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Users' Perceptions of Local Public Water and Waste Services: A Case Study for Sustainable Development

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Abstract: Access to safe drinking water is essential to good health, a basic human right, and a component of effective policy for health protection. Improving the quality of local public water and waste services is one of the United Nations Sustainable Development Goals (Goal 6: Clean Water and Sanitation). This study aims to know the degree of satisfaction of domestic users who receive services related to water and waste in municipalities with less than 20,000 inhabitants in the province of Badajoz (Spain). We carry out this research because the perception of municipal services provided by the public administration is usually negative and deficient. The case study PROMEDIO, the consortium formula, is described as a successful partnership to improve the quality of local public water and waste services. For this purpose, a detailed analysis of the different aspects involved in the relationship between the users and the services provided is carried out. The consortium was found to increase citizens' satisfaction with the services provided, given the close relationship between the municipality and the users.

Keywords: sustainable development; public services; water management; waste management; corporate social responsibility; Sustainable Development Goals

Citation: Sanchez-Hernandez, M.I.; Maldonado-Briegas, J.J.; Sanguino, R.; Barroso, A.; Barriuso, M.C. Users' Perceptions of Local Public Water and Waste Services: A Case Study for Sustainable Development. *Energies* **2021**, *14*, 3120. https://doi.org/10.3390/en14113120

Academic Editor: Alexey Mikhaylov

Received: 5 April 2021
Accepted: 24 May 2021
Published: 27 May 2021

1. Introduction

The 2030 Agenda for Sustainable Developments Goals (SDGs) principally encompasses humanity and our planet's challenges, consisting of 17 main goals. One of the SDGs is related to water, specifically SDG6: Clean Water and Sanitation, which is a global challenge and indispensable requirement for sustainable development.

The United Nations (UN) have highlighted that water is at the foundation of sustainable development as it is the common denominator of all global challenges, such as energy, food, health, peace and security, and poverty eradication [1]. Access to safe drinking water is essential to good health, a basic human right, and a component of effective policy for health protection [2]. However, we observe how the degradation of water and other natural resources around the world [3] is endangering present and future social progress and development [4]. Considering the global population increases and the evidence of climate change, societies are gradually more aware of the importance of an efficient management system of water resource [5]. Consequently, innovation in public services is needed [6]. The governing institutions are gaining a better understanding of the decision-making processes related to basic public services and are looking for new business models, or new formulas of the production and provision of alternative services to the traditional ones.

Related to sustainability issues, social responsibility (SR) currently occupies a major and fundamental place in the agenda of organizations, both private and public. In fact, a new field of research is emerging to analyze, understand, and improve the social responsibility of public administrations [7–9]. In general, it can be said that it is increasingly necessary for organizations, and also for public institutions, to be transparent and ethical,

to comply with current legislation, and also to respect and meet the needs of stakeholders. To improve the relationship between the institution and the citizens it serves, SR becomes a strategic option. SR in public administrations is a tool for increasing the possibilities of a better future for citizens through guaranteeing a sustainable environment [10].

Research for the generation and analysis of data related to public services that have to do with water, waste, and their relationship with sustainable local development, could boost territorial progress based on criteria of responsible rebalancing from a triple perspective [11]: social, economic, and environmental. This not only allows the optimization of resources contributing to the sustainable development of the municipalities, but could also encourage new social and economic actions, such as those related to environmental tourism [12,13].

Nowadays, we can consider the contemporary citizen as a key factor contributing to better management of the municipal water system. The passive traditional citizen has become a modern consumer. Consequently, it is necessary a shift away from the traditional citizenship-based model of public services towards a consumerist model based on market-oriented principles [14]. In this new context, public services are provided by the public administration, either directly or through agreements, contracts and other formulas, through consortia, or agreements with private entities [15].

Some of the references on the degree of satisfaction of water service users are related to the differences in the maintenance and operation of water supply systems in rural villages [16]. Furthermore, the perception of residential customers' satisfaction with public water provision was analyzed based on customers' perception of ten selected satisfaction drivers [17]. In addition, we can highlight some case studies to evaluate the effectiveness and efficiency of an evaluation model to measure the customer satisfaction level in a water-supply domain (criteria such as water quality, water quantity, responsibility of the company, etc.) [18].

One of the foci of public administration related to water and waste is user satisfaction. Unfortunately, to meet the expectations of citizens requires prior knowledge of user perception. The current state of the research does not allow for adequate analysis of previous experiences. We carry out this research because the perception of municipal services provided by the public administration is usually negative and deficient, although the causes of this perception are rarely investigated. This research shows a new way of knowing the users' perception through a survey system. To do this, the researchers will carry out a case study of a public organization in water and waste management.

Therefore, our study aims to analyze the degree of satisfaction of users receiving water and waste services in municipalities with less than 20,000 inhabitants in the province of Badajoz (Spain). For this purpose, a detailed analysis of the different aspects involved in the user's relationship with the services provided is proposed. This research assesses the provision of services based on the consortium formula as an example of a partnership between public organizations working together in the provision of local services, but belonging to different levels of government: provincial and local [19]. This is the most common form of collaboration between provincial councils and local corporations in Spain, where the fieldwork was carried out. Specifically, the consortium PROMEDIO was chosen as a case study. This case study would be considered as a good example of a specific hybrid business model under the umbrella of the emerging fourth sector [20]. Later, the consortium for the Management of Environmental Services of the province of Badajoz in Spain is presented for measuring the citizens' satisfaction with the service provided.

The main contributions of this paper are the following: First, the concept of intergovernmental cooperation in the provision of basic/essential services, such as water supply and waste management; it is a vibrant concept that should lead to greater efficiency in the provision of such services. Second, the role of an organization should not only be limited to providing services and managing resources, but decision-making and management should be done in the most accountable, transparent, and sustainable way. Lastly, most of the

citizens feel the need to protect the environment by searching for ways and proposing alternatives for its care and preservation.

This paper is organized as follows: Section 2 provides the theoretical background. Section 3 presents the method and procedure, including the context of the study and the PROMEDIO consortium case study. Section 4 analyzes the results. In Section 5, the discussion, contribution, and future research are presented. Finally, in Section 6, conclusions are provided.

2. Theoretical Background

2.1. The 2030 Agenda for Sustainable Development Goals (SDGs)

The 2030 Agenda for SDGs principally encompasses humanity and our planet's challenges, consisting of 17 main goals and 169 sub-targets [21]. Billions of people worldwide still lack access to safely managed water and sanitation services and basic handwashing facilities at home, which are critical to preventing the spread of COVID-19. Immediate action to improve Water, Sanitation and Hygiene for All (WASH) is critical to prevent infection and contain its spread.

