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INDICADORES DE QUALIDADE DO SERVIÇO DA ERSAR – CASO PRÁTICO DE UM MUNICÍPIO
ERSAR SERVICE QUALITY INDICATORS – PRACTICAL CASE OF A MUNICIPALITY
INDICADORES DE CALIDADE SEVICIO ERSAR – CASO PRÁTICO DE UN MUNICÍPIO

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RESUMO

Introdução: Os serviços de resíduos são fundamentais nas sociedades modernas, pois contribuem significativamente para o desenvolvimento social e económico do país. Portanto, devem obedecer a um conjunto de princípios, de entre os quais a universalidade do acesso, continuidade e qualidade de serviço e eficiência e equidade de preços, constituindo-se em importante fator de equilíbrio social.

Do ponto de vista da regulação e avaliação da qualidade dos serviços públicos prestados aos consumidores, a Autoridade de Regulação de Serviços de Água e Resíduos (ERSAR) desempenha um papel de liderança.

Objetivos: Analisar os indicadores de qualidade de serviço (IQS) de um município de médio porte para o período de 2011 a 2016, que permitam avaliar, em termos técnicos, ambientais e económicos, um sistema municipal de gestão de resíduos sólidos.

Métodos: A avaliação dos serviços de gestão de resíduos sólidos urbanos (RSU) é realizada por meio de três grupos de indicadores de qualidade de serviço (indicadores de desempenho): indicadores que refletem a proteção dos interesses dos consumidores; indicadores que refletem a sustentabilidade da gestão de serviços e, por fim, indicadores que traduzem a sustentabilidade ambiental.

Resultados: Os resultados obtidos nos indicadores de qualidade de serviço para a avaliação dos objetivos do Plano Estratégico Português para Gestão de RSU (PERSU 2020) mostram que a cidade ainda tem que fazer um esforço para atingir os objetivos definidos para o setor até 2020.

Conclusões: No geral, a análise mostra que o sistema apresenta principalmente níveis médios e insatisfatórios de qualidade de serviço.

Palavras-chave: Gestão Municipal de Resíduos Sólidos, ERSAR, Indicadores de Qualidade de Serviço.

ABSTRACT

Introduction: Waste services are fundamental in modern societies as they contribute significantly to the social and economic development of the country. Therefore, they must comply with a set of principles, among which are the universality of access, continuity and quality of service and price efficiency and equity, constituting an important factor of social balance.

From the point of view of regulation and evaluation of the quality of public services provided to users, The Water and Waste Services Regulation Authority (ERSAR) plays a leading role.

Objectives: To analyze the service quality indicators (SQI) of a medium-sized city council for the period 2011 to 2016, which allow to evaluate in a technical, environmental and economic terms an municipal solid waste management system.

Methods: The evaluation of municipal solid waste (MSW) management services is carried out through three groups of quality of service quality indicators (performance indicators): indicators that reflect the protection of user interests; indicators that reflect the sustainability of service management and, finally, indicators that translate environmental sustainability.

Results: The results obtained in the service quality indicators for the evaluation of the goals of the Portuguese Strategic Plan for MSW Management (PERSU 2020) show that the city has yet to make an effort to meet the goals defined for the sector by 2020. **Conclusions:** Overall, the analysis shows that the system presents mainly levels medium and unsatisfactory quality of service.

Keywords: Municipal Solid Waste Management, ERSAR, Service Quality Indicators.

RESUMEN

Introducción: Los servicios de residuos son fundamentales en las sociedades modernas, pues contribuyen significativamente al desarrollo social y económico del país. Por lo tanto, deben obedecer a un conjunto de principios, entre los cuales la universalidad del acceso, continuidad y calidad de servicio y eficiencia y equidad de precios, constituyéndose en un importante factor de equilibrio social.

Desde el punto de vista de la regulación y evaluación de la calidad de los servicios públicos prestados a los consumidores, la Autoridad de regulación de los servicios de agua y de desechos (ERSAR) desempeña un papel de liderazgo.

Objetivos: Analizar los indicadores de calidad de servicio (IQS) de un municipio de mediano porte para el período de 2011 a 2016, que permitan evaluar, en términos técnicos, ambientales y económicos, un sistema municipal de gestión de residuos sólidos.

