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Pricing The Public Good: Balancing Cost Recovery, Affordability, And Equity In Essential Public Services

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Abstract

This study examines how public service pricing balances cost recovery, affordability, and equity in the provision of essential public services. Drawing on a review of 50 journal articles published between 2021 and 2026, this study synthesizes recent research on pricing mechanisms, economic principles, and their implications for public service delivery. The analysis covers various sectors, particularly water and sanitation, transportation, waste management, and healthcare. The findings indicate that public service pricing involves a complex balance between financial sustainability and the public's ability to access essential services. The Polluter Pays Principle and Pigouvian pricing emerge as recurring economic approaches, while ability-to-pay, beneficiary-pays, and social equity considerations highlight the importance of affordability and fairness in determining service charges. Empirical quantitative studies and economic modeling dominate the reviewed literature. However, the theoretical foundations remain fragmented, with many studies not explicitly identifying an underlying theoretical framework. Furthermore, differences across service sectors and national contexts demonstrate that pricing mechanisms cannot be applied uniformly, as they must consider service characteristics, cost structures, regulatory environments, and users' socioeconomic conditions. This study contributes to public sector accounting literature by integrating the financial, economic, and social dimensions of public service pricing and highlighting the need for pricing policies that support both sustainable service provision and equitable public access.

Keywords: Public Service Pricing, Cost Recovery, Affordability, Social Equity, Essential Public Services, Public Sector Accounting.

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INTRODUCTION

Pricing for public services is one of the important aspects of public sector financial management because it is related to the sustainability of financing and public access to basic services. The government needs to set tariffs that are able to support operational costs and maintenance of services without ignoring the economic capabilities of the community. In practice, tariffs that are too low can hinder cost recovery, while tariffs that are too high have the potential to limit access for low-income groups. Therefore, the determination of public service prices needs to consider a balance between cost recovery, affordability, and equity (Pratap & Gupta, 2022; Switzer & Teodoro, 2025).

These problems can be seen in the clean water and sanitation sectors, which require sustainable financing as well as basic needs of the community. The application of the principle of full cost recovery can support operational financing and infrastructure maintenance, but has the potential to burden households with economic limitations. Sereno (2022) emphasized that the recovery of water and sanitation service costs needs to be accompanied by protection of people's rights to minimum water needs. Fagundes et al. (2025) also show that affordability measurement needs to pay attention to household conditions, not just using average community spending.

In addition to the ability to pay, the perception of fairness also affects public acceptance of tariff policies. Research by Fuente et al. (2023) shows that information about water service costs and infrastructure can increase the perception of the fairness of bills. Meanwhile, Al-Khatib et al. (2023) found that the public's assessment of the applicable tariff is related to the acceptance of the price change plan. The findings show that the determination of tariffs is not only related to the amount of costs, but also transparency, service quality, and equitable distribution of the payment burden.

Similar problems are also found in the public transport sector. Free or low-fare policies can improve accessibility and provide benefits to certain groups of people (Beck et al., 2026; Lightner et al., 2026). However, such policies do not always result in a shift in the use of private vehicles or environmental quality improvements as expected. An evaluation of the €9 ticket policy in Germany shows that increased use of public transport needs to be seen alongside changes in travel behavior and policy sustainability (Loder et al., 2024; Andor et al., 2025). Thus, the effectiveness of fares needs to be assessed based on their social benefits and economic consequences.

In the health sector, the determination of service prices is influenced by the cost of provision, payment mechanisms, regulations, and the readiness of facilities. Sirur and Pillai (2024) explained that the pricing of hospital services involves various factors that affect the formation of tariffs. Meanwhile, Rozelle's research on six low- and middle-income countries shows that the relationship between user levies and the readiness of health facilities can differ between countries. This shows that the levy policy needs to

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consider the quality and readiness of services, not just the potential for service provider acceptance.

