Thematic Week 5: Water Services for Supply and Sanitation

Main Track 1: Regulatory and Institutional Framework

Title of the paper: The Portuguese experience on the regulation of the water services

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Abstract:

The main objectives of this paper are to provide an overview of the Portuguese Regulator's (IRAR) main strategic guidelines and its experience in those last five years. It will also be described the outcome of a project carried out, in association with LNEC, aimed at defining the performance indicators (PI) systems to be used as basis for comparison of the operators' performance. Three groups of PI were defined, related to: 1) protection of the user interests; 2) sustainability of the operator; and 3) environmental sustainability. Twenty PI have been set for both services: water supply and wastewater. These PI systems are a fundamental tool for IRAR to implement the quality of service regulation, as an essential component of its regulatory model. The quality of service regulation frames the operators performance as far as the quality of service provided to users is concerned and shall not be dissociated from the economic regulation. At present, the consolidation of regulation is crucial envisaging the enhancement of the current quality of service to the users. IRAR aims at having a leverage effect in the transition of the country from the current stage of infrastructural investment in new assets to a new stage of stability and high quality of service delivery.

Keywords: Regulation; performance indicators; benchmarking; water supply; wastewater.

1. Introduction

The consolidation of a clear and effective regulatory model for the public water supply and urban wastewater services to the population is one of the current priorities of the Portuguese Institute for the Regulation of Water and Solid Wastes (IRAR - Instituto Regulador de Águas e Resíduos). This paper aims to explain the Institute's main strategic guidelines, as well as the approach adopted for the quality of service assessment.

According to IRAR's bylaws legislation, its scope covers water supply and wastewater (and also solid waste) services. Such activities are a structural part of public service, being vital to the general welfare, public health and overall safety of the population, as well as to the economic activities and the environment protection.

Therefore, it deals with natural monopolies, either at a local or regional level, in particular as far as public water supply and urban wastewater treatment and disposal are concerned; such a feature is probably more evident here than in any other public service markets. Natural monopolies occur whenever the cost structure is characterized by the production average marginal costs reduction as the productive system develops, due to the existence of scale economies. In such cases, the whole production cost for a given demand decreases whenever there is a single service supplier.

Constraints to competition exist at a natural monopolist market. In particular, natural barriers to the entry into the market of new operators arise, independently of the level of privatization. Naturally, such a fact does not induce a continuous incentive to increased efficiency.

Such services allow for scale economies, as the investment and production unit costs tend to decrease as far as demand increases, to a given extent. On the other hand, there are also significant economies range, where the production unit costs are likely to decrease as far as similar activities are integrated (e.g., whenever managing together the water supply and the wastewater services), due to the synergies in human resources, equipment and facilities management.

Such activities are also characterized by high value assets, representing an intensive capital sector. Additionally, these are assets built up for a life period of many decades and depreciation periods, designed for peak situations and generating idle capabilities which are not used for long periods. The infrastructures show a high degree of immobilization, as they are intended for a specific purpose for which their transaction is difficult. Finally, this market shows a strong correlation between the asset values and the revenues generated and low demand-price elasticity, as they are essential services.

Such features contribute to the limitation of competition among the sector. In practice, only the existence of a single operator for a given geographic area is feasible. This originates a monopoly, as in such a context the user cannot choose either an operator or the most convenient price-quality ratio.

2. The need for regulation at the sector

When a public service is a natural monopoly, the State, through its central administration, local administration or a public undertaking, may assume its management and operation, beyond the ownership, the objective being to assure the public and consumer satisfaction, without taking advantage of its own monopolist condition, requiring the State to accept its role.

If this is not the case, due to a State's option or to the management and operation of services being assured by private entities, the natural monopoly markets require a regulation scheme that

compensates the non-existence of self-regulation which is a feature of the competitive markets. Without regulation, the risk of prevalence of managing bodies over the users increases. In such a case, the former tends to take benefit from either their dominant position or the market power, and the users will most probably get less quality services at higher prices.

Regulation is a then a tool that aims at reproducing, in a natural monopoly market, the results naturally expected in a competitive market. Regulation creates a kind of "virtual competition market" and leads the operator to act according to the public interest without jeopardising its feasibility. It appears as a State's modern tool in a vital economic activity sector, aiming at its good operation and protection of the public interest. With this aim, IRAR started its activity in September 1999.

3. The purpose of regulation by IRAR

Regulation should mainly aim at protecting the user interests, by promoting the quality of the service provided by the operators and assuring the balance of the ruling tariffs, as based on the essentiality, indispensability, equity, feasibility and cost-effectiveness principles, and associated to the quality of service.

It must nevertheless be carried out allowing for the safeguard of the economical feasibility and the legitimate interests of the operators, by assuring a proper remuneration of invested capital (creation of the shareholder value), in spite of their statute – either public or private, municipal or multi-municipal - and also by taking into account the safeguard of the economic sector through both the consolidation of the industry and the natural resources preservation.