Métodos: La evaluación de los servicios de gestión de residuos sólidos urbanos (RSU) se realiza a través de tres grupos de indicadores de calidad de servicio (indicadores de desempeño): indicadores que reflejan la protección de los intereses de los consumidores; indicadores que reflejan la sostenibilidad de la gestión de servicios y, por último, indicadores que reflejan la sostenibilidad ambiental.

Resultados: Los resultados obtenidos en la calidad de los indicadores de servicio para la evaluación de los objetivos del Plan Estratégico para la Gestión de RSU portuguesa (PERSU 2020) muestran que la ciudad todavía tiene que hacer un esfuerzo para alcanzar los objetivos fijados para el sector en 2020.

Conclusiones: En general, el análisis muestra que el sistema presenta principalmente niveles medios e insatisfactorios de calidad de servicio.

Palabras clave: Gestión Municipal de Residuos Sólidos, ERSAR, Indicadores de Calidad de Servicio.

INTRODUCTION

In the past, "household wastes" practically were not a problem. Almost all of the materials used contained components of animal or plant origin that, once returned to earth, were naturally decomposed into their elemental constituents, re-integrating a new life cycle (Levis & Cabeças, 2006).

Throughout the twentieth century, all this scenario has changed, with the appearance and production of new materials resulting from technological development, and with society orientated by consumerist values, where the choice of products has become increasingly varied (Levis & Cabeças, 2006).

The management of municipal waste, from its production to its final destination, presupposes the systematic and in-depth knowledge of its characteristics, both quantitative and qualitative (Levis & Cabeças, 2006).

Solid waste management can be a challenge, taking into account:

- Population expansion and economic development;
- Risk to human health and the environment;
- Contaminating water, attracting insects and rodents, and increasing flooding due to blocked drainage canals or gullies;
- Safety hazards from fires or explosions;
- Increases GHG emissions, which contribute to climate changes.

Adequate waste management contributes to the preservation of natural resources, both at the level of prevention and through recycling and valorization, as well as other specific legal instruments, reflecting the importance of this sector, considered in its aspects, as environmental and as sector of economic activity and the challenges facing policy makers and all actors in the chain of management, from the Public Administration, through economic operators to citizens, in general, as producers of waste and indispensable agents of the continuation of these policies (APA, 2017).

In 2015, 4,765 million tonnes of MW were produced in Portugal, 1% more than in 2014, reversing the trend of decrease observed in previous years (close to those of 2012). For 2015, in Continental Portugal, a capitation of 459 kg/person.year was below the European average (474 kg/person.year). Including the amounts of the Autonomous Regions this value would increase to 460 kg/person.year (APA, Resíduos Urbanos Relatório Anual 2015, 2016).

This increase will be related to an improvement of the economic situation in Portugal, which seems to indicate that the objective of decoupling waste production from economic growth is not being achieved. On the other hand, it is also noted that measures to prevent waste production are not having the expected effectiveness (APA, 2016).

Regulation of the waste sector in Portugal

Regulation of the waste sector is key to management, environment or quality of service, in order to ensure acceptable conditions for users, the State and the environment. In addition, regulation becomes the sole verification by the State of investment in the construction of landfills, incineration plants and other equipment remunerated with state money and the approved by Decree-Law nº 379/93, of 5 November (Silva, Ferreira, & Brás, 2015).

In recent years, the sector of urban waste services has undergone major developments, setting ambitious targets for the treatment of waste produced. This development has resulted in increasingly demanding collection and treatment of waste, economically and in terms of the demand for an efficient service. Therefore, it is necessary to evaluate the performance of the Management Entities (EG), a task that has been assumed by The Water and Waste Services Regulation Authority (ERSAR), being the service quality indicators (SQI) a good quality assessment instrument, either for the Regulation Authority or for the management entities (ERSAR, 2017).

ERSAR is responsible for developing an assessment of the quality of service levels of all water and waste management entities, but also collecting, validating, processing and disseminating this information and preparing and publicizing comparative summaries in an annual report (ERSAR, 2017).