Pricing can also be used as an economic instrument to control externalities and encourage resource use efficiency. In waste management, the Polluter Pays principle and the Pigouvian Pricing approach are applied through the Pay-As-You-Throw (PAYT) scheme, which is a payment that is linked to the amount of waste generated. A number of studies have shown that such mechanisms have the potential to encourage sorting and reduce unsorted waste, although its effectiveness is influenced by user characteristics and infrastructure availability (Asih et al., 2026; Compagnoni & Torbert, 2025; Rizzo & Secomandi, 2026). Thus, the price of public services also plays a role in shaping community behavior and supporting environmental sustainability.

Willingness to pay is another important aspect because it can provide an overview of people's preferences for the quality and benefits of services. Girma et al. (2022) found that most of the households studied were willing to pay for the improvement of garbage collection services in Harar, Ethiopia. Other research shows that willingness to pay is influenced by income levels, service quality, prices, and socioeconomic characteristics of users. However, willingness to pay does not always reflect ability to pay, so the results of the measurement need to be considered along with the economic conditions of the community and the cost of providing services.

Based on the mapping of 50 articles analyzed, research on the determination of public service prices discussed the water and sanitation sector with 24 articles (48%), followed by transportation with 13 articles (26%), waste management with 6 articles (12%), and health with 5 articles (10%). In terms of methods, quantitative research and modeling dominated with 34 articles (68%), while literature review included 12 articles (24%). The results of the mapping show that previous research has discussed various tariff mechanisms, user responses, and price policy impacts. However, approaches that integrate financing sustainability, affordability, and service fairness still need to be studied in a more integrated manner.

Based on these conditions, this study aims to examine how the determination of public service prices balances the interests of cost recovery, affordability, and fairness in the provision of essential services. The study uses a Systematic Literature Review approach on 50 journal articles published in the period 2021–2026. This study identifies the pricing mechanism, the underlying economic principles, and their implications for financial sustainability and public access. The results of the study are expected to provide a more comprehensive understanding of efficient, sustainable, and equitable public service pricing policies.

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LITERATURE STUDY

Theoretical Foundation

This research uses the perspectives of Public Finance Theory and Welfare Economics as a basis for understanding the pricing of public services. Public Finance Theory explains the role of the government in the provision of public goods and services, financing, and distribution of resources to meet the needs of the community (Musgrave, 1959). Meanwhile, Welfare Economics emphasizes the importance of efficient allocation of resources and social welfare in economic decision-making. Both perspectives explain that tariff determination not only functions as a source of revenue, but also as an instrument of financing and resource allocation to support the provision of public services.

The perspective of Distributive Justice Theory and Environmental Economics complement this foundation by explaining the dimensions of environmental justice and sustainability. Distributive justice emphasizes that the distribution of benefits and policy burdens needs to take into account the different conditions and needs of society (Rawls, 1971). Meanwhile, Environmental Economics explains the use of price instruments to account for the cost of environmental externalities through the principles of Polluter Pays and Pigouvian Pricing (Pigou, 1920). The integration of these four perspectives is the basis for understanding the determination of the price of public services through a balance between cost recovery, affordability, and equity.

Public Service Pricing

Public service pricing is the process of determining tariffs or fees charged to users for services provided by the government and public service providers. Pricing is not only aimed at obtaining revenue, but also supporting operational financing, infrastructure maintenance, and service sustainability. In contrast to the commercial sector, public service pricing needs to consider community needs, social benefits, and government responsibilities in providing basic services. Pratap and Gupta (2022) explained that user charges can be a source of infrastructure financing, but their implementation needs to consider the type of service and subsidy needs.

Cost Recovery

Cost recovery is a financing principle that emphasizes the ability of service providers to recover costs incurred in providing public services. These costs can include operations, maintenance, labor, and infrastructure development. The implementation of user charges is one of the mechanisms to support cost recovery and reduce service providers' dependence on the government budget. Pratap and Gupta (2022) explained that user charges can help finance infrastructure development and maintenance,

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although the recovery of all costs is not always appropriate for services that have broad social benefits.

Affordability

Affordability refers to the ability of the community to pay for public services without sacrificing the fulfillment of other basic needs. This concept is important because tariffs set based on the cost of provision are not necessarily in accordance with the economic conditions of all users. Fagundes et al. (2025) show that the affordability of water services needs to be assessed by taking into account household conditions and the distribution of expenditure burdens. Tirumala and Tiwari (2022) also show that low-income groups can face a relatively higher burden of water expenditure due to limited access to adequate water sources.

