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The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

Towards an effective pricing strategy for water use charges

The Water Research Commission is supporting the Department of Water and Sanitation in the finalisation of the draft revised strategy on water pricing. The following policy brief notes the outcomes and recommendations from four finalised research projects in this regard.

Introduction

The National Water Act enables the Minister of Water and Sanitation, with the concurrence of the Minister of Finance, to establish a pricing strategy for any water use, within the framework of relevant government policy. Such a strategy was first developed in November 1999, followed by a revised version that came into effect in 2007, titled *A Pricing Strategy for Raw Water Use Charges*.

This version currently remains in effect, but is undergoing a process of revision to incorporate various developments. Although a draft revised strategy was published for public comment in 2015, it has yet to be finalised. In supporting the process to complete the revision of the strategy, the Water Research Commission (WRC) initiated four projects, each concentrating on specific aspects jointly identified with the Department of Water and Sanitation (DWS) and National Treasury as requiring further investigation:

- Implementation of the Waste Discharge Charge System
- Classification of social and commercial infrastructure
- Public interest functions of water resource management activities
- The Future Infrastructure Build Charge

Each of these is discussed further in this policy brief, outlining the matters of investigation, study findings and potential implications and recommendations for the revision of the strategy.

Implementation of the Waste Discharge Charge System

In response to the country's poor water quality in strategic catchments, DWS developed the Waste Discharge Charge

System (WDCS) as an economic instrument for supporting water quality management. This system has been in development for over a decade, and implementation is critical to improving the quality of our water resources. The Pricing Strategy for Water Use Charges provides the framework for implementing the WDCS, but further work was required to clarify and strengthen its expression through the strategy.

The project report revisits the theoretical foundations and policy principles and intent underpinning the WDCS, and clearly differentiates the WDCS and its Waste Mitigation Charge from other charges established by the pricing strategy. Guidance is presented on the design and costing of suitable mitigation measures to address the pollutants of interest. The process and formula for calculating the Waste Mitigation Charge are reviewed and applied in a case study of the Hartbeespoort Dam. Finally, the consultative nature of the process of implementing the WDCS is emphasised, along with an outline of the roles and responsibilities of the various parties for financing and operation of the mitigation measures.

Implications and recommendations

The study recommended four scenarios under which the pricing strategy could enable the imposition of a Waste Mitigation Charge:

- **Removal of load from the water resource**, to enable recovery of costs for developing and operating regional mitigation schemes for the reduction of loads within the water resource.
- **Water resource system operation for water quality management**, to enable recovery of costs associated with reduced system yield arising from the management

of river-reservoir systems to reduce the impact of water quality problems.

- **Treatment for downstream water users**, to enable recovery of costs incurred in developing and operating additional treatment requirements for downstream users, particularly where water quality does not meet specified Resource Quality Objectives.
- **Treatment at source**, to enable a group of dischargers to contribute directly to the costs of reducing waste load from a specific source, including regional schemes to collect and treat waste from several sources before it enters the water resource.

The following recommendations are made with respect to implementation of the Waste Mitigation Charge:

- The WDSCS should be applied at a catchment scale that includes those areas that have a significant impact on water quality or are impacted by the specific problem.
- The WDSCS should focus on load discharged. This approach (1) avoids dilution of effluent to achieve cost reduction, (2) is more equitable, as it does not disproportionately penalise small dischargers with relatively higher effluent concentrations, and (3) is simple to implement.
- A constant charge rate should be applied to the waste discharge load that does not vary against concentration.
- The WDSCS should apply to both surface and groundwater resources, with a single approach used to calculate the Waste Mitigation Charge in both surface and groundwater.
- Only registered waste discharge-related water uses in terms of Sections 21 (e), (f), (g) and (h) of the National Water Act will be liable for Waste Mitigation Charges.
- Government should be responsible for the costs associated with load that cannot be charged to registered water users.
- The pollutant load in water supplied to the discharger must be deducted from the load in water that is discharged to get an accurate assessment of contribution of the discharge to the total load, and then the calculation of the Waste Discharge Charge.
- The mitigation measures and associated Waste Discharge Charges may be phased in to enable planning by dischargers and allow adaptive setting of charges as conditions change.
- Minimum load thresholds for imposition of charges may be specified based on administrative cost considerations.