The experience acquired during the application of the 1st generation of the evaluation system, the need to prepare the 2nd generation for application to all management entities and the publication of the ISO 24500 standards related to performance evaluation of water services, important contributions to the improvement and consolidation of the system. The system of indicators is organized according

to these standards which, although they cover only water supply and wastewater services, can also be applied to municipal waste management services (Cardoso, 2014).

Following the publication of the new strategic plans approved for the water sector (PENSAAR 2020) and for the waste sector (PERSU 2020), ERSAR carried out a deep reflection on the review of the quality of service evaluation system, to adapt the same to these plans.

1. METHODS

In order to have instruments to assess the service quality vis-a-vis the previously mentioned regulation goals three groups of service quality indicators were defined:

- Indicators that reflect the adequacy of the interface to users: this group of indicators aims to assess whether the service provided in the year under assessment was appropriate, particularly in terms of greater or lesser physical access and affordability to the service and the quality with which it is provided; this group is further subdivided into the two aspects mentioned: accessibility of the service and quality of the service provided.
- Indicators that reflect the sustainability of service management: this group of indicators aims to assess whether basic measures are being taken to ensure that the service provided is sustainable; this group is further subdivided into the aspects of economic sustainability of the service, infrastructural sustainability of the service and physical productivity of human resources.
- Indicators that reflect the environmental sustainability: this group of indicators aims to assess the level of protection of environmental aspects associated with the operator's activities; this group is further subdivided into efficiency aspects in the use of environmental resources and the prevention of pollution (ERSAR, 2017).

Sixteen indicators were defined to assess the quality of the municipal waste management service (listed in Table 1), indicating their scope of application depending on the type of system. The indicators are calculated according to the ERSAR technical guides (ERSAR, 2017b; ERSAR, 2017).

Table 2 shows the Reference values, for each indicator, for retail systems.

Table 1. Municipal waste management service quality indicators

		MUNICIPAL WASTE MANAGEMENT SERVICE QUALITY INDICATORS			Bulk	Retail		
Protection of user interests	Accessibility of the service to users							
		RU01 – Service coverage (%)			•	•		
		RU02 – Selective collection coverage (%)			•	•		
		RU03 – Affordability of the service (%)			•	•		
		Quality of the service provided						
		RU04 – Washing of containers (-)			•	•		
	RU05 – Response to complaints and suggestions (%)			•	•			
Operator sustainability	Economic sustainability							
		RU06 – Cost recovery ratio (%)			•	•		
		Infrastructural sustainability						
		2nd generation		3th generation				
			Bulk	Retail		Bulk	Retail	
		RU07 – Packaging waste recycling (%)	•	•	RU07- Recycling of selective waste collection (%)	•	•	
		RU08 – Organic waste recovery (%)	•	n.a.	RU08 - recycling of undifferentiated waste (%)	•	•	
		RU09 – Incineration (%)	•	n.a.	RU09 - Waste recovery by TMB (%)	•	n.a.	
		RU10 – Landfill use (%)			•	n.a.		
		RU11 – Renewal of waste collection vehicles (km/vehicle)			•	•		
	RU12 – Efficient use of waste collection vehicles [kg/(m ³ · year)]			•	•			

MUNICIPAL WASTE MANAGEMENT SERVICE QUALITY INDICATORS		Bulk	Retail
Physical productivity of human resources			
RU13 – Adequacy of human resources (No./1000 t)		•	•
Efficiency in the use of environmental resources			
Environmental sustainability	RU14 – Use of energy resources	(kWh/t)	•
		(tep/1000t)	n.a.
Efficiency in the prevention of pollution			
RU15 – Quality of the leachate after treatment (%)		•	n.a.
RU16 – Greenhouse gas emissions (kg CO ₂ /t)		•	•
n.a. – not applicable			