Equity in Public Service Pricing

Equity in the pricing of public services is related to fairness in the sharing of costs and equitable access to services. This principle emphasizes that users with different economic conditions and needs do not always have to bear the same payment burden. Switzer and Teodoro (2025) explain that pricing in public companies can function as a redistributive policy because the tariff structure affects the distribution of costs among user groups. In water services, Khan et al. (2026) point out that tariff design needs to consider payment inequality and user ability so that increased revenue does not worsen affordability.

Economic Instruments and Pricing Mechanisms

Economic instruments are policy mechanisms that use prices, tariffs, levies, or subsidies to influence user decisions and resource management. One of the principles used is the Polluter Pays Principle, where those who cause pollution or environmental impacts need to bear the costs they cause. The Pigouvian Pricing approach also links prices with externality costs so that consumption and production decisions better reflect social costs. In waste management, this principle is applied through the Pay-As-You-Throw (PAYT) scheme, which is a levy that is linked to the amount of waste produced. Research by Asih et al. (2026), Compagnoni and Torbert (2025), and Rizzo and Secomandi (2026) show the use of price mechanisms to drive changes in waste management behavior.

Balancing Cost Recovery, Affordability, and Equity

A balance between cost recovery, affordability, and equity is an important cornerstone in designing public service pricing policies. An orientation to cost recovery

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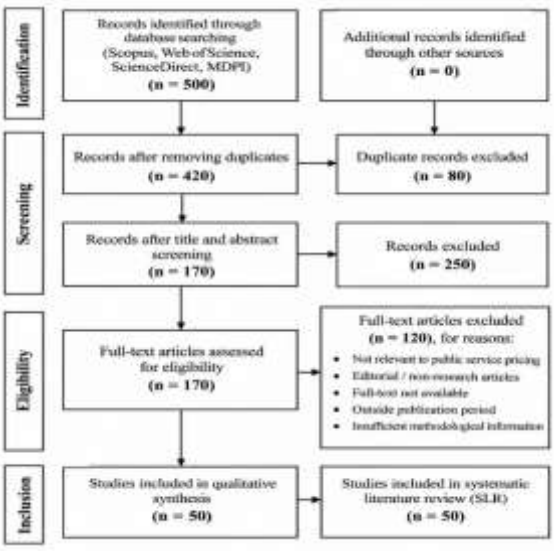
can strengthen the financial sustainability of service providers, but the implementation of tariffs without considering affordability risks limiting public access. In contrast, free or low tariff policies can expand access, but still require adequate sources of financing to maintain the quality and continuity of services. Pratap and Gupta (2022), Beck et al. (2026), and Switzer and Teodoro (2025) show that pricing decisions have consequences for financing, accessibility, and cost burden distribution.

RESEARCH METHODS

This study employs a Systematic Literature Review (SLR) approach to identify, evaluate, and synthesize previous research on public service pricing. The review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines developed by Page et al. (2021) to ensure transparency and systematic article selection.

The literature search focuses on international journal articles published between 2021 and 2026. Relevant keywords include public service pricing, user charges, cost recovery, affordability, equity, public utility pricing, and essential public services. The search covers various public service sectors, including water and sanitation, transportation, waste management, healthcare, and public infrastructure.

Article selection is based on predefined inclusion and exclusion criteria, considering publication period, thematic relevance, and scientific quality. The selection process consists of identification, screening, eligibility assessment, and final inclusion. Following these stages, 50 articles were selected as the final research corpus for further analysis.



Source : Data processed, 2026

Figure 1. PRISMA Flow Diagram

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Based on these stages, as many as 50 articles met the criteria and were designated as the final corpus to be analyzed in the systematic literature review (SLR), in order to identify research patterns, pricing approaches, and the linkages between cost recovery, affordability, and fairness in the provision of essential public services.

