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# Public or Private Water Management: Experience from different European Countries

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**Abstract.** Faced with liberalisation proposals and an increasing internationalisation of water resource management, the question arises as to how a change of the regulatory framework would affect the market structure and the supply conditions in this area. While the term “privatisation” relates to the ownership structure of the providers, the term “liberalisation” implies extensive free market ideas. Privatisation involves the outsourcing of public services from the public authorities to a privately organised organisation. Through this, however, nothing needs to change in terms of the market or the intensity of competition for the commodity in question. Within the framework of privatisation it can also occur that the public monopoly is only transferred to a private monopoly. The term “liberalisation” in addition refers to the basic regulatory constraints: liberalisation signifies the cessation of limitations to competition and supply monopolies, and open competition between several suppliers for the consumers. In the EU-15, the only country where the provision of operational services in the water supply has been totally passed to the private sector is the United Kingdom, but this is only true for England and Wales. Another singular case is France, where there is a mix of mainly private operating companies and municipalities which have divided the regional supply areas among themselves. In six other EU-15 countries where some privatisation took place, either the municipalities or (majority) publicly owned companies are controlling water supply. In the remaining seven countries, the water supply is organised by municipality companies only. In an international comparison, there are three basic models for the regulation of natural monopolies in the public water supply: the Anglo-Saxon, the French and the German model. The delimitation between supervisory bodies and operations in the water supply is strongest in the first model and weakest in the last. This has led to three basic types of privatisation: “full privatisation”, “privatisation through delegation” and “privatisation with regulation by the supervisory bodies”. These have led to three clearly distinguishable forms of competition: substitute competition simulated by the regulation authorities between private supply-enterprises, competition between private operators for the right to the temporary provision of water supplies, and competition in the product and service markets in the provision of water. In this paper, these different forms of privatisation and liberalisation are described and their impact on competition and market structures is analysed.

**Keywords:** water management, natural monopoly, privatisation, liberalisation.

## 1. Introduction

While the term “privatization” relates to the ownership structure of the providers, the term “liberalization” implies extensive free market ideas, especially the removal of barriers to entry the markets for water services, which are supplied by regional monopolies up to now. Privatization means

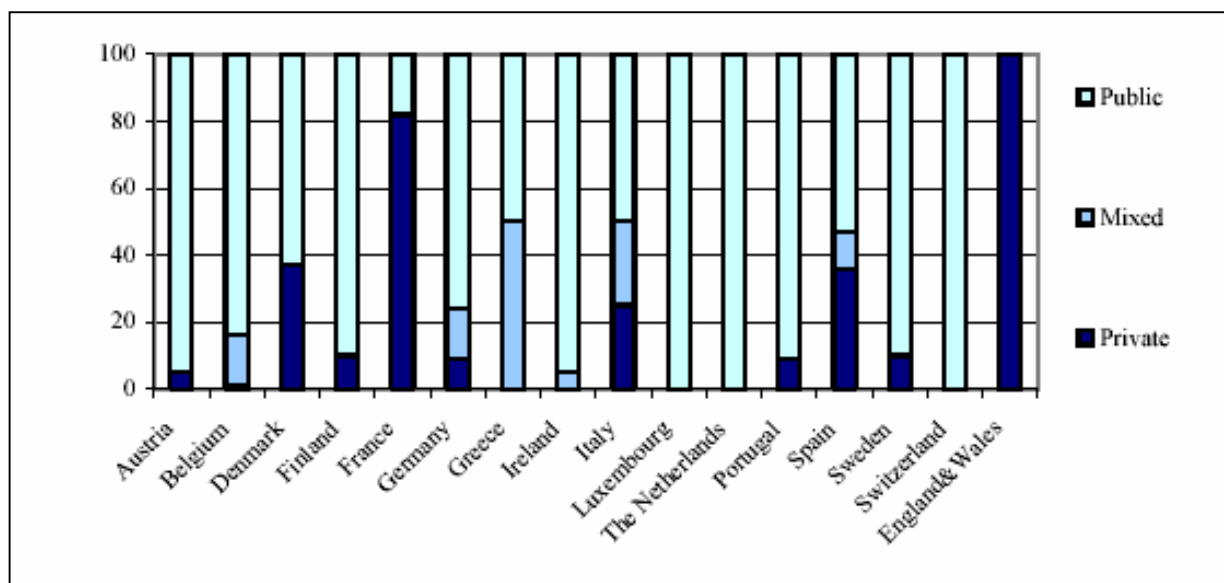
the outsourcing of public services from the public authorities to a privately organized enterprise [1]. This, however, does not necessarily mean a change in the shape of the market or the intensity of competition for the commodity in question. Within the framework of the privatization, it is also possible that the public monopoly is only transferred to a private monopoly.