4. The activity scope of IRAR

IRAR's duties, according to its present ruling law, are limited to the multi-municipal and municipal concessions for public water supply, urban wastewater and solid wastes management. The local administration bodies in charge of the systems direct management are not liable to IRAR, except as far as monitoring of water quality for human consumption is concerned. From the assessment of its duties resulting from its current ruling – the revision of which should be shortly carried out - IRAR is mainly empowered to "proposing, issuing recommending, pronouncing itself, requesting information, dissemination, promoting assessment, calling attention, examining, cooperating, assessing, auditing, informing and promoting" actions.

Without prejudice to its duty as an "influence magisterial" through a constructive interaction with the remaining implicated actors, IRAR must use its capabilities as well as allowed by law "issuing binding instructions to settle detected irregularities". Its action may also be strengthened by using the capability to request information to the operators, to its validation and to disclose the levels of service and comparative summaries. This enables IRAR to employ both an indirect tool to promote merit by disclosing real cases that may be considered as quality references, and a penalty tool that calls the attention of the community to the occurrence of abnormal situations.

IRAR has also been appointed as competent authority for the assessment of drinking water quality, in complement to its other regulatory roles.

5. The regulatory model of IRAR

The regulatory model for the sector in Portugal is giving its first steps. It is IRAR's priority to consolidate a clear and effective regulation policy, taking into account the regulation practice in other fields in Portugal and internationally. Such is vital for every agent at this sector, mainly the

operators, so that they know in advance the regulation model rules and may safely decide upon their attitude.

IRAR's strategy follows two major action plans, the first being at the structural regulation level of the sector, and the second at the operator's level.

Structural regulation of the sector

The structural regulation is intended to contribute to:
(i) better organization of the sector;
(ii) legislation update and clarification of functional rules;
(iii) control of new operators entering the market;
(iv) operator's auditing; and
(v) creation of instruments to support the operators.

This type of regulation aims for the proper level of operator's horizontal aggregation by geographic units and type of service (markets), by creating better competitive conditions and allowing for a more effective regulation. It also searches for the proper level of operator's vertical aggregation, at present frequently split into retail and distribution entities.

Regulation of the operators performance

IRAR's strategy also includes economic and quality of service regulation, in order to promote adequate performance of the operators.

The economic regulation should be understood as a major part of the operator's performance regulation, as it is known that monopoly prices tend to be higher than the prices resulting from competitive markets. Accomplishment of lower prices which allow for both the economic and financial feasibility of the operators – the fairest situation for users – requires a strong action by the regulatory body.

The economic regulation includes also the evaluation of the operator's investments, as they act directly on the social welfare. User interests are better assured through a suitable investment policy, which is essential to ensure both the continuity of the long-term service and the short, medium and long-term maintenance of the levels of service.

In association to the economic regulation, the quality of service regulation is an effective way of promoting an adequate balance between price and quality of the service provided to the users. This model is complemented by using tools from the operator's monitoring performance. The results thereof will be validated by the regulatory body using assessment tools, and further compared with the results of similar operators at different geographic areas (benchmarking), adopting an educational and added value attitude.

For that purpose, the regulatory body must obtain from the operators the information needed to calculate performance indicators previously set and, upon validation, to carry out the benchmarking based on the operator's self historical record, in order to know their own management evolution overtime, and to compare with other similar operators, aiming to settle references which enable the setting up of new efficiency targets in a realistic way.

The results of such a comparison will be publicly explained, as this procedure is a user's fundamental right. On the other hand, operators do not wish to be poorly graded and public visibility of their performance promotes efficiency. The purpose is also to consolidate a true information culture, concise, credible and easily understood.

An efficient regulation of natural monopolies recommends the joint application of both sector's structural regulation and performance regulation. This is why operator's regulation must incorporate the following major issues: structural regulation of the sector, operators' economical regulation, and operator's quality of service regulation, naturally completed by benchmarking and public dissemination of the results.

At the water supply, wastewater treatment and disposal sectors – once stated that they are quite static, due to the slow changes on the market conditions and technologies (less perceptible in the current domestic context, still unstable, but tending to develop towards consolidation) - it is foreseeable that the most suitable will be the prevalence of the regulation of the operator's performance over the structural regulation of the sector. In this case, the role of regulation would be, above all, to facilitate the performance regulation.

On the contrary, at other service sectors with a more dynamic technology, prevalence of the sector's structural regulation over the performance regulation might be advisable.

6. Assessment of the operators performance

As far as the quality of the operator's service to be assessed by IRAR is concerned, and having in mind the complexity of the matter, it shall be essential to use performance indicators, which are a measure of the operator's effectiveness and efficiency related to specific issues of the activity developed or to the system performance. The indicators translate the performance levels actually obtained and make clear and transparent the comparison between the management objectives and the obtained results, by making easier a situation that would be quite complex otherwise.