Preliminary estimates from 79 mostly high- and higher-middle income countries in 2019 suggest that, in about one quarter of the countries, less than half of all household wastewater flows were safely treated. In 2018, 60 per cent of 172 countries reported very low, low, and medium-low levels of implementation of integrated water resources management and were unlikely to meet the implementation target by 2030.

In this sense, SDG 6 (Clean Water and Sanitation) seeks to ensure the availability and sustainable management of water and sanitation for all [22]. To achieve this, it considers measures such as universal and equitable access to affordable drinking water by 2030, reducing pollution and waste to improve water quality, minimizing the emission of chemicals, and reducing the percentage of untreated wastewater.

According to the United Nations (UN) in its 2018 Synthesis Report on Sustainable Development Goal 6 on water and sanitation, "social development and economic prosperity depend on the sustainable management of freshwater resources and ecosystems" [23]. Thus, the availability of freshwater in adequate proportions of quality and quantity is fundamental to every aspect of life and sustainable development. The report recognizes that "water resources are integrated into all forms of development, into the maintenance of economic growth in agriculture, industry and energy generation, and into the conservation of healthy ecosystems".

Reversing this reality has become a major international goal. In Spain, most large companies working in this area are doing major efforts to help the achievement of this goal. The Iberdrola group contributes directly to the achievement of Sustainable Development Goal (SDG) 6, clean water and sanitation, working towards a rational and sustainable use of this essential resource and tackling the risks related to its scarcity. Thanks to these efforts, the company is currently one of the utilities with the best water productivity and, by 2030, it has committed to reduce the intensity of water use/production by 50% compared to 2019 [24].

We have developed a case study with the PROMEDIO consortium that was created with the purpose of becoming the managing body of those services of municipal competence related to the environment, both urban and rural. As a special interest, those activities related to the complete water cycle that are in line with SDG6, and trying to improve this goal.

2.2. The Winning Formula for Sustainable Local Governments: The Consortium

Sustainable municipalities are concerned with water and waste treatment and disposal, and water quality [25,26]. Water and waste management is one of the more controversial issues in public utilities policy today, especially for countries such as Spain where there is water stress [27]. Wolff and Palaniappan [28] have criticized that the ideological debate

between the pros and cons of privatizing this service frequently overshadows the finding of a good and efficient solution to water and waste management worldwide.

Although the traditional argument is that private management is more efficient than public management [29], the truth is that there is not clear evidence to support this idea [30]. In fact, it has been recognized that public management systems used to be reasonably well managed, and there are well known good practices highlighted in the academic literature, such as the Dutch water companies [31]. At the local level, we have even observed the re-municipalization of public services in cities such as Berlin or Paris [32], and that also has occurred in some Spanish municipalities in the last years [33]. This pace is growing in cities around the world that are taking these services back into public control [34].

Instead of "public versus private services", a new path has emerged from the fourth sector that is the public–private partnership (PPP) in domestic water and waste management. Different authors, in different contexts, have defended PPPs, such as Al-Jayyousi [35] in the city of Aman in Jordan, Zhong et al. [36] in China, or González-Gómez et al. [33] about the Consortium of Bilbao in Spain.

The consortium is an example of a local vertical and horizontal organization that can be formed by public entities of different levels of government and of different types, whose common objective is to show a direct interest in the provision of a local competitive service. The most general combination has to do with the collaboration between provincial councils and local entities.

Hybrid organizational theory studies how the economic value in business could be complemented with social and environmental values in pursuit of sustainability [37]. Nowadays, there are holistic models of sustainable entrepreneurship, in which the social, environmental, and economic value are mutually supportive [38]. In general terms, we can state that consortia are under the paradigm of hybrid organizing and sustainable business model research [39–41].

From a business model perspective, a consortium could be considered a winning formula because it is socially responsible by taking into account economic, but also social and environmental bottom-lines [11]. A consortium also could be considered as a sustainable alternative for providing services at the municipal level because it takes care about people (such as reducing injuries), planet (such as reducing energy use), and enhance profit (such as lower energy costs) [42].

The consortium implies an economic and organizational benefit for the cases in which the municipalities do not work individually and independently. One of the keys of this organizational model is based on the idea that cooperation multiplies resources, and therefore the advantages between municipalities and local entities. In this case, with regard to the services related to the environment. Water and sewage services serve a natural and geographical monopoly structure, because of the cost of connecting some systems with others, in contrast to sectors such as electricity or telephony. There is, therefore, the need to look for alternatives when planning and scheduling the actions that are carried out, since it is necessary to share resources, from the start-up to their maintenance.

3. Method and Procedure

3.1. Context of the Study

Regarding the quality of services in Spain, Garcia-Rubio et al. [30] have examined the users' satisfaction with tap water quality in 64 Spanish cities, concluding that they perceive a lower quality when the company is from the private sector. Contributing to this line of research, this study was carried out in the province of Badajoz, in the region of Extremadura in Spain, in which the Law of Corporate Social Responsibility of the Autonomous Community of Extremadura was approved ten years ago, whose aim is to promote SR in the territory. In addition, we focus the attention on the environmental side of SR, from the public sphere, since it adds value to the strategies, objectives, and results of the institution.

In Spain, the management of water and waste is entrusted by law to municipalities. Concretely, the Law of Rationalization and Sustainability of the Local Administration, approved by the Government of Spain in 2013, establishes in its articles that all municipalities must provide a series of services among which are the collection of waste, household supply of drinking water, and the sewage system. In addition, in municipalities with less than 20,000 inhabitants, the Provincial Council, or equivalent entity, will coordinate the provision of services related to the collection and treatment of waste, and the supply of drinking water at home and evacuation and sewage treatment.

Al the local level, the concept of eco-efficiency is relevant, since the scope of this work is the management related to limited and/or expensive natural resources (water, energy, etc.). In this framework, organizations must become more efficient in terms of consumption to reduce costs, improve processes (optimizing resources, eliminating inefficiencies, and protecting the environment) and design products (maintaining quality and minimizing consumption) in order to combine economic, ecological, and social objectives [43–46]. We also consider some of the measures that could improve the decision making of the local public administration and generate instruments that determine the degree of satisfaction of users to assess their perception of the quality of services. In our study, we focused on the complete water and waste cycle.