In the supply of drinking water, the pipe network represents a natural monopoly but not the production of drinking water. As drinking water is provided in different qualities, this is not a homogenous commodity such as, for example, electricity. Operation of the network and production of drinking water can be separated from one another only with difficulty. The high fixed-cost component in the supply of water makes the laying of parallel networks by the competing bidder unprofitable; here we have the classical case of a natural monopoly. This is characterized by subadditivity (i.e. a monopolist can supply the relevant market more cost-effectively than two or more companies) as well as by the irreversibility of investments (so-called “sunk costs”). With the presence of “sunk costs” free entry into and departure from the market are not possible, the relevant market is then no contestable market in the sense of the theory of “contestable markets”[2]. In the case of a natural monopoly, the alternative to competition in the market would be competition for the market, for example by licence bidding.

Therefore, competition in the supply of drinking water is hard to introduce, as the transport of water from competing providers is problematic since it involves the toleration of the mixing of various qualities of water. Operation of the network and production of drinking water are therefore difficult to separate. The public water supply in Germany, in contrast to other infrastructure areas, is thus still an exception in terms of competition law. Despite isolated privatization of municipal water supply companies, no competition in the sense of a liberalization of the market exists.

## 2. Market Structures

Within the former 15 countries of the European Union, only in France and England/Wales is the majority of inhabitants supplied by private water companies (Figure 1, Population served by type of operator (ownership) in Europe, 2003). In the other EU-15 countries as well as in Switzerland, water supply is predominantly public. Private ownership is also considerably important in Denmark, Italy and Spain. In terms of size (Figure 2, Population served by type of operator (size) in Europe, 2003), in the majority of countries the population is served by either a small (less than 100,000 customers) or a medium sized (100,000 to 10 million customers) operator. Only in France are large operators (more than 10 million customers) dominant, which can be seen as a result of the local model of delegated management to private companies. Apart from France, large operators are also present in the United Kingdom, and in Germany. In England and Wales exclusively private, in most cases medium sized suppliers are active, in Germany contrarily mainly public and small to medium sized suppliers.