Classification of social and commercial infrastructure

The 2015 draft pricing strategy makes provision for water resource infrastructure to be classified as either social or commercial, in essence determining the funding model and

the implication for the raw water user charges. However, the strategy lacked the appropriate theoretical basis required to define such water resource users, as well as lacking clear and objective guidelines to classify the social and commercial components of large raw water projects.

Therefore, this project set out to provide the theoretical foundations, guidelines, criteria and the process on which the social and economic water users and social and commercial water resource infrastructures will be classified. The theoretical approach is anchored on the principles of public finance, where the use of water for private, social or public purposes was used as a basis for defining water users. This allowed the development of guidelines for distinguishing between raw water volumes for domestic use in distressed areas (social users) from raw water volumes for economic use by other domestic, industry and agricultural users (economic users). This distinction provides the basis for a national charge, in the form of the Future Infrastructure Build Charge (FIBC), and user charges, in the form of the Capital User Charges (CUC), that will fund the water resource projects. Raw water users in areas that are identified as financially distressed should benefit from investments made with FIBC funds and should not be liable for CUC.

Implications and recommendations

- Given that raw water is generally used towards the production of goods, it is recommended that social users be defined as users of raw water who produce public, social and merit goods that benefit society in general and the poor in particular, and economic users be defined as users of raw water for the production of private goods.
- Using the six categories of users defined in the current pricing strategy, the study recommends that municipal users of water resources that are identified as socially and economically distressed as the basis for calculating the national charge and subsequent support through the FIBC. This approach notes that the agriculture and municipal water use categories each contain both social and economic users.
- The strategy should consider using the local government equitable share (LGES) formula to identify municipalities with limited revenue-generating potential (as an indicator of social and economic distress), and thereby determine social municipal users of raw water.
- As such, there are currently 54 municipalities identified using this formula as having a limited revenue base and severe resource constraints. It is recommended that these municipalities should be targeted for infrastructure investment through funding from the FIBC and the fiscus.

- Raw water infrastructure should be classified into social and commercial components using the objective criteria proposed in the report. The primary criterion is the share of such infrastructure used by social users and economic users respectively.
- The classification can be applied to annual capital expenditure plans as per the ten-year Infrastructure Plan, and tariffs will be approved annually through the processes as required by the Treasury Regulation for Trading Entities.
- Once infrastructure is classified, it is recommended that the Minister consults with the Minister of Finance and the Minister of Cooperative Governance and Traditional Affairs, to ensure that the financing implications and the application of the LGES formula are appropriately addressed.

Public interest functions of water resource management activities

The 2015 draft pricing strategy affirms the principle that DWS will provide fiscal support for core national and public interest functions undertaken by water management institutions, the cost of which cannot be recovered fully through water use charges. In finalising the strategy, work was needed to strengthen the way in which the public interest functions of water resource management activities are handled.

This project thus set out to provide a clear definition of the public interest functions, clarify the relevant enabling policy objectives and principles, and quantify the portion to be funded through fiscal support. This entailed developing a consistent and transparent method for calculating the fiscal contribution towards the public interest component of water resource management activities, versus the component of these activities to be funded through the Water Resource Management Charge. The method was applied to each of the eleven water resource management activities listed in the draft water pricing strategy, within the context of each of the six current and planned Catchment Management Agencies (CMAs).

The Excel model developed by the project provides a disaggregated cost per function per CMA per year. For 2023, the results of the modelling indicate that the proportion of the total costs of CMAs' water resource management activities that should be funded by the fiscus is in the order of 33%, or R263 million. Guidelines are provided for the use and further development of this model, as better-quality data become available.