Considering the scope of development of the study, which is limited to the municipalities with less than 20,000 inhabitants of the province of Badajoz, we establish as a reference model for the provision of the aforementioned services a consortium of Municipalities and Communities. The Provincial Council launched this consortium in 2009 to face the challenge of sustainable development, as it is oriented towards the integral management of environmental services of a local nature. It is usual that many issues and processes related to the territory cover a level that transcend the local space. It is essential, therefore, to generate more modern, efficient, and transparent intervention instruments to meet the needs of citizens.

Our research work tries to establish a broad relationship between the territory and sustainability. From this area, value must be produced, betting on competitiveness and also on responsibility. As indicated by Porter and Kramer [47,48] and followed by other authors as well [49–51], if you intend to be competitive, you must be socially responsible. In this way, establishing an SR commitment motivates actions in the company that have the potential to promote positive acceptance of the organization, thereby increasing its competitive position in relation to its industry rivals [52].

At this point, we want to note that equity and environmental care are essential values to achieve sustainable competitiveness and growth. Considering the two mentioned conditions, territory and sustainability, we understand that a management formula based on the consortium can be efficient. Based on its definition, this hybrid business model could be seen a priori as something diffuse. However, we can affirm that there is a consortium when different administrations voluntarily decide to form an organization, with a different legal personality, for the achievement of a general interest, and where its governing bodies are made up by those of the administrations that comprise it.

3.2. The PROMEDIO Consortium

PROMEDIO is a consortium launched in 2005 by the Badajoz County Council (called Diputacion), together with the municipalities and associations of the province aimed at the supra-municipal management of local environmental services (Figure 1). It is mainly responsible for the management of the integral water cycle and waste. The consortium was born at a time when the municipalities of the province of Badajoz had serious difficulties in dealing with waste and water management because of their small size and scarce resources. Considering this situation, the Badajoz Provincial Council decided to launch the consortium, thanks to which all the citizens of the province, wherever they resided, received a professional, efficient, and sustainable service at a fair price. The PROMEDIO consortium was also created to implement a strategic planning in the mid/long-term for

contributing to sustainable development of the province, giving a high-quality response to immediate and future environmental needs.

The basic pillars of its operation are the efficiency of resources and solidarity among municipalities. PROMEDIO is governed by statutes that were approved by the Provincial Government of Badajoz in 2009. It was created with the purpose of becoming the managing body of those services of municipal competence, related to the environment, both urban and rural. As of special interest, those activities related to the complete water cycle and to the cycle of collection, transportation, and treatment of all kinds of waste are considered. The system is based on an inter-municipal model where all municipalities share dustcarts, fuel cost, and staff, and every user pays the same for the service, without considering where they live. The consortium provides its services to 93% of the towns in the area (179 local entities), with a total population of 372,000, which is more than the 50% of the provincial total, on an area—and here is the challenge—of 21,766 km^2.

PROMEDIO serves local entities in three different areas (Figure 1): first, Special Services, including collection of worn out furniture, electrical appliances, and other household items or spent batteries, as well as dumpster washing or removing of blockages in public pipes; second, Municipal Solid Waste (MSW) management, including the daily collection and treatment of organic garbage and weekly collection of used paper; and third, the Integral Water Cycle (IWC) management service, including drinking water supply and the sewage control department.

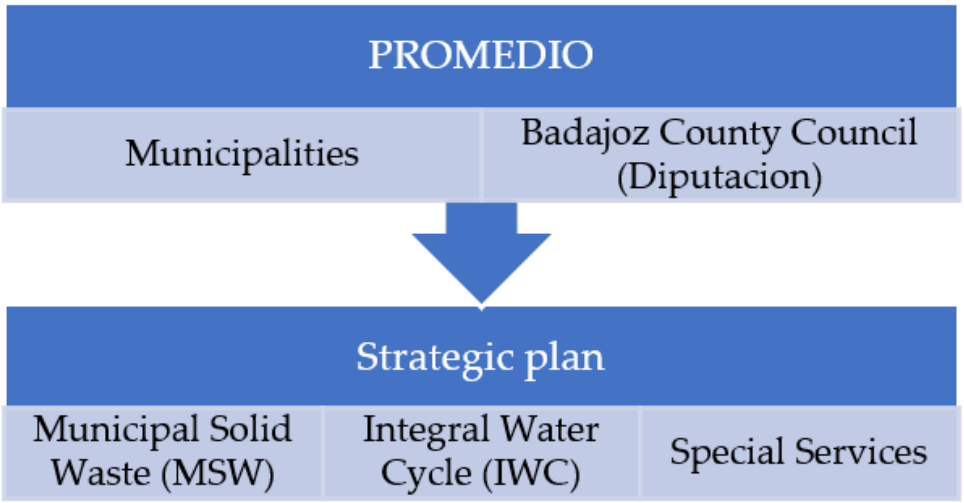

Figure 1. PROMEDIO structure.

The consortium has a periodic service for the associated municipalities regardless of their position in the territory, with minimum costs and the same for all. The benefit of the formula of the consortium services for the municipal coffers is considered as a valid model, responsible and sustainable, since many of the benefits would be unviable individually, due to their high cost, as a consequence of a necessary specialization and technical capacity. One of the strengths added to the model is the participation of the main provincial institution existing in the province. Diputacion provides legal and administrative support, infrastructures and services from different areas, collection management, treasury and intervention, ships and mobile par-for machinery, vehicles, advertising, and communication, etc. All this allows the consortium to offer the highest quality at the lowest cost, and to establish unique rates, thereby confirming the principle of solidarity.

Water, despite its apparent abundance in the region, is a scarce commodity around the world, and that is why it must be preserved and administered. Water and economics are directly related because, among other reasons, it is necessary for all the processes that have to do with consumption and production. This relationship is born not from a patrimonial point of view but from SR.

The water cycle is one of the processes more studied in depth, and often one of the least understood. Frequently, the schemes used for its description only show the part that is seen; that is, the superficial part, forgetting that there is a complete stage that includes certain details that condition the understanding of the whole process and affect the phenomena involved. The integral water cycle includes the supply of drinking water, sanitation, and the purification of wastewater. The starting point begins with the collection and purification of water, to later distribute it for consumption. Finally, the wastewater is collected and purified so that it returns to the river minimizing the environmental damage. The development of human societies, their growth, and industrialization has generated intensive exploitation of ecosystems and important environmental problems. European and state regulations oblige all local entities to manage waste in a fractional and efficient manner. The cost of management by the municipalities can be very high unless there are collaboration formulas that allow such management to be handled optimally. It is necessary to have technical and human teams that allow the development of tasks in a more efficient way.