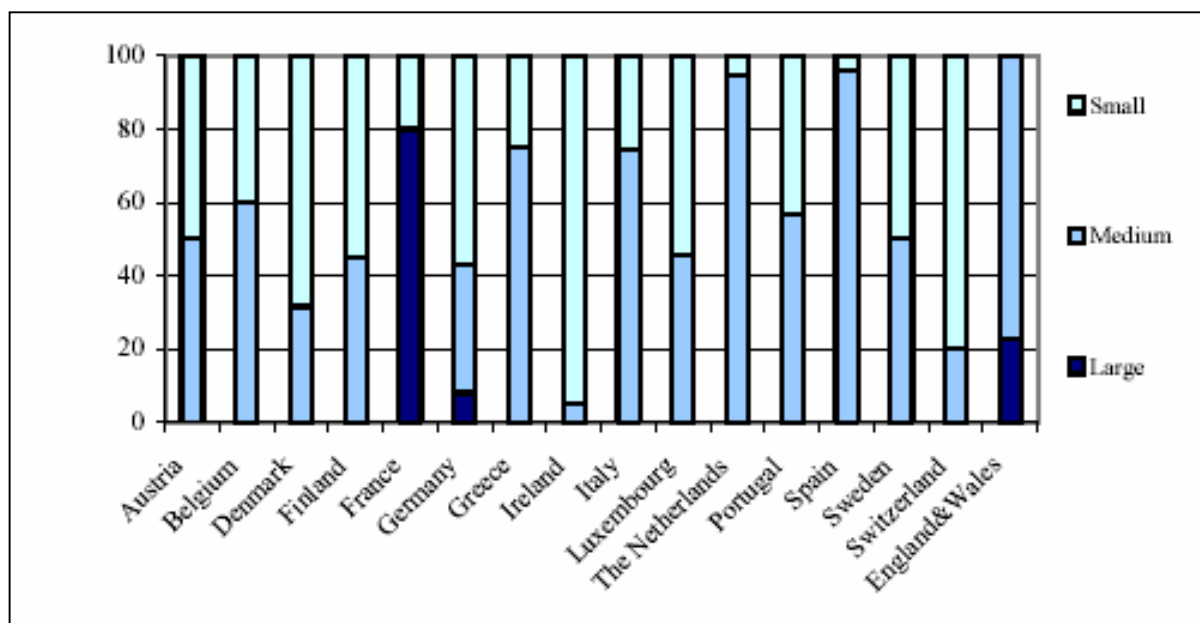


**Figure1.** Population served by type of operator (ownership) in Europe, 2003 [3]

The international markets for water and waste water services are dominated by the French companies Veolia, serving 108 million people, and Suez Environnement, serving 80 million people with drinking water and/or waste water services (Figure 3, Number of people served by water multinationals). The next largest company is the British Thames Water with 56 million customers, which was acquired by the German RWE Group in 2001 but sold again at the end of 2006 to Kemble Water Limited, a consortium led by the Australian Macquarie's European Infrastructure Funds [4]. With the takeover of Thames Water, RWE was the only German company that succeeded in catching up with the global players on the international water markets. Next is the American company United Utilities/US Water with 27 million customers, followed by other French and British companies. The German companies Gelsenwasser and Remondis Aqua, serving 6.5 million customers and 4.5 million customers, respectively, are lagging behind at positions nine and ten. With the takeover of Thames Water, RWE has temporarily advanced into the foremost group of global players in the water market.

### 3. Three Basic Models for the Regulation of Natural Monopolies in the Public Water Supply

A liberalization of the water supply can take place in different ways; the concrete basic features depend on which regulation the market for drinking water is or should be subjected to and in what way and to what extent the private sector is involved into the organization of the water supply. In the EU-15, the only country where the provision of operational services in the water supply has been totally passed to the private sector is the United Kingdom, and more specifically this is only true for England and Wales. In Scotland and Northern Ireland, independent, publicly owned companies provide the water services. Another singular case is France, where there is a mix of mainly private operating companies and municipalities that have divided the regional supply areas among themselves. In other countries like Germany, Greece, Italy, the Netherlands, Portugal and Spain either the municipalities or (majority) publicly owned companies control the water supply. In the remaining seven EU-15 countries, the water supply is organized by municipality companies only [5]. In the following, the two unique forms of privatization in France and England/Wales as well as the German method of privatization as an example of the interaction of municipalities and majority publicly owned water companies are discussed, especially with regard to the corresponding effects on competition and market structures.



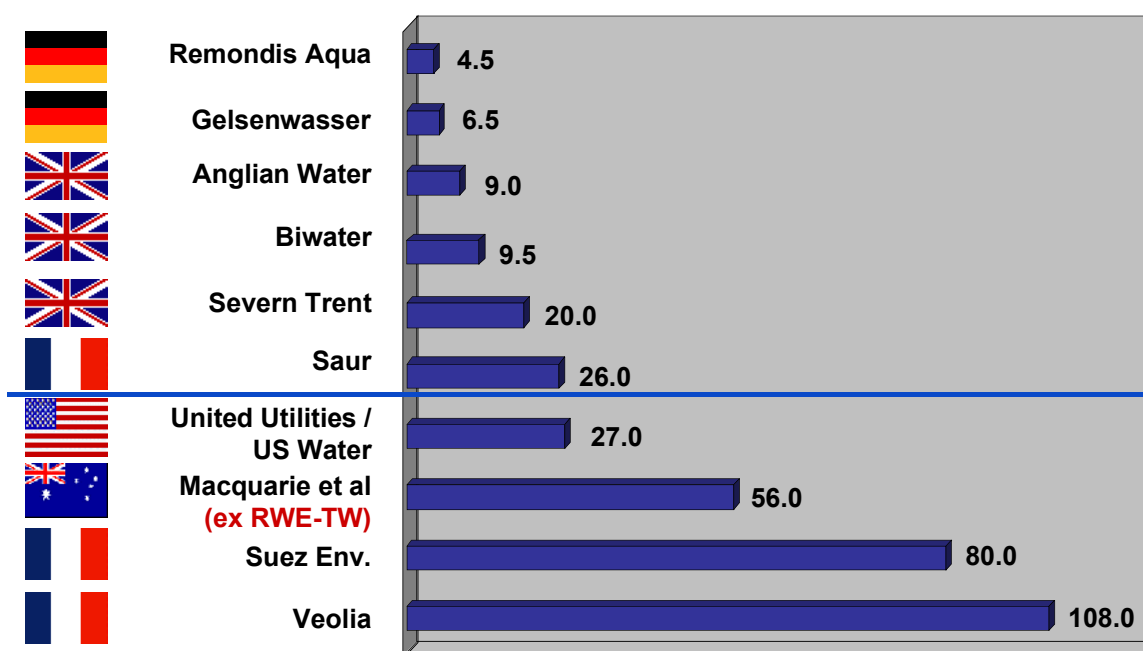
**Figure 2.** Population served by type of operator (size) in Europe, 2003 [3]

