structures, always influenced by aspects of social, economic and environmental order. The privatisations of certain services, the creation of joint ventures or the tendency by municipalities to integrate into broader management systems are some of the aspects to take into account in the study of water management that is currently facing the challenge of incorporating new technologies into the integral management of the resource in order to modernize and update its activity, orienting it to an efficient management and in line with the Sustainable Development Goals.

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