Implications and recommendations

- In relation to CMA functions, public interest functions should be defined as those that have a benefit that is experienced not only by the CMA's customers (i.e., those paying user charges to the CMA).
- The budgeted expenditure approach used in the report should be applied at present as the basis for costing the CMA and proto-CMA activities. However, over the medium term, the unit cost approach is favoured as the institutions mature. Unit costs should be informed by other costing processes that are being implemented by a range of actors.
- In the interim, performance data and/or data on cost benchmarks should continue to be gathered, to allow the relative performance of the CMAs to be accommodated into the unit cost approach.
- There is a level of subjectivity in the determination of the proportions of activities and functions that are in the public interest. Given this subjectivity, consultations should be as broad as possible, including officials from DWS, CMAs and other government entities that are involved in water resource management.

The Future Infrastructure Build Charge

The 2015 draft pricing strategy introduced the Future Infrastructure Build Charge (FIBC), intended to support the development of social and economic development stimulus infrastructure. In finalising the strategy, there was however a need to develop the concept further, by revisiting the theoretical foundations and existing, relevant policy principles and intent underpinning the conceptualisation of the FIBC.

The resulting study identified and compared four alternatives to the FIBC, following which it was confirmed that the FIBC was the most appropriate and practical approach to fund social infrastructure. An approach to calculating the FIBC was developed, drawing on cost and water demand information used in the financial model for the proposed National Water Resources Infrastructure Agency (NWRIA). An Excel model was prepared and calculations done for several scenarios, returning indicative charge amounts ranging from R0.49 – R1.06 per cubic metre across the range of scenarios. The study concluded by proposing suitable wording for inclusion in the revised pricing strategy that describes the FIBC, its purpose and its calculation.

Implications and recommendations

- The analysis carried out through the study confirms that the FIBC is the preferred mechanism for funding the development and betterment of social and economic development stimulus infrastructure.

- The FIBC should not replace fiscal contributions to the development of social infrastructure. Appropriations from the National Revenue Fund plus FIBC revenue will make up the total spend on social infrastructure.
 - The quantum of the FIBC should be calculated on the volume of raw water sold nationally and not on yield, otherwise billing will produce a shortfall.
 - The FIBC will be a national, rather than catchment or scheme-based, charge. Consequently, it is recommended that the proposed NWRIA, or DWS in the interim while the NWRIA is being established, should bill and collect the FIBC.
 - A ring-fenced reserve fund should be created, containing FIBC funds that will only be spent in the future:
1. These funds should be invested according to National Treasury prescripts. This will be enabled by the NWRIA having a treasury function.
 2. Excess funds held in the reserve should be minimised by aligning capital expenditure on social projects as closely as is practical with revenue from the FIBC and National Treasury budgetary allocations.
 3. Temporary shortfalls can be bridged through off-budget

- bridging loans secured by the FIBC. Permanent shortfalls should be funded by National Treasury allocations.
4. The reserve should be managed by a special finance and internal auditing committee comprising DWS officials and NWRIA executives.
 5. The revenue accruing into the reserve and the disbursements from the reserve should be clearly reported on in the notes to the Annual Financial Statements of DWS or the NWRIA.

Conclusion

The four studies summarised in this policy brief are not only relevant to the revision of the current *Pricing Strategy for Raw Water Use Charges*. They also make a contribution to the evidence base supporting the development of wider thinking around the economic regulation of the water value chain in South Africa. There remains a need for a systematic assessment of knowledge gaps and research needs across the entire water pricing chain, in order to develop a prioritised research agenda for economic regulation in the water sector.

Related reports

Revision of the Pricing Strategy for Water Use Charges: Implementation of the Waste Discharge Charge System (WRCWD)
(WRC Report No. 3016/1/22) [Click here](#)

Revision of the Pricing Strategy for Water Use Charges: Classification of Social and Commercial projects
(WRC Report No. 3018/1/22) [Click here](#)

Revision of the Pricing Strategy for Water Use Charges: Public Interest Functions of Water Resource Management Activities
(WRC Report No. 3019/1/22) [Click here](#)

Revision of the Pricing Strategy for Water Use Charges: Future Infrastructure Build Charge
(WRC Report No. 3023/1/22) [Click here](#)

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