### 3.1. *England and Wales: Full privatisation*

With this form of privatization, which is to be found in England and Wales, publicly operated monopolies are transferred as a whole to a private enterprise oriented provider. Both ownership of the infrastructure and operation of the supply network stay in one hand, but it is no more the public sector but the private sector that is responsible. Therefore, here we speak of a “full privatization”. In this case, a sale of the operator firms, including all tangible assets (such as, for example, pipelines, wastewater treatment plants and water catchment systems) to private investors takes place. In England and Wales, ten water service companies have been created in this manner, which offer the supply of drinking water and the disposal of wastewater from one hand, and whose shares have been sold publicly (in Scotland and Northern Ireland water supply and wastewater disposal on the other hand remain with the public authorities). In addition, there were some 30 water supply companies which avoided earlier nationalization and are now subject to the same regulating system as the recently privatized companies. The regulation system follows the “specialized regulation”: it consists of one each of separate, independent advisory authorities for the drawing of water and discharge of wastewater, for the quality of drinking water and for water prices and supply conditions:

- the Environment Agency monitors the water quality of rivers and waters used for swimming as well as the environmental effects of the company activities.
- the Drinking Water Inspectorate is concerned with the assurance of the quality of drinking water.
- the Office of Water Services (OFWAT) sets the prices within a defined minimum and maximum whereby the performance of the individual providers is evaluated.

The price regulation allows the companies to increase their average prices per year by a factor of  $RPI + K$ , whereby RPI is the Retail Price Index and K the additional costs represented through the environmentally- and quality-related conditions. The regulating authorities set the prices such that an efficient company can expect a fair rate of return on its original business capital [6].



**Figure 3.** Number of people served by water multinationals (BMWA 2006, [7])

### 3.2. France: Privatisation through delegation

Under this, one understands the temporarily limited transfer of the responsibility for the operation of water networks to private operators as it is practiced in France. In this case the responsibility for the water supply (as for the disposal of wastewater) lies fundamentally with the municipalities, which however, can choose between direct management or contract management, leaving the provision of services to private companies. In the latter case, the production of goods and services are put out to tender by the municipalities; the facilities for the supply of water on the other hand, remain the property of a public body. Ownership of the infrastructure and operation of the network are separated in this case. In the contracts between the municipalities and the companies, that won the contract, it is laid down which costs the private side may include, as a maximum, in the bill. Three different forms of contracts are to be found [8]:

- the franchise agreement: here the private operator takes on the costs for new investment; the duration of the agreement is 20 to 30 years.
- the lease agreement: here the private operator does not bear the costs for new investment; the duration of the agreement is 10 to 15 years.
- the operating agreement: here only partial performances are transferred to the private side; the duration of the agreement is 6 to 10 years.

Thus the operation of existing water systems can be transferred to a private company for a relatively short period, whereby the systems as a rule remain municipal property. On the other hand, the construction and operation of new systems can be transferred to private companies, and at the end of the period the property is transferred to the municipality. Under a franchise agreement the franchise holder builds, finances and operates certain plants for the agreed period. He receives a contractual remuneration, as a rule calculated according to cubic metre of water or wastewater, respectively [6]. As opposed to the Anglo-Saxon privatization model, the tangible assets with the French privatization model remain in the ownership of the public authorities, that is the state and the municipalities or departments; only the operating responsibility is delegated to the private side if the municipality

chooses contract management. In this case the operating licences are awarded by means of a bidding process.