Finally, the complete cycle of waste in the municipality, according to the consortium itself, ranges from the collection of solid urban waste, adequacy of landfills, accumulation of cardboard, to the removal of utensils, batteries, and electrical and electronic devices.

3.3. Procedure

The applied method has made it possible to evaluate the users' perception of services in relation to the water and waste cycle, based on three fundamental factors: image, perception regarding the relationship between quality and price, and the perception regarding the quality of the service (Figure 2). In order to try to meet the proposed objectives, a descriptive cross-sectional study was chosen. This kind of study makes it possible to approach the meaning of the actions of individuals, using an interpretive methodology and temporal scope, by referring to an analysis of the aspects of interest at a given time.

The development of this study was established in four interrelated phases in order to be able to draw sufficient, truthful, and precise conclusions, which are the ones detailed in Figure 2:

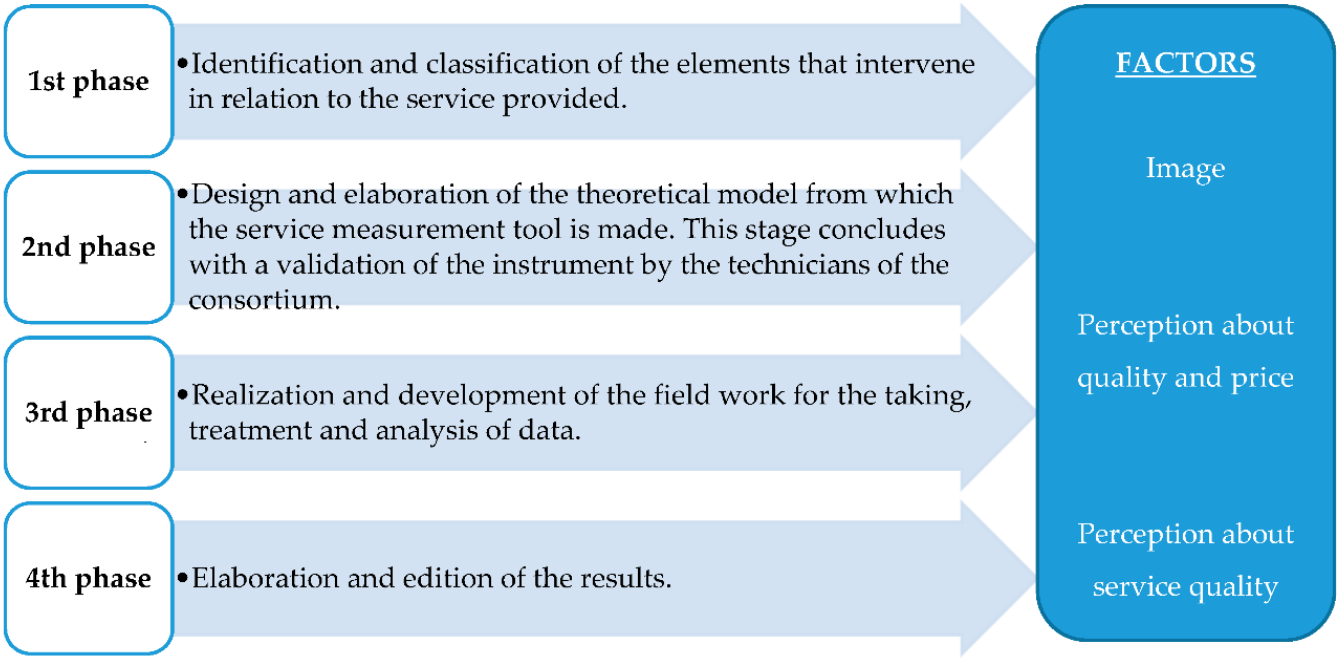

Figure 2. Phases of the study.

The framework for territorial action taken as a reference for the present work has included all the municipalities of the province of Badajoz in which the consortium currently provides its services. A compilation, analysis, and documentary treatment of the existing data was carried out in order to obtain the maximum useful information.

The field work was based on telephone and face-to-face surveys of the population in general. The instrument used was a 53-item questionnaire with simple questions that are easy to understand, and its application oriented to capture sociodemographic data, assessment of the main services, and referrals and incidents. The questionnaire was also submitted to the consortium for validation, to guarantee the validity and representativeness of the factors that were going to be measured. In addition, when conducting the survey, the environment in which the user habitually worked was considered; finally, anonymity of the information received and subsequently processed was guaranteed.

The heterogeneity of the observation units was considered in the selection of the sampling units. The first step to design the sample was the identification and quantification of the target population for the study, since surveying all users was unfeasible for reasons of effort and costs. In this regard, the frame of reference was constructed from the database of town halls where the services under study were provided.

The determination of the sample consisted of the selection of specific units from the total population, which were representative and met certain minimum requirements. These requirements are to be as complete as possible, be up-to-date, not have duplicates, do not include units that do not correspond to the population, contain complementary information that helps the location of the selected sample units, and preferably be in a format that would allow a subsequent treatment in a simple manner.

Based on the stated objective, the population was formed from users of the consortium of the province of Badajoz. Once the population receiving services was determined, random sampling by conglomerates was established. This process consisted of dividing the population into several groups of similar characteristics, by geographic zones, to analyze them later. It was raised in the following way: first, establishing a balance between territorial demarcations, which later would facilitate comparing data by zones; second, considering all the global characteristics of the population, allowing to eliminate partial biases of age, sex, educational level, income level, etc.; and third, randomly defining the surveyed users, which avoids biases in the selection.

The target audience was people of legal age. For telephone surveys, the telephone numbers of the residents in the municipality under study were used. As for the sample, a total of 597 surveys were conducted, of which 405 were valid, 26 of them having been carried out face-to-face and the rest by telephone. The selection was made randomly to form a representative sample.

The questionnaire was posed with closed questions of double, triple, or multiple choice with a Likert scale, whose performance has been demonstrated in social research, referring to the measurement of attitudes. This scale ranges between 1 (Very bad) and 5 (Excellent). In relation to the structure, the questionnaire was divided into blocks where the scales considered for the analysis of the variables under study were detailed. They are the following:

- Personal data—they make up the socio-descriptive block of the profile of the interviewee. The variables were considered: user's municipality, age, sex, nationality, and profession. They were raised by open questions, except those related to sex and nationality, for which two response options were considered.
- General information—questions regarding the knowledge of the consortium as a provider of services related to the cycle of water and waste in municipalities of less than 20,000 inhabitants of the province of Badajoz. In addition, in this block, a question was added referring to the knowledge of the types of canon applied by other institutions of different scope to the provincial one.
- Services provided on water—this block is subdivided into three, which have to do with water management, as well as the management of Wastewater Treatment Plant

(WWTPs), pumping stations, and collectors. Issues related to complaints, attention to the user, sustainability measures and reduction of water consumption, perception of the water characteristics, cost comparison with other services, the water bill, or knowledge of WWTPs or Drinking Water Treatment Plants (DWTPs) were also discussed, among others.