With this objective in view, IRAR developed, in association with the National Laboratory of Civil Engineering (LNEC), the following three groups of performance indicators:

a) Protection of the user interests: the purpose being to assess in which degree the user interests are protected, as far as the service accessibility and the service quality are concerned.

b) Sustainability of the operator: the purpose being to assess in which degree the technical and economical sustainability of the operator, as well as its legitimate interests, are protected, under the economic and financial, infrastructural, operational and human resources' points of view.

c) Environmental sustainability: the purpose being to assess in which degree the environmental aspects associated with the operator's activities are being considered.

Twenty performance indicators have been set for each type of service. These are currently being analysed in an extended way. In this way IRAR shall further own a fundamental tool to materialize the regulation of the quality of service, an essential component of the regulatory model.

Performance indicators for water supply services regulation

Protection of the user interests

User service accessibility

AA 01 - Service coverage (%)

AA 02 - Average water charges (€/m3)

Quality of service supplied to users

AA 03 - Service interruptions (nr./ delivery point or /1000 serviced connection)

AA 04 - Water tests performed (%)

AA 05 - Quality of supplied water (%)

AA 06 - Response to written complaints (%)

Sustainability of the operator

Operator's economical and financial sustainability
AA 07 - Operating cost coverage ratio (-)
AA 08 - Unit running costs (€/m3)
AA 09 - Debt equity ratio (-)
AA 10 - Non-revenue water (%)
Operator's infrastructural sustainability
AA 11 - Fulfilment of the water intake licensing (%)
AA 12 - Treatment utilisation (%)
AA 13 - Transmission and distribution storage capacity (days)
AA 14 - Mains rehabilitation (%)
AA 15 - Service connection rehabilitation (%)
Operator's operational sustainability
AA 16 - Mains failures (nr./100 km)
Operator's human resources sustainability
AA 17 - Personnel (nr./1000 service connection or / m3)

Environmental sustainability
AA 18 - Inefficiency of use of water resources (%)
AA 19 - Standardised energy consumption (kWh/ m3/100 m)
AA 20 - Disposal of sludge from the water treatment (%)

Performance indicators for urban wastewater services regulation

Protection of the user interests
User service accessibility
AR 01 - Service coverage (%)
AR 02 - Average water charges (€/103)
Quality of service supplied to users
AR 03 – Flooding occurrence (nr/100 km of sewers or m2 /100 km of sewers)
AR 04 – Response to written complaints (%)

Sustainability of the operator
Operator's economical and financial sustainability
AR 05 - Operating cost coverage ratio (-)
AR 06 - Unit running costs (€/103)
AR 07 – Debt equity ratio (-)
Operator's infrastructural sustainability
AR 08 - Treatment utilisation (%)
AR 09 - Treatment of collected wastewater (%)
AR 10 - Wastewater pumping capacity (%)
AR 11 - Sewer rehabilitation (%)
AR 12 - Service connection rehabilitation (%)
Operator's operational sustainability
AR 13 - Sewer blockages (nr./100 km of sewers)
AR 14 – Pump failures (hours/pump)
AR 15 - Sewer collapses (nr./100 km of sewers)
Operator's human resources sustainability
AR 16 – Personnel (nr./100 km of sewers)

Environmental sustainability
AR 17 - Wastewater tests performed (%)
AR 18 - Fulfilment of the wastewater discharge parameters (%)
AR 19 – Energy resources efficiency use (kWh/ m3/ m)

AR 20 – Sludge disposal (%)

In addition, the use of such performance assessment tools enables comparisons of the results between similar operators (benchmarking); such results will be reported and made public on an yearly basis, as above mentioned, as this encourages operators to provide an improved service as they aim to achieve an advantageous position, and at the same time to fulfil a fundamental right of the users.

A reference document has been edited by IRAR and LNEC (BAPTISTA, J.M. et al, 2004), as well as additional technical documents (ALEGRE, H. e al, 2000; MATOS, M.R. et al, 2003) which are the Portuguese versions of the International Water Association manuals of best practice on performance indicators for water supply and wastewater services. These documents contain clear procedures for the implementation of the assessment system, particularly on the definition of the data to be supplied by the operators, on the data validation and auditing by IRAR, on the data processing, and on results interpretation anchored on explanatory factors.

An Extranet application for easier data input by the operators has been developed and is now available. A forum (Extranet application) is being used to answer to "frequently asked questions" and to promote discussions among operators (www.irar.pt).

7. Conclusion

In summary, the consolidation of regulation is urgent and crucial at the current state of development of public water supply and urban wastewater treatment and disposal services. It envisages a well-balanced growth of these sectors in Portugal, and will assist in the transition from the current stage of infrastructural investments in new assets to a new stage we all aim to be characterized by stability and high quality of services delivery.

It is our belief that a clear gain may result from regulation for the services users, for the sector in general, and for the country at large.

8. References

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