RESEARCH RESULTS

This study analyzed 50 journal articles that discussed the determination of public service prices in the 2021–2026 period. The mapping was carried out based on six aspects, namely the journal quartile index, theory and conceptual framework, country or research area, research method, public service sector, and main research results. The grouping aims to provide an overview of the characteristics of the literature as well as identify the tendency of discussion related to cost recovery, affordability, and equity in the provision of essential public services.

Table 1. Journal Index Distribution

Journal Index	Number of Articles	Percentage
Scopus Q1	42	84,00%
Scopus Q2	6	12,00%
Scopus Q3	2	4,00%
Total	**50**	**100%**

Source: Data processed, 2026

Based on Table 1, the publications analyzed were dominated by the Scopus Q1 journal, which was 42 articles (84.00%). Furthermore, as many as 6 articles (12.00%) were published in the Q2 journal and 2 articles (4.00%) in the Q3 journal. These results show that most of the articles in the research corpus come from journals with the Q1 quartile.

Table 2. Distribution of Research Theories

Theory	Number of Articles	Percentage
Environmental Economics Theory and Polluter Pays Principle	12	24,00%
Public Finance Theory and Welfare Economics Theory	10	20,00%
Distributive Justice Theory, Ability-to-Pay Principle, and Beneficiary-Pays Principle	9	18,00%

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Theory	Number of Articles	Percentage
Consumer Choice Theory, Random Utility Theory, and Theory of Planned Behavior	6	12,00%
Institutional and Regulatory Theory	5	10,00%
Social Determinants of Health Framework and Service Readiness Framework	3	6,00%
Human Rights-Based Approach	2	4,00%
Game Theory	1	2,00%
Adaptive Capacity and Resilience Theory	1	2,00%
Income Theory	1	2,00%
Total	**50**	**100%**

Source : Data processed, 2026

Based on Table 2, the perspective of Environmental Economics Theory and Polluter Pays Principle is the most widely used group, namely 12 articles (24.00%). Furthermore, Public Finance Theory and Welfare Economics Theory covered 10 articles (20.00%), followed by the perspectives of Distributive Justice Theory, Ability-to-Pay Principle, and Beneficiary-Pays Principle as many as 9 articles (18.00%). These results show that research on determining public service prices focuses a lot on externality control, financing efficiency, and fairness in charging service costs.

Table 3. Distribution of Research Countries

Country	Number of Articles	Percentage
Global/ Multicountry	15	30,00%
Indonesia	4	8,00%
Germany	3	6,00%
Italy	3	6,00%
Spain	3	6,00%
United States	2	4,00%
India	2	4,00%
Kenya	2	4,00%
Ethiopia	2	4,00%
Norway	1	2,00%

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Country	Number of Articles	Percentage
Denmark	1	2,00%
Australia	1	2,00%
Nigeria	1	2,00%
Portugal	1	2,00%
Pakistan	1	2,00%
South Africa	1	2,00%
Palestine	1	2,00%
France	1	2,00%
Egypt	1	2,00%
English	1	2,00%
Mali	1	2,00%
Brazil	1	2,00%
European Union	1	2,00%
Total	**50**	**100%**

Source : Data processed, 2026

Based on Table 3, research on determining the price of public services was most often conducted in an international or multi-country context through literature reviews, which was 15 articles (30.00%). Indonesia ranked next with 4 articles (8.00%), while Germany, Italy, and Spain each contributed 3 articles (6.00%). The United States, India, Kenya, and Ethiopia each recorded 2 articles (4.00%). Meanwhile, other countries, such as Norway, Denmark, Australia, Nigeria, Portugal, Pakistan, South Africa, Palestine, France, Egypt, the United Kingdom, Mali, and Brazil, were each represented by only one article (2.00%).