In the six river catchment areas that were formed through the First National Water Law from 1964, two bodies in each case regulate the water supply:

- the Comité de Bassin (Committee of the Catchment Area) and
- the Agence de l'Eau (Water Agency)

The amount of the water tariffs are laid down by the Comité de Bassin. In this body, which represents a type of regional "water parliament", the state, the regions, the departments and communes, as well as the water and surface water users are represented. The setting of the objectives and priorities for the various measures are laid down there in a water management plan. Parallel to the Agence de l'Eau is a state public body that carries out the water management measures, raises charges for the water usage and water pollution as well as allocating benefits for investments and costs for treatment operations [9].

### 3.3. Germany: Partial privatisation with regulation by the supervisory bodies

In Germany the privatization debate is to be viewed against the background of a traditionally strong municipal administration; with the privatization of the water supply in Germany, as opposed to France and Great Britain, there is only one legal option open; in no way a national action [10]. Ownership of the infrastructure and operation of the network usually, but not necessarily in each case, remain in one hand. The German privatization model prefers a regulation of the privatized concern via its supervisory bodies. By the sending of representatives of the public authorities into this supervisory bodies, influence on the business policy of the water provider is exercised; the fixing of prices takes place according to the cost-covering principle. There are basically two different forms of this type of privatization as well as one mixed form to be differentiated:

**Formal privatization or organizational privatization:** In this case the task of the water supply remains with the previous administrator; only the operating agency is transformed into a business form under private law, for example, with the transformation from a municipal department or a semi-autonomous municipal agency into a municipal enterprise. Despite formal privatisation, public structures are maintained which, however, are to approximate to the management of public-law companies with regard to independence and flexibility.

**Material privatization or functional privatization:** Here the administrator delegates his tasks in favour of the private party. This relinquishment of the public inventory of tasks can be revocable or final [1]. A regulation of the privatised company takes place in both cases through the creation of supervisory boards and the naming of supervisory persons within the company [6].

**Mixed form of privatization:** Here one is concerned with a mixed form between formal and material privatisation in the shape of a participation of private companies in a municipal enterprise, which in Germany has become well-known as the so-called "Berlin model". With the partial privatisation of the Berlin Water Works (BWB) in 1998, a holding model was selected with which the Federal State Berlin received 50.1% of the shares in the strategic controlling holding Berlinwasser Holding Aktiengesellschaft. The remaining 49.9% of the shares in Berlinwasser Holding Aktiengesellschaft was acquired by an associated incorporated company that was established by an investor consortium. The business purpose of the holding is the control and further development of the competitive business and the control of the Berlin Water Works. The legal form of the Berlin Water Works as an incorporation under public law has remained unchanged, but the competitive businesses were spun off and were transferred into the Berlinwasser Holding Aktiengesellschaft [11].

The responsibility for water pollution control and the management of surface waters in most of the German Federal States is distributed over several levels. In the larger area states these are:

- the superior water authority (as a rule the Ministry of the Environment) with the responsibility for strategic decisions.
- the upper, higher or middle water authority which, as a rule, is assigned to the district committees or regional governments and is responsible for the regional water management planning.
- the lower water authority (cities, towns, urban and rural districts as well as water management offices) with monitoring, technical advice and executive functions.

The Federal State Working Group Water (LAWA), which was established for the harmonization of Federal State water laws, is formed from the superior water authorities. The Federal States have also formed working groups for the co-ordination in the management of river basins [10].

The municipal incorporations and municipal public utilities are typical in the German model for the operation of infrastructure systems for water supply, in the same way the inter-municipal agencies which were established specifically for these tasks. The German model functions essentially without formal, external regulation of the water prices, tariffs or returns on investment. As no private enterprise profit motive is present, only cost covering prices and public charges for the municipal water services are charged. The liberalization of the water supply in Germany remains rather halfhearted, and even in the case where the legal form of the water supply firms is transmitted from public to private law, the municipalities keep a substantial influence on the strategic decisions by holding at least a 50.1% majority in the new firms under private law, a construction which is summarized under the term “public-private partnership”.