- Services provided on waste—a subdivision was made into two blocks, one that deals with the collection of solid urban waste (garbage), packaging, paper and cardboard, and another referring to the selective collection of light packaging. Questions were asked about the frequency, cleanliness, cost, maintenance, and professionalism of the staff that handles these services.

The data collected served to classify the participants in the study according to variables such as sex, age, nationality, and employment situation. The sample has a greater specific weight of women than men, 63% compared to 37%. It was made up of people of legal age, with a range between 21 and 72 years old and of Spanish nationality. With regard to the profession and situation related to employment, we can point out that 47.4% correspond to self-employed workers, 29.9% are employed workers, 18% are unemployed people, 3.7% are retired people, and 1% are students.

4. Results

4.1. General Information

In this section, the main results obtained are detailed and analyzed, based on the issues raised in the study. To begin with, it is important to know the position of the participants as to whether or not they know the consortium. In total, 61% of the users in the municipalities know about it and 77% are aware of the services it offers. In addition, the communicative information is well valued. Furthermore, 84% of the total number of users who know the consortium rate it as very good or good. Finally, 44% of the total number of people interviewed are familiar with the consortium's website.

4.2. Services Provided on Water

A total of 61% of the total number of respondents were unaware of the water tax applied by other public administrations, which reflects the ignorance of the different tariffs, influencing the final price paid by the users. Regarding the management and maintenance of water, the percentage of claims is very low, 11% in the last year, and they do not pertain to problems in the invoicing but rather with incidents and problems with the supply.

With regard to measures of sustainability and reduction of domestic water consumption, we can point out that a high percentage of the population, 82%, uses some related measure. We can see that awareness and concern for actions on the environment, little by little, are reaching public opinion and citizens. The majority of the users prefer showers (88%) for their daily hygiene instead of baths. In fact, currently there is technology applied on the taps that allows reducing water consumption by regulating the flow.

In total, 60% of the users find the information offered by the water bill clear and sufficient. On the contrary, 40% rate that the information is neither clear nor sufficient. We understand that it is necessary to improve in this specific aspect of management to gain transparency and user satisfaction. In addition, there is a balance in the knowledge of the detail of the bill by the users: 51% of the respondents claim to know the concepts billed, and 49% do not.

Most users have received the correct attention regarding the meter service, specifically 85%; 15% rate it as incorrect. In this case, we must also consider that some counters, depending on the age, can be installed inside the house, where by accessing to reading becomes more complicated, and the user must provide it.

These results are summarized in the following Figure 3.

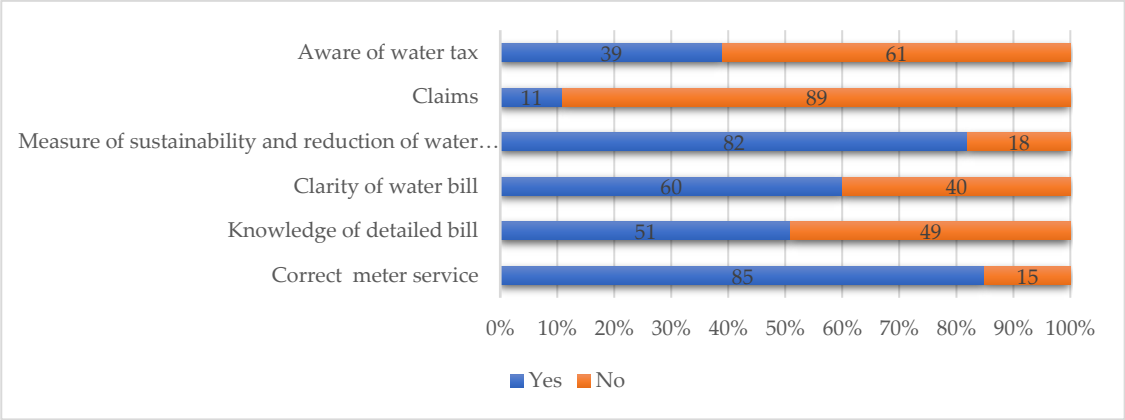

Figure 3. Summary of the results.

The attention paid to the user that receives the water services was qualified as regular, good, and excellent by 91% of the respondents. Only 9% rate it as very bad or bad. The professionalism of employees is qualified by the majority as normal and good, which has to do with training for the development of work. Specifically, 94% of users rated it as fair, good and excellent; 6% rate it as bad or very bad. In turn, 40% of users rate the punctuality of the invoice as regular, 35% think that the bill is not punctual, while 25% rate punctuality as good or excellent.

Most users, 53% to be exact, rate the response time to breakdowns or incidents as regular. In addition, 23% rate it as bad or very bad, and 24% rate it as good or excellent. The quality/price ratio is average, and it is rated as normal. Thus, at 59%, the quality/price ratio seems normal, at 15% it seems bad or very bad, while at 26% it seems good or very good. It must be taken into consideration that the majority of users (71%) affirmed that the price of water was better than the price of other services, such as electricity, gas, etc. Figure 4 shows a summary of the results.

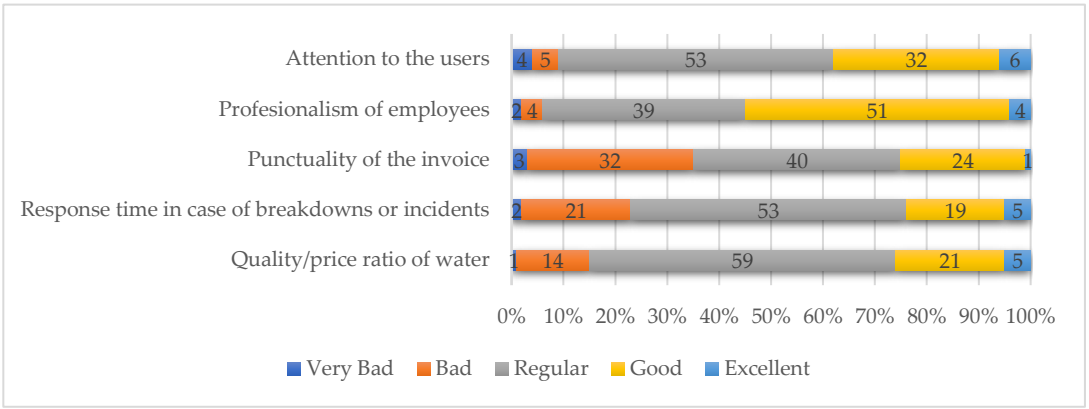

Figure 4. Summary of the results.