Table 4. Distribution of Research Methods

Research Methods	Number of Articles	Percentage
Quantitative (empirical and modelling)	34	68,00%
Literature Review / Systematic Review / Scoping Review	12	24,00%
Conceptual / Policy Analysis / Theoretical Analysis	2	4,00%
Q Methodology	1	2,00%
Qualitative / Normative Legal Analysis	1	2,00%

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Research Methods	Number of Articles	Percentage
Total	**50**	**100%**

Source : Data processed, 2026

Based on Table 4, quantitative methods (empirical and modeling) are the most dominant approaches, with 34 articles (68.00%). This approach includes the use of household surveys, regression analysis, panel data, contingent valuation methods, choice experiments, difference-in-differences, mathematical modeling, and econometric analysis. This dominance shows that most studies seek to measure the relationship between tariff setting, service provision costs, user characteristics, and public response to public service pricing policies.

Table 5. Distribution of Research Sectors

Research Object/Sector	Number of Articles	Percentage
Clean Water, Sanitation, and Water Resources Management Services	24	48,00%
Public Transportation Services and Transportation Infrastructure	13	26,00%
Urban Solid Waste and Solid Waste Management	6	12,00%
Health Services and Hospitals	5	10,00%
Public Infrastructure Financing	1	2,00%
Road Infrastructure and Urban Toll System	1	2,00%
Total	**50**	**100%**

Source : Data processed, 2026

Based on Table 5, the clean water, sanitation, and water resources management sectors dominated the literature with 24 articles (48.00%), followed by public transportation and transportation infrastructure with 13 articles (26.00%), urban waste management with 6 articles (12.00%), health services and hospitals with 5 articles (10.00%), and public infrastructure financing and road infrastructure with 1 article each (2.00%). This distribution indicates that public service pricing research is primarily concentrated on water and transportation services, emphasizing the importance of balancing cost recovery, tariff affordability, financial sustainability, and equitable public access.

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Table 6. Main Research Results

Main Research Results	Number of Articles	Percentage
Free and low-fare policies improve public transport use, accessibility and social inclusivity	3	6,00%
The reduction in transportation fares has not completely resulted in a shift from private vehicles or an improvement in environmental quality	3	6,00%
The determination of service rates is influenced by the cost of supply, demand, supply, market structure, regulations, and reimbursement mechanisms	1	2,00%
The implementation of user tariffs supports the financing and maintenance of public infrastructure, with subsidies for basic needs services	1	2,00%
Improving the quality of facilities and maintaining public services increases user utility and willingness to pay	1	2,00%
The exclusion of electric vehicles from toll tariffs affects the distribution of tariff burdens and pricing decisions	1	2,00%
Tariff and subsidy policies affect the affordability, accessibility, and use of public services	2	4,00%
The combination of price and tariff instruments affects user behavior and service efficiency	2	4,00%
Pricing needs to consider actual costs, resource utilization, and operational efficiency	2	4,00%
Limited ability to pay and service quality are obstacles to fare acceptance	1	2,00%
The willingness to pay the public is not comparable to the market cost of sanitation services	1	2,00%
The pricing of hospital services is influenced by costs, demand, supply, regulations, and third-party reimbursements	1	2,00%
The combination of transportation tariff and fuel tax policies can reduce transportation externalities	1	2,00%
The willingness to pay and support of the community is influenced by the benefits of services, preferences, and social care	1	2,00%

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Main Research Results	Number of Articles	Percentage
Improving the billing system and service quality can increase revenue while improving tariff fairness	1	2,00%
Adaptive capacity and governance resilience increase public support for public service levies	1	2,00%
The willingness to pay the community is a potential source of financing to improve waste management services	1	2,00%
Perceptions of tariff justice are influenced by social inequality and people's experiences	1	2,00%
Water tariffs that are considered high have the potential to cause resistance to price increases	1	2,00%
Submission of information on infrastructure costs increases public perception of tariff fairness	1	2,00%
Changes in hospital payment rates are associated with changes in patient coding behavior	1	2,00%
Tiered tariff structures can balance affordability, cost recovery, and resource conservation	1	2,00%
Water price policy can reduce water use, but has the potential to reduce agricultural sector income	1	2,00%
The implementation of Pay-As-You-Throw (PAYT) tariffs encourages the reduction of unsorted waste and increases sorting or recycling	3	6,00%
The willingness to pay the public is influenced by the rate level, economic ability, and user characteristics	2	4,00%
The health service levy is related to the readiness of facilities, especially the availability of drugs and diagnostic capacity	1	2,00%
Implementation of water rights and full-cost restoration require targeted subsidies for vulnerable groups	1	2,00%
Inequality of access to water causes low-income groups to bear relatively higher water expenditure	1	2,00%
Accountability information increases public acceptance of waste tariff scheme changes	1	2,00%
The assessment of willingness to pay helps determine the priorities for improving the quality of services and the water company's investment	1	2,00%