Table 2 -Reference values, for each indicator, for retail systems

MUNICIPAL WASTE MANAGEMENT SERVICE QUALITY INDICATORS		Reference values for retail system (for predominantly rural intervention areas)		
Accessibility of the service to users				
Protection of user interests	RU01 – Service coverage (%)	Good service quality [80; 100] Average service quality [70; 80] Unsatisfactory service quality [0; 70[
	RU02 – Selective collection coverage (%)	Good service quality [70; 100] Average service quality [50; 70] Unsatisfactory service quality [0; 50[
	RU03 – Affordability of the service (%)	Good service quality [0; 0.50] Average service quality [0.50; 1.00] Unsatisfactory service quality [1.00; +∞[
	Quality of the service provided			
	RU04 – Washing of containers (-)	Good service quality [6.0; 24.0] Average service quality [4.0; 6.0] or [24.0; 28.0] Unsatisfactory service quality [0.0; 4.0] or [30.0; +∞ [
	RU05 – Response to complaints and suggestions (%)	Good service quality 100 Average service quality [85; 100] Unsatisfactory service quality [0; 85[
Economic sustainability				
RU06 – Cost recovery ratio (%)	Good service quality [100; 110] Average service quality [90; 100] or [110.0; 120.0] Unsatisfactory service quality [0; 90] or [120.0; +∞ [
Infrastructural sustainability				
2nd generation		3th generation		
RU07 – Packaging waste recycling (%)	Good service quality [95; +∞] Average service quality [90; 95] Unsatisfactory service quality [0; 90]	RU07- Recycling of selective waste collection (%)	Good service quality [100; +∞] Average service quality [90;100] Unsatisfactory service quality [0; 90[
RU08 – Organic waste recovery (%)	n.a.	RU08 - recycling of undifferentiated waste (%)	Good service quality [7; +∞] Average service quality [5;7] Unsatisfactory service quality [0; 5[
RU09 – Incineration (%)	n.a.	RU09 - Waste recovery by TMB (%)	n.a.	
RU10 – Landfill use (%)	Good service quality [24; +∞] Average service quality [18;7] Unsatisfactory service quality [0; 18[
RU11 – Renewal of waste collection vehicles (km/vehicle)	Good service quality [0; 250 000] Average service quality [250 000; 350 000 [] Unsatisfactory service quality [350 000; +∞ [
RU12 – Efficient use of waste collection vehicles [kg/(m ³ · year)	Good service quality [400; 500] Average service quality [300; 400] and [500; 550[

MUNICIPAL WASTE MANAGEMENT SERVICE QUALITY INDICATORS		Reference values for retail system (for predominantly rural intervention areas)
		Unsatisfactory service quality]0; 350[and]550; +∞[
Physical productivity of human resources		
RU13 – Adequacy of human resources (No./1000 t)		Good service quality]1.0; 3.0[Average service quality]0.5; 1.0[and]3.0; 3.5[Unsatisfactory service quality]0.0; 0.5[and]3.5; +∞[
Efficiency in the use of environmental resources		
RU14 – Use of energy resources (tep/1000t)		Good service quality]0; 6,5[Average service quality]6,5; 7,5[Unsatisfactory service quality]7,5; +∞ [
Efficiency in the prevention of pollution		
RU15 – Quality of the leachate after treatment (%)		n.a.
RU16 – Greenhouse gas emissions (kg CO ₂ /t)		Good quality service]0; 15[Average quality service]15; 18[Unsatisfactory quality service]18; +∞ [
n.a. – not applicable		

2. RESULTS

Table 3 presents the performance indicators for the years 2011 to 2015 and the performance indicators available for 2016, for the medium-sized city council studied. The Municipality has about thirty-six thousand inhabitants and an area about one thousand km².

Table 3 - Values for evaluating service quality indicators in the period 2011 to 2016