Most users, around 92%, rates the perception of the color, smell, and taste of the water as excellent, good, and fair. Such results show that there are not elements that could alter the smell and taste of the water, such as algae, bacteria, spills and waste discharges, wastewater, or other products. In terms of water pressure, it is rated as fair, good, and excellent by 85% of users, while 15% rate it as bad or very bad. The pressure of the water is related to the channeling of the lines of pipes that transport the water; this is associated with good maintenance and management of the infrastructures, and to a good water treatment. Figure 5 presents the results about water characteristics.

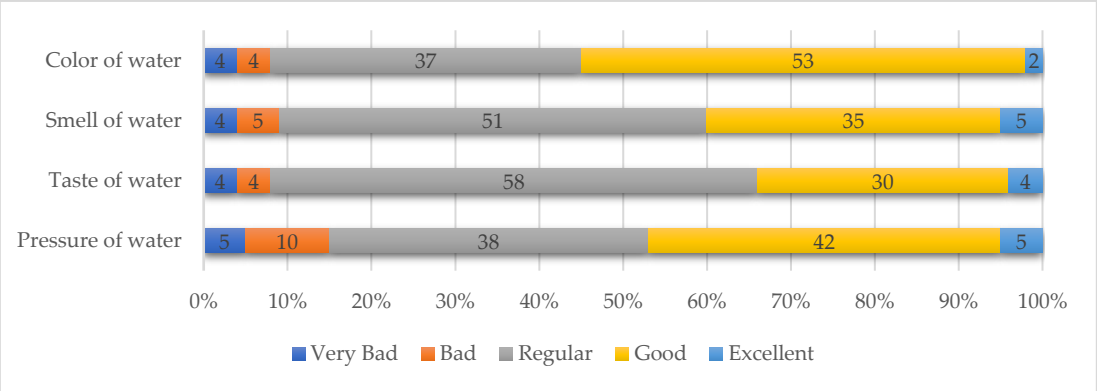

Figure 5. Characteristics of the water.

We begin by noting that the percentage of users who know the origin of the water that reaches their municipalities is very high, at 85%. On the other hand, 15% have no record of the place of origin. The knowledge of the Drinking Water Treatment Plants (DWTPs) by the users receiving the services of PROMEDIO is balanced: 51% of the participants know about DWTPs, while 49% do not know about any. Among those who know the facilities, 53% of them are not aware of their management, while 47% are aware of it. On the other hand, of the total number of users receiving services, 56% know the existence of any Wastewater Treatment Plant (WWTP) in their municipality, while 44% have no record (Figure 6).

The result is closely related to the visit programs organized by the consortium, so that citizens can get to know the infrastructures in the municipalities. A total of 95% of users believe that wastewater should not be discharged directly into riverbeds. It is appreciated how the citizens are acquiring greater environmental conscience and ethics, in terms of values and norms applied to the interaction with living beings and environmental preservation. Likewise, in relation to environmental awareness, 97% consider wastewater treatment necessary (Figure 6). We cannot forget that the ethics and responsibility of the citizens are based on education, culture, and training in environmental rights and responsibilities.

We can indicate that the user's knowledge about the costs associated with the water purification processes is balanced: 49% know them and 51% do not (Figure 6). It is important to highlight the importance of users' knowledge of the costs of wastewater treatment, in order to reduce pollutants and to dump in the appropriate places according to legislation.

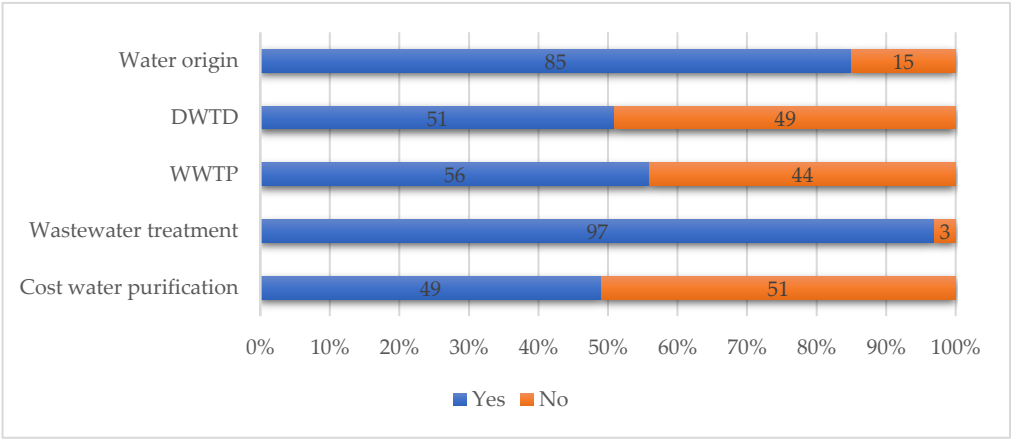

Figure 6. Knowledge of the users on key aspects.

The overall assessment of the drinking water service made by users is considered very positive. The rating is fair, good, and excellent in 90% of cases, and only 10% rate it as bad or very bad (Figure 7).

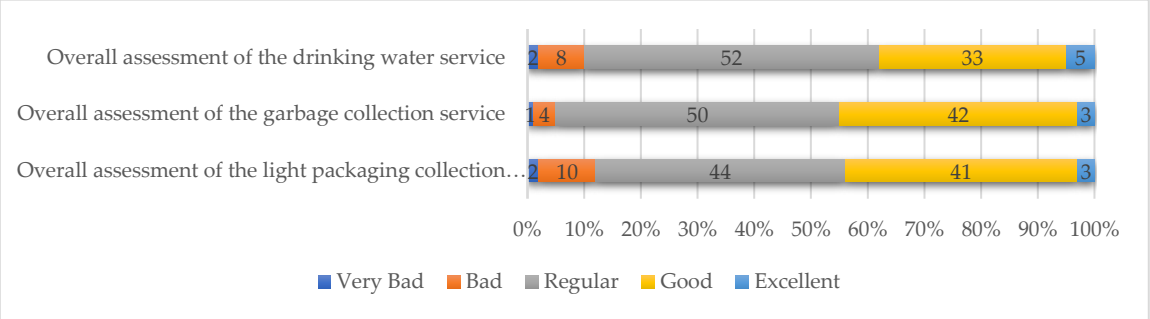

Figure 7. Overview of the users' perceptions.