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Main Research Results	Number of Articles	Percentage
Tariff policy affects the fairness of cost distribution and affordability of public services	4	8,00%
The tariff structure affects the revenue of service providers and the efficiency of resource utilization	2	4,00%
Service quality assessment needs to be integrated in cost setting and tariff setting	1	2,00%
Public perception of tariffs, consumption, and service costs has not fully complied with actual conditions	1	2,00%
Fare innovation affects travel patterns and the use of public transportation	1	2,00%
Economic instruments and price policies play a role in the sustainability of water resource management	1	2,00%
Total	**50**	**100,00%**

Source: Data processed, 2026.

Based on Table 6, the results of the study show that the policy of determining the price of public services is closely related to the fairness of cost distribution and the affordability of services. Findings regarding the influence of tariff policy on these two aspects are the most categories, namely 4 articles (8.00%). In addition, free tariff and low tariff policies were found in 3 articles (6.00%) which showed an increase in the use of public transportation, accessibility, and social inclusivity. These results show that tariff determination is not only oriented towards the acceptance of service providers, but also needs to consider the ability to pay the community and equal access, especially for low-income groups.

DISCUSSION

1. Cost Recovery and the Financial Sustainability of Public Services

Cost recovery (Cost recovery) is one of the main considerations in determining the price of public services because it is related to the ability of service providers to finance operational activities, maintenance, and improvement of service quality. Tariff determination needs to take into account the cost of provision, resource use, and operational efficiency so that services can continue to be provided in a sustainable manner. In the context of public infrastructure financing, user tariffs can be one of the sources of funding to support development and maintenance, although subsidies are still needed for services that have a social function (Pratap & Gupta, 2022). Thus, Cost recovery Not only is it directed to cover all costs through user payments, but also to maintain the continuity of services without ignoring the needs of the community.

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The importance of cost recovery can be seen from the dominance of research in the clean water, sanitation, and water resources management sectors, which are as many as 24 articles (48.00%). In this sector, the determination of tariffs is related to operational needs, infrastructure maintenance, and sustainable resource management. Caravaggio et al. (2024) discusses the determination of water tariffs for domestic, agricultural, and industrial needs by considering consumer welfare and water availability in the future. Meanwhile, Adeoti and Fati (2022) examine the issue of piped water tariffs and the recovery of service providers' income. Both studies show that tariff design needs to consider the interests of service providers as well as their impact on users.

Overall, the results of the study show that Cost recovery is an important dimension in maintaining the sustainability of public service provision. However, an overly dominant cost recovery orientation can increase the burden on users if it is not accompanied by protection and subsidy policies. On the other hand, tariffs that are too low without alternative financing support can reduce the ability of service providers to maintain the quality of facilities. Therefore, the determination of the price of public services requires a balance between the adequacy of revenue, the efficiency of resource use, and the continuity of services in the long term.

2. Affordability and the Ability of Communities to Pay

Affordability (Affordability) is an important dimension because the ability of the community to pay public service tariffs is not always in line with the costs required to provide these services. The mapping results show that the willingness to pay the public is influenced by the rate level, economic ability, user characteristics, service quality, and perceived benefits. Thus, public acceptance of the price policy is not only determined by the size of the tariff, but also by socio-economic conditions and the benefits obtained from the service. Tariffs that are considered financially adequate by service providers are not necessarily affordable for all community groups.

The problem of affordability is most seen in water and sanitation services. Tariffs that are too high can increase the burden of household expenditure, especially for low-income groups. Research on household perceptions of the fairness of water prices shows that public assessment of tariffs is related to economic conditions and perceptions of services received (Fuente et al., 2023). In addition, Al-Khatib's research et al. (2023) discusses public attitudes towards applicable water tariffs and price changes. The findings show that tariff policies need to consider the economic capabilities of users so as not to restrict access to basic services.

