POLICY BRIEF

June 2019
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.

Incorporating the economics of ecosystems and biodiversity in pricing water and its management

Economic development in South Africa results in increased pressure on aquatic ecosystems. To mitigate the resultant degradation, various government departments have policies in place to regulate activities that damage ecosystems, including economic policy instruments. A Water Research Commission research project successfully developed a conceptual framework for economic policy instruments for the water sector through a triangulation of critical literature review, ecosystem services analysis and South African water policy review.

Focus on: environmental degradation

South Africa's economic development has put increased pressure on aquatic ecosystems. In order to mitigate the resultant degradation, various government departments have policies and legislation in place that regulate activities that damage ecosystems. These include environmental impact assessments, water use licenses and broad environmental damage regulations.

To be successful at a water basin-wide scale, the regulatory threshold approach requires significant State resources to enforce compliance. This includes monitoring, evaluation, policing and punitive treatment of offenders.

It is common cause that the South African fiscus is under great pressure, thus, while we are striving towards a mature regulatory system (as above), we need to be more innovative in finding additional policy instruments that could curb environmental degradation.

Economy policy instruments
Economic policy instruments (EPIs) provide one such innovative approach.

A policy instrument is the term used to describe the methods used by governments to achieve a desired effect as envisaged in policy. Three types of policy instruments exist: regulatory instruments, suasion instruments and economic instruments.

Regulatory instruments are by far the most commonly used policy instruments internationally. Examples include laws of a rationing or prescriptive nature; and regulations that permit or license resource use, planning controls or performance standards.

Suasion instruments are ethical or discretionary instruments that use moral and direct persuasion to promote appropriate behaviour.

Economic instruments seek to influence behaviour and decision-making through introducing economic incentives or disincentives. Their purpose is usually two-fold: 1) to achieve policy objectives and 2) to generate revenue.

EPIs are not viewed as an alternative to regulatory and suasion instruments. Rather, in the design policy of EPIs, it remains important to combine the EPI with appropriate elements of regulatory and suasion instruments.

EPIs therefore fall within the ambit of the regulatory function of the Department of Water and Sanitation (DWS), Department of Environmental Affairs (DEA) and Water Service Authorities (WSAs).

EPIs for water management
In addition to developing a conceptual framework for water-related EPIs in South Africa, the project identified seven types of EPIs relevant to the management of water resources.

This entailed investigating the limitations faced by current EPIs in a South African context, and identifying and demonstrating possible alternative EPIs that would provide suitable mechanisms for internalising environmental damage into the economy.

The point of departure for identifying EPIs was the framework for ecosystem services provided by the Millennium Ecosystems Assessment (MEA). Aquatic ecosystem services, defined as the benefits provided to people by aquatic ecosystems, highlight the linkages between water resources and the economy.

The seven types of potential EPIs for water management are:

Water tariffs

- These include elements of the system of regulated tariffs that relate to sustainability policy objectives (e.g. the Water Resource Management Charge). The enabling policy environment for this exists, but would require suitable ring-fenced institutional arrangements to ensure the tariff income is spent on catchment management activities.

Green infrastructure asset management systems

- Such systems could be used to internalise ecosystem assets into existing State-operated immovable asset management systems. This would require these assets to be registered, valued and managed within existing budgetary processes.

Eco-restoration

- Eco-restoration permit trading could follow from conditions associated with environmental authorisation processes, e.g. wetland offset requirements.

Waste discharge charges

- The DWS Raw Water Pricing Strategy envisages a Waste Discharge Charge System, which enables a "polluter pays" approach. This system, yet to be implemented, includes a mitigation charge that covers the costs of measures for the mitigation of impacts arising from waste discharge.

Industrial wastewater charges

- Several municipal by-laws currently envisage a set of variable rate charges that target industrial users whose wastewater is being treated in municipal facilities but contains extremely high levels of particular pollutants.

Pollution deposit-refund system

- Pollution deposit-refund systems are systems where impactors may purchase pollution concessions and then get refunded for reducing emissions.

Water pollution permit trading

- In addition to the Waste Discharge Charge System serving as an incentive to polluters to reduce their effluent discharges, polluters could also have the option of mitigating their pollution through buying and selling tradable permits. This could operate along the lines of cap and trade systems used in mitigating air pollutants.

Demonstrating potential

Economic models were developed for four of these EPIs (water tariffs, industrial waste water charge with deposit refund, conservation credit trading, and waste discharge charges with tradable permits) that were considered to have the best potential for implementation. The findings of the work illustrate that EPIs could internalise ecosystem benefits into the economy in a way that can achieve a "double-dividend" in the form of achieving policy objectives and generating revenue.

Several conditions for successful EPI implementation were identified:

- The policy objective(s) of the EPI need to be clearly defined;
- EPIs should be complimented by suitable regulatory instruments;
- The process should be initiated by the regulator, i.e. DWS, DEA or WSAs;
- Ecosystem service benefits need to be clear and measurable;
- Users/impactors need to be clearly identified;
- Benefits and beneficiaries need to be clearly identified;
- An appropriate combination of transaction clearing mechanisms (institutional arrangements) need to be in place;
- Transaction costs need to be controlled; and
- The private sector would play a key role in implementing EPIs and need to be involved from the outset.

Way forward

The report concludes that there is a need for a range of suitable transaction clearing mechanisms and institutional arrangements to be in place in order to enable implementation of EPIs. Although in South Africa these are not fully mature, it remains possible to design EPIs that build on existing areas of strength.

In taking this work forward, the report recommends in-depth case studies on potential EPIs that develop the required transaction clearing mechanisms and perform feasibility testing, using appropriate regulatory and valuation assessment techniques.

Associated project:
Towards the development of economic policy instruments for sustainable management of water resources (**Project No. K5/2529**). Contact the WRC at Tel: (012) 761 9300, or Visit: www.wrc.org.za.