4.3. Services Provided on Waste

As for solid urban waste (garbage), users rate the collection frequency as good. This opinion is shown by 56%, while 27% rate it as fair, 5% express it is bad or very bad, and 12% rate it as excellent. This shows the good management of the collection routes by the consortium, optimizing service provision and minimizing costs.

The users of the services qualify the cleaning of the garbage containers in a positive way: 45% of the total score it as regular, and 36% say it is good although most of them do not know about the container washing service; 61% do not know, while 39% do. This service is performed at night, and it is directly related to the cleaning of containers, which is well valued by users. Container maintenance is assessed as fair and good, as reflected by 74% of participants; 21% rate it as bad.

The assessment of the personnel that performs the garbage collection is rated as good. This is shown by 56% of users, while 34% rate it as regular. The quality/price ratio of the garbage service is rated as normal, as indicated by 40% of the respondents, whereas 35% rate it as bad, and 15% as good. In general, the users who receive the services value the service as regular, tending to good, by 50% and 42%, respectively. Figure 8 summarizes the results regarding solid urban waste.

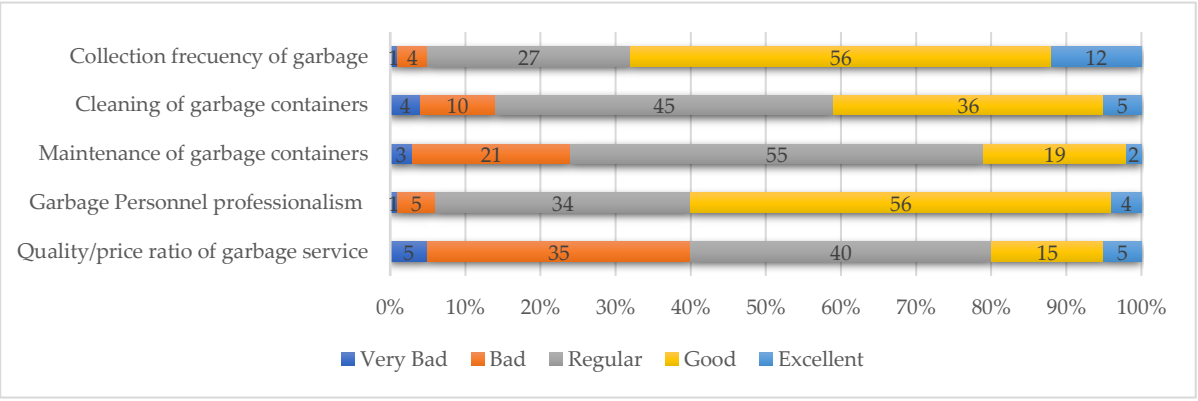

Figure 8. Summary of the solid urban waste results (garbage).

On the selective collection of light packaging containers, the frequency of collection is rated as neither good nor bad by the majority of users, 39% to be exact. A total of 33% say it is good and excellent, and 28% say it is bad and very bad. This section is also related to the management of the routes carried out by the consortium in the province. In addition, it must be considered that the collection frequency of light containers is lower than that

of waste, due to the difference in characteristics and components that affect the waste degradation process. Most users rate the cleanliness status of light packaging containers as good, specifically by 44%.

Container maintenance is rated as regular by 56% of service users. Of the total, 23% rate it as bad and very bad, and 22% as good and very good. The results are similar to those obtained in the evaluation of the maintenance of garbage containers. Regarding the assessment of the personnel that performs the collection of light packaging is good, as rated by 49% of users; 38% rate the attitude, professionalism, etc., of the staff as regular, and 9% as bad.

In general, the assessment is very positive. Specifically, 88% of users consider it is regular, good, and excellent. The results are similar to the overall assessment made by users of the garbage collection service. Moreover, with respect to this type of waste, the social responsibility of the citizen and their collaboration are necessary, not only for complying with the municipal ordinances in terms of scheduling and collection, but also for preserving the environment. Figure 9 summarizes the results regarding light packaging waste.

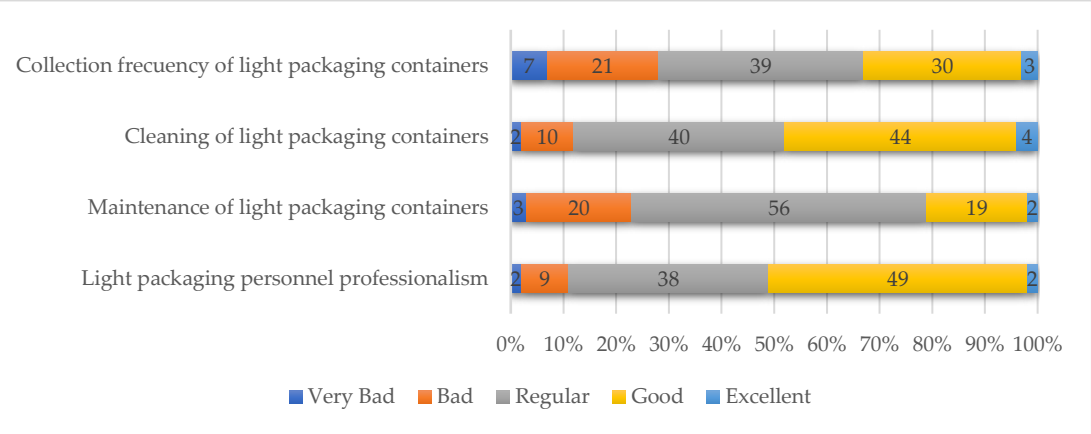

Figure 9. Summary of the light packaging waste.

To sum up, Figure 7 shows a general overview of the users' perceptions about the service provided by PROMEDIO in terms of water and waste.

5. Discussion, Contributions, and Future Research

In line with the United Nations Sustainable Development Goals, governments are making a great effort to achieve them, as can be seen in this study, specifically with Goal 6: Clean Water and Sanitation. The PROMEDIO consortium aims to meet SDG6 as it supports and strengthens the participation of local communities in improving water, sanitation management, and waste.