The willingness to pay the community is also related to the quality and benefits of services. Girma et al. (2022), for example, examined the willingness of households in

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Harar, Ethiopia, to pay for increased waste collection services. This willingness showed that people could receive additional payments when improved service quality provided perceived benefits. A similar trend was seen in research on wastewater treatment services, which showed that willingness to pay was influenced by service attributes and user characteristics (Cecilia et al., 2024). This means that the ability to pay and the willingness to pay are two things that need to be considered simultaneously in determining the price of public services.

3. Equity and Fairness in Public Service Pricing

Justice (equity) in determining the price of public services is related to how the burden of costs is distributed to the community and the extent to which each group has the opportunity to obtain services. The results of the mapping show that tariff policy is related to the fairness of cost distribution and the affordability of public services. A total of four articles (8.00%) were specifically grouped on findings on the influence of tariff policies on the fairness of cost distribution and affordability. In addition, other studies discussed the perception of tariff justice, social inequality, protection of vulnerable groups, and the impact of subsidy policies. This shows that price determination is not only a matter of economic calculation, but also related to the social consequences of service financing policies.

The application of the same tariff for all users does not necessarily result in a fair payment burden. The difference in income and needs can cause low-income groups to bear relatively greater service expenses than their economic capabilities. In water services, the problem is related to the inequality of access and the burden of household expenditure. Research on the perception of the fairness of water prices by Fuente et al. (2023), as well as a study on urban water tariffs by Khan et al. (2026), showing the importance of considering user conditions in designing price policies. Thus, tariff fairness does not always mean that all users pay the same amount, but rather pay attention to differences in people's abilities and needs.

The principle of affordability (Ability to pay) and the principle of beneficiaries (Beneficiary-Countries) is a relevant approach in explaining the distribution of the burden of public service costs. Both principles place economic capabilities and benefits received as considerations in determining user contributions. In the context of public services, this approach allows service providers to differentiate payment burdens without eliminating the principle of financing sustainability. Switzer (2025) discusses the pricing of public companies in relation to redistributive policies. This suggests that price policies can also play a role in regulating the distribution of benefits and economic burdens among community groups.

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4. Economic Instruments, Pricing Mechanisms, and Public Service Outcomes

The pricing of public services also serves as an economic instrument to influence user behavior and manage the use of resources. One of the approaches found in the corpus is Polluter Country Principle and Pigouvian Pricing, especially in research on waste management and transportation. This principle places social or environmental costs as part of the consideration of the price charged to the user or affected party. In waste management, the application of PAYT relates the amount of waste generated to the amount of levy that must be paid. This approach provides incentives to the community to reduce waste and increase sorting.

The results of the study show that the application of price instruments can affect user behavior, although the impact depends on the characteristics of the service and the initial conditions of the community. Rizzo and Secomandi (2024) show that the implementation of PAYT in Ferrara is related to increasing recycling and decreasing waste per capita. Meanwhile, Compagnoni and Torbert (2026) discuss PAYT as an economic instrument in supporting urban waste management and the circular economy. The findings show that the effectiveness of price policies needs to be assessed not only from the revenue obtained, but also from the changes in behavior and service results produced.

In the transportation sector, price instruments can influence travel choices and cost distribution between users. Tariff policies, fuel taxes, and tariff exemptions for certain types of vehicles can influence transportation use decisions and environmental impacts. Research on the combination of transportation tariffs and fuel taxes shows that price instruments can be used to reduce transportation externalities. In addition, the policy of excluding electric vehicles from toll tariffs can affect the distribution of payment burdens and pricing decisions. This shows that tariff design needs to consider the economic and environmental consequences of user behavior.