		2011	2012	2013	2014	2015	2016
PROTECTION OF USER INTERESTS	Accessibility of the service to users						
	RU01 – Service coverage (%)	93 ●	94 ●	94 ●	90 ●	90 ●	90,4 ●
	RU02 – Selective collection coverage (%)	8 ●	88 ●	97 ●	81 ●	82 ●	b)
	RU03 – Affordability of the service (%)	0.10 ●	0.21 ●	0.17 ●	0.22 ●	0.25 ●	b)
	Quality of the service provided						
	RU04 – Washing of containers (-)	6 ●	4.3 ●	7.2 ●	3.7 ●	4.8 ●	5,6 ●
RU05 – Reply to written complaints and suggestions (%)	94 ●	96 ●	100 ●	95 ●	92 ●	78,6 ●	
OPERATOR SUSTAINABILITY	Economic sustainability						
	RU06 – Cost recovery ratio (%)	w.i.	0.5 ●	0,4 ●	NA	54 ●	w.i.
	Infrastructural sustainability						
	RU07 – Packaging waste recycling (%)	102 ●	94 ●	91 ●	88 ●	115 ●	w.i.
	RU08 – Organic waste recovery (%)	w.i.	w.i.	w.i.	w.i.	w.i.	w.i.
	RU09 – Incineration (%)	w.i.	w.i.	w.i.	w.i.	w.i.	w.i.
	RU10 – Landfill use (%)	w.i.	w.i.	w.i.	w.i.	w.i.	w.i.
	RU11 – Renewal of waste collection vehicles (km/vehicle)	174,406 ●	194,064 ●	218,356 ●	260,870 ●	277,570 ●	w.i.
	RU12 – Efficient use of waste collection vehicles [kg/(m ³ · year)]	322 ●	313 ●	292 ●	308 ●	320 ●	316 ●
	Physical productivity of human resources						
RU13 – Adequacy of human resources (No./1000 t)	NR	3.2 ●	3.1 ●	3.6 ●	3.8 ●	4 ●	
ENVIRONMENTAL SUSTAINABILITY	Efficiency in the use of environmental resources						
	RU14 – Use of energy resources (kWh/t)	5 ●	5 ●	5 ●	5 ●	5,2 ●	5,2 ●
	Efficiency in the prevention of pollution						
	RU15 – Quality of the leachate after treatment (%)	w.i.	w.i.	w.i.	w.i.	w.i.	w.i.
RU16 – Emissions of greenhouse gases (kg CO ₂ /t)	16 ●	15 ●	15 ●	16 ●	16 ●	16 ●	
		<ul style="list-style-type: none"> ● Good quality service ● Average quality service ● Unsatisfactory quality service n.a - not applicable w.i. - without information 					

Based on the analysis of the previous table, which corresponds to the evaluation of the management entity and the Alentejo City Hall, there are indicators for which the evaluation is almost always unsatisfactory during the period considered, such as the profitability of the car park and the laundering containers.

This assessment may be due to the lack of staff to carry out these tasks, which is reflected in several indicators since without sufficient staff in the service can not achieve positive results.

On the other hand, it was verified that the indicators physical accessibility of the service, selective collection, economic accessibility of the service, use of energy resources presented satisfactory evaluation.

In the year 2015 there was improvement in the parameter of packaging waste recycling, which went from an unsatisfactory quality of service to a good quality of service.

CONCLUSIONS

The Urban Waste service sector has been undergoing major developments in recent years. In addition to the individual policies of each Member State, the European Union itself has defined policies that have been translated into ambitious goals in terms of UW treatment targets produced.

The situation of lack of competition and the very requirements to comply with the goals and objectives established in the PERSU2020 create a need to evaluate performance and ERSAR has assumed this task through regulation, first in the sector in "Bulk" and then in the sector in "Retail".

The regulation, through the evaluation of service quality indicators of the waste management systems, allows an up-to-date and accurate knowledge of the state of the services, providing an awareness of what is working satisfactorily and what can still be improved.

In general, it can be concluded that ERSAR has played a key role in promoting the continuous improvement of the quality levels of the waste services provided, however, the Management Entities should continue to make an effort that translates into better transparency, efficiency and effectiveness of management and support the implementation and enforcement of public policies at national and community level.

Regarding the actions of the Municipality, it can be mentioned that there is a concern for good management of the UW, namely in the acquisition of new containers for the disposal of waste.

However, there is still little participation of the population in the separation of waste.

In this work, the service quality indicators were analyzed from 2011 to 2016. It was verified that there are indicators with a satisfactory result, others with unsatisfactory result and indicators with a median result. The indicators of performance with unsatisfactory result are those that require more attention, as is the case of the washing of the containers of the Municipality, as mentioned this evaluation is due to the lack of personnel, that to go about collecting the waste, they cannot do the washes.

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