The recommendation of García-Rubio et al. [27] for local authorities is to periodically consult consumers on their satisfaction levels. The article reports the results of research intending to advance the improvement of local public services. We have tried to understand the level of satisfaction of domestic users in small localities in the province of Badajoz (Spain) with two basic services that daily intervene in the quality of life of citizens: water and waste.

The paper has several contributions. Given the demand for democratic development at the local level, social justice advances and sustainability improvements are often based on the development of a new shared municipal economy. The model that has been taken as a reference is a consortium, as an attempt for sustainable innovative management, which starts from the public, and because its services are the most used by municipalities in the field of reference. To do this, information from the available bibliographical sources was used, as well as documentation from Diputacion. The levels of knowledge and perceived

quality (image, service, and quality/price ratio), and their effects, were evaluated. For this purpose, the main clients of the services provided were studied, which coincide with the final user and receiver of the services.

Furthermore, the concept of intergovernmental cooperation in the provision of basic/essential services, such as water supply and waste management, is a vibrant concept that should result in greater efficiency in the provision of such services. Conducting a user survey of the degree of satisfaction with providing such services on a regional scale instead of a local scale was an option to verify this assumption. As a general reflection on this study, we highlight that the level of knowledge and the services provided have been qualified as high by the user. Regarding the information disaggregated by sex, women are more favorable than men when responding to the questionnaire, and therefore to participate in the study. In the same way, and although the result is balanced, the consortium is slightly more known by women than men, although in turn the services provided are better known by men.

In addition, the rating of the offered communication is high. It must be considered, as has been shown, that we are facing a provision of services in which the end customer demands a lot of information, which must be very clear. It is stated as necessary to promote the dissemination of actions and projects that are launched. The role of an organization should not only be limited to providing services and managing resources, but decision-making and management should be done in the most responsible, transparent, and sustainable way [53].

Finally, the user of the services is described as satisfied. This is shown by data such as the quality/price ratio of the services provided in terms of water and waste, which is rated as positive by most of the interviewees. In addition, the price of water is better valued in comparison with the price of other supplies. In addition, the environmental awareness of the participants is demonstrated in the study. It is appreciated how most of the citizens feel the need to protect the environment by searching for ways and proposing alternatives to take care and preserve the environment. In the analysis of the results obtained, we observe how sustainability measures are used and proposed by the users. They consider it necessary to treat the wastewater and not to directly discharge the wastewater into the riverbeds. Likewise, they use some measures of sustainability, such as using the shower instead of bathing for personal hygiene.

This study has limitations in the following directions. First, the limitations of the case study methodology are evident in that its results do not allow the elaboration of general explanations, and, in many cases, it complicates the relationships between the investigating subject and the investigated object. Our study was based in a region of Spain and hence we cannot generalize the results to the rest of the country and even to other countries. Second, we performed a descriptive analysis to assess the satisfaction degree of the consortium users. A deeper analysis would be interesting to evaluate the factors that influence a user's satisfaction. Finally, the lack of previous research studies on this topic has not allowed us to have a solid basis for the literature review. Previous studies would have helped us to lay the foundations for understanding the research problem under investigation. We call for more research on users' perception about water and waste management.

For the near future, more research is needed in the field of sustainable local public service provision. It is necessary to promote new R&D+i projects that improve the services provided in relation to the environment. The projects should be directed towards two fundamental lines of work. The first has to do with research to improve the efficiency and operability of the provided services for improving the citizens´ satisfaction. The second is to influence the youth through educational, training, and awareness-raising frameworks, with the aim of creating a better world from the local level upwards.

6. Conclusions

The study assesses the provision of services through the consortium formula as an example of successful partnership between public organizations belonging to different

levels of government, provincial and local, but aiming for the best solutions for citizens. This hybrid business model is considered as a responsible and sustainable model that increases the citizens' satisfaction with the services provided, given the close relationship between the municipality and end users.

Regarding the water service, the results indicate that the users are very satisfied with the water service provided by the consortium. These data are endorsed because there are very few claims, and those presented are not related to the invoice. The users are also satisfied because of the price of the service provided, the professionalism of the employees, the attention to the user, and the properties of the water.

In the same line, from the conclusions regarding the urban solid waste (garbage), packaging, and paper and cardboard services, we highlight that users are also very satisfied with the service. These results are due to the frequency of garbage collection, the cleaning and maintenance of the containers, the price of the service provided, and the professionalism of the employees.

PROMEDIO was created with the aim of establishing itself as a manager of the services concerning the environment, with emphasis on an integrated water cycle (collection, purification, distribution, and wastewater treatment) and with the complete cycle of collection and transportation of all types of waste. From the information obtained in the research and the ratings of the users, we can state that the consortium's formula is very well valued. There is a direct relationship between the results obtained in the study and the convenience of providing a service through this instrument. The concept of economy of scale is put into value. The main arguments are an improvement in the quality of the services, greater administrative and functional agility, and a reduction in costs. These issues have a greater qualitative and quantitative benefit for the user. It has been shown that the different government mechanisms to manage public resources can be organized by different formulas and levels, but the importance lies in the level of commitment and social responsibility among the interested parties and the consortium formula used.

Therefore, we can conclude that PROMEDIO has value as a successful, sustainable, and responsible hybrid model [37–41] for local governments since it has been proven to offer high-quality services at a low price with high user satisfaction, confirming the principle of solidarity.

Author Contributions: M.I.S.-H. has coordinated the research, contributed to the data analysis and wrote the final manuscript; J.J.M.-B. designed the research and analyzed the data; R.S., A.B. and M.C.B. led the review and editing process. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Junta de Extremadura and European Union (FEDER) grant number IB16024.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The study did not report any data.

Acknowledgments: The authors are grateful to the Regional Government (Junta de Extremadura and the European Union (FEDER) for its support to the research groups of the University of Extremadura (Group SEJO21 and SEJ005). The research behind the article also was made possible thanks to the collaboration of the PROMEDIO consortium, together with the municipalities and grouping of municipalities of the province, oriented to the supra-municipal management of environmental services. It is mainly responsible for the management of the integral water cycle (purification, supply and purification) and waste.

Conflicts of Interest: The authors declare no conflict of interest.

Nomenclature List

SDGs	Sustainable Development Goals
UN	United Nations
SR	Social Responsibility
WASH	Water, Sanitation and Hygiene
PPP	Public–Private Partnership
MSW	Municipal Solid Waste
IWC	Integral Water Cycle
WWTP	Wastewater Treatment Plant
DWTP	Drinking Water Treatment Plant
R&D+i	Research, Development and Innovation

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