5. Integrating Cost Recovery, Affordability, and Equity in Essential Public Services

The results of the synthesis of 50 articles show that the determination of public service prices is a multidimensional problem that cannot only be oriented towards cost recovery or increasing revenue. The distribution of the research sector shows the dominance of clean water, sanitation, and water resources management services as many as 24 articles (48.00%), followed by public transportation as many as 13 articles (26.00%), waste management as many as six articles (12.00%), and health services as many as five articles (10.00%). This composition shows that price issues are most studied in services that are directly related to basic needs and community activities. Each sector has different characteristics of costs, investment needs, usage patterns,

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and levels of dependence. Therefore, tariff design needs to be adjusted to the characteristics of services and social goals to be achieved.

Balance between Cost recovery and Affordability This is important because tariffs that are able to cover the cost of provision are not necessarily affordable for all users. Conversely, tariffs that are too low can reduce the ability of service providers to finance operations and maintenance. In the context of public infrastructure, user tariffs can support financing, but they need to be balanced with subsidies for services that have a social function (Pratap & Gupta, 2022). In water services, tariff design also needs to take into account consumer welfare and resource sustainability (Caravaggio et al., 2024). Meanwhile, research on willingness to pay shows that user acceptance is related to the quality and benefits of the services received (Cecilia et al., 2024). The findings show that price policies need to combine the financing needs of service providers with the capabilities and benefits received by the community.

CONCLUSION

Based on results Systematic Literature Review (SLR) of 50 international journal articles for the period 2021–2026, it can be concluded that the determination of public service prices needs to consider the balance between cost recovery (Cost recovery), affordability (Affordability), and justice (equity). These three aspects are interrelated in maintaining the sustainability of financing while ensuring that the community has access to basic services. Thus, it is not enough to set tariffs only oriented to the acceptance of service providers, but also need to pay attention to economic capabilities and user needs.

This study was dominated by research on the water, sanitation, and water resources sectors with 24 articles (48.00%), followed by public transportation with 13 articles (26.00%) and waste management with six articles (12.00%). The findings show that price instruments can also affect user behavior, resource use efficiency, and environmental sustainability. Therefore, price policies need to be designed by paying attention to the adequacy of financing, tariff affordability, and equitable access to services.

RESEARCH LIMITATIONS

This research is limited to 50 international journal articles for the period 2021–2026. Differences in countries, sector characteristics, and socioeconomic conditions cause the results of the study to have diverse contexts. In addition, the dominance of studies in the water and transportation sectors shows that discussions about other public service sectors are still relatively limited in the literature analyzed.

Another limitation lies in the variety of methods and theoretical frameworks used. A total of 34 articles (68.00%) used empirical quantitative or modeling approaches, while

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the other articles used literature, conceptual, and qualitative review approaches. These differences in approaches limit the direct comparison between findings. This study also focuses on the synthesis of literature and does not conduct empirical testing of certain tariff policies.

SUGGESTIONS

Further research is suggested to expand the scope of the literature through the addition of databases, countries, and publication periods. Comparative studies between countries and between sectors are also needed to understand the differences in tariff setting mechanisms based on economic conditions, fiscal capacity, and public service characteristics.

For the government and service providers, the determination of tariffs needs to consider the cost of provision, the ability to pay the community, and the equal distribution of access. Targeted subsidies and tiered tariffs can be considered to maintain a balance between the sustainability of financing and the affordability of services. Policy evaluation also needs to pay attention to the quality of services as well as social and environmental impacts.

PRACTICAL AND THEORETICAL IMPLICATIONS

Practically, this study shows the importance of price policies that are not only oriented towards cost recovery, but also pay attention to economic capabilities and community needs. Transparency in tariff setting, targeted subsidies, and evaluation of service quality are needed to maintain accessibility and user trust. Price instruments can also be used to encourage efficient use of resources and change in people's behavior.

Theoretically, this study shows that the determination of the price of public services is a multidimensional problem that includes economic, social, and environmental aspects. Polluter Country Principle and Pigouvian Pricing explains the role of price in accounting for social and environmental costs, while the principle of Ability to pay and Beneficiary-Countries is the basis for the distribution of financing burdens. Integration Cost recovery, Affordability, and equity provide a framework to understand sustainable pricing while supporting equitable access to public services.

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