#### **4. Effects on competition**

The success of French water companies suggests that the clear separation of (public) infrastructure ownership and (private) operation of the water supply network encourages international competitiveness, in particular if the companies have a long experience with the practise of franchise bidding. In France private water supply companies were established already in the 19<sup>th</sup> century: in 1853 the Société Générale des Eaux and in 1880 the Lyonnaise des Eaux. In 1933 the third largest group, the Société d’Amenagement Urbain et Rural (SAUR) was founded [2]. These business groups and their successors today have the largest shares of the market in international business, which is based on the fact that under their umbrella all components for complex water management projects (plant manufacture, engineering, surface and subsurface civil engineering, development departments) can be found. They are, in essence international, competitively, vertically integrated multinational enterprises.

In Germany, privatisation of the water supply is neither linked with direct competition between municipal institutions for the market nor with an obligatory yardstick competition. The water supply companies are in a “quasi competition”, as three out of four companies raise public charges in accordance with the Municipal Charges Law; these must be approved by local governments under the supervision of the federal states. Here, attention is to be paid to the principles of cost-covering and equivalence in accordance with charges law, whose consideration in the form of price-performance comparisons can be examined by the municipal supervisory authorities. The remaining quarter of the providers raises payments under private law and is subordinate to the anti-trust control of abusive practices. The anti-trust price control is oriented to the comparative market concepts and accepts price differences between providers on the strength of clearly defined criteria only [12]. Performance comparisons between the various bidders are undertaken by the municipal operators themselves by voluntary benchmarking [13]. The water supply is still organized as a regional monopoly, be it public, private or semi-private, but the unclear separation of public and private responsibilities seems to be an obstacle for success on international markets. In the German water supply the public-law forms of enterprise dominate: In 2003, 30% of the water supply companies in Germany were managed as municipal enterprise or public enterprise, 15% as semi-autonomous municipal agency, 16% as inter-municipal agency, and 6% as water and soil management associations. 29% were arrangements under



Public Private Partnership and only 3.5 % were other arrangements under private law, which in fact can be regarded as material privatization [14].

Water management competence in Germany is clearly located at the municipal level, which admittedly restricts international competitiveness. In contrast, French communes, considerably smaller than their German counterparts, are not in a position to manage the supply of drinking water supply themselves for reasons of a lack of specialist personnel and specialist knowledge [2]. An important advantage of the structures in the German water supply is that the strong communal anchoring of the German providers ensures a high degree of political involvement. With this the precautionary orientation of the management of surface waters is placed on a solid basis. This system enjoys strong acceptance amongst the population. The high level and the efficiency in the technical management are guaranteed through the close co-operation between water supply companies, industry, government agencies as well as through the activities of technical-scientific associations which set the rules. Due to the strong functional and organizational fragmentation, the influence of the German water industry on the decision processes in the European Union is, however, rather small. Through the strong division of organizational competence (water supply and wastewater disposal companies, construction firms, plant constructors, component suppliers, consulting firms, engineer offices, water laboratories and research institutes) the integrated appearance on the international market is missing in the German water industry. This is the main reason why the steadily growing market segment of the complete turnkey solutions (planning, construction, operation, maintenance, invoicing and customer service), where above all, enterprises from France and Great Britain dominate, cannot be filled by German competitors [15].

## 5. Conclusion

The international markets for the operation of water supply systems and complete solutions are dominated by French and British companies. The sole exception was briefly the German RWE which, however, was owing to the take over of a British company. Otherwise the typical German plant constructor either does not achieve the critical size for a global player or he lacks the necessary references as operator of water supply systems. On the other side, the water supply and wastewater disposal operators lack the financial power in order to compete with the world market leaders. In order also to be present on the market for complete solutions, a large competitive backlog compared with foreign water companies would have to be offset. For this the current, strong municipal anchoring of the water industry in Germany would have to be relaxed in favour of the build up of vertically integrated water multinationals, which can be competitive on international markets. An adjustment of the market and concentration in the German water industry would be the required prerequisite for such an internationalization, which bears the danger that the structures of German water supply, proven with regard to security of supply and drinking water quality, will have to be sacrificed for this competition with its uncertain outcome.

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