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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.

The opportunity of independent water producers in South Africa

The concept of independent water producers (IWPs) is relatively new in the South African water landscape. The Water Research Commission (WRC) funded a recently-published study to unpack and understand this opportunity within the South African water legislation and institutional context. The study also explored the route to the introduction of independent water producers in South Africa.

Background

Independent water production (IWP) is an increasingly common approach to securing water supplies internationally. This is particularly true of drought prone and water scarce regions. This typically involves the private ownership of water production assets (for example, treatment works, dams, and barges) and the sale of water to public offtakers at scale for public distribution.

Recent droughts in Australia, California (USA) and Spain, as well as increasing development in Dubai, Abu Dhabi and Israel, for example, have seen a rise in seawater desalination plants, many of which are owned and independently operated for supply to cities and industries. These operations typically have long-term offtake agreements with the public operator or other customers.

What is an independent water producer?

An independent water producer is understood to be an entity, which is not a publicly owned water utility, but which owns and operates facilities to produce water for sale to customers. Customers can include utilities, central government, municipalities and end users, like industry or farmers.

The international experience of independent water producers has been varied, with viability depending heavily on contextual factors including scale, quality of feedwater, location of plant, extent of environmental regulation, cost and availability of energy, and the extent of drought.

A review of the literature and engagement with key stakeholders suggest that there are both IWP and other private sector service provision opportunities in the South African water sector. IWP opportunities exist through several technologies, some well-established either in South Africa or internationally, and others that are emerging and are untested.

Options for the introduction of IWPs in South Africa

There are two broad pathways that existing for the introduction of IWPs in South Africa. These are the introduction of IWPs within the existing legislative and institutional framework or amending the current legislative framework to allow for the introduction of IWPs within the existing water value chain.

Amending the existing legislative framework will require Ministerial approval and compliance with the consultation and other existing processes to amend legislation. However, the introduction of IWPs within the existing legislation framework may require the introduction of additional regulations to prevent unintended consequences.

Various options have been identified in South Africa for the potential introduction of IWPs. The final report sets out the potential impact financial, institutional complexities and skills availability of each of these options.

Option 1: Conventional bulk production (ground and surface water)

Conventional bulk production IWPs would involve the ownership of water source and the associated bulk production infrastructure (treatment works and bulk pipelines) by the independent water producer. The IWP

would also manage the operation and maintenance of the infrastructure and would assume the risk associated with this.

These IWP would require long-term offtake agreements with its customers. It is likely that these IWP operations would take the form of a public-private partnership (PPP), most likely under the Public Finance Management Act and Regulation 16 (although potentially also under the Municipal Finance Management Act for water service authorities (WSAs)). Under current legislation the IWP could not own the resource where from which they source their water.

Option 2: Desalination for bulk water production

IWPs would be the owner of the desalination infrastructure by the independent water producer. The IWP would also manage the operation and maintenance of the infrastructure and would assume the risk associated with this activity. These IWPs would require long term offtake agreements with large public sector off takers such as water boards, and WSAs in coastal areas. It is likely that these IWP operations would take the form of a PPP.

Option 3: Wastewater treatment for reuse

Wastewater treatment IWPs in this context would involve the ownership of the treatment works infrastructure by the independent water producer and the distribution network to the customer. The IWP would also manage the operation and maintenance of the infrastructure and would assume the risk associated with this. These IWPs would require long term offtake agreements with off takers most likely WSAs, but potentially water boards or industry.

IWP in this context would most likely be reliant on a WSA for this unless a large wastewater producer could be sourced. The IWP may need to take over management of WSA wastewater treatment plant to ensure effluent quality is suitable for potable water production. It is likely that these IWP operations would take the form of a PPP given the likelihood need to integrate into a municipal network unless a large industrial or commercial customer could be sourced as an off-taker.

Option 4: Community management through water services committees

IWPs in this context would involve the contracting of an IWP by a water services committee in terms of Section 51 of the Water Services Act where WSAs are unable to provide the service. The IWP could build, operate and maintain new water production infrastructure, likely groundwater abstraction and treatment, wastewater treatment or seawater desalination and would assume the risk associated

with this. It could also potentially manage, operate and maintain existing water infrastructure. These IWPs would likely be moderately sized and required medium term off-take agreements for implementation to generate a return on investment.

Option 5: Emerging innovations

IWPs using emerging innovation will be structured in a way that best responds to the technology. They could supply potentially at any scale, which any type of off-taker. If that off-taker is a public institution there is a high possibility that the IWP will need to be procured through an unsolicited bid.

Conclusions and recommendations

The opportunity for IWP exists in South Africa, particularly around desalination, wastewater reuse, and small-scale production for industry. However, for IWP to make a contribution to addressing South Africa's water challenges, of adequate skills, finance, and water resilience significant work is likely to be needed to be done to address areas of institutional weakness in the water sector.

A small number of water boards and WSAs could currently be reliable customers for IWPs, the majority of water sector institutions are investment partners. IWP could be implemented either by focusing on those water boards and WSAs that:

- Have strong credit ratings;
- Are developing programmes associated with specific type of projects, such as seawater desalination or wastewater reuse; and
- Streamlining process around procuring these and bringing them online.

An alternative approach would be to develop a single off-taker with sovereign guarantees to purchase water on behalf of Water Boards and WSAs from IWP at scale, for distribution into the networks and free up water upstream in the value chain. This would require institutional restructuring at a national level. However, it may be possible to incorporate this into the development of the National Water Resources Infrastructure Agency.

Industry will develop its own water supply to ensure security of supply security in the appropriate conditions. This additional supply and possible redundancy is useful for building resilience in the broader water sector and the national economy. However, it does pose threats to municipal revenue. Restrictions and uncertainties created in the regulations around water sector intermediaries are the biggest barrier to industry doing this and should be

improved. However, these activities should not be subsidised through public funds.

Based on the emerging position of IWP, the table below outlines the emerging framework for the way forward to enable the introduction of IWP in South Africa. It outlines the initial steps that would need to be taken and the key principles that need to be considered within each of the identified steps.

Table 1: Emerging framework for implementation

Steps	Key principles
Investigate regulatory implications for the preferred programmes	The principle of this step is to establish which is the correct regulatory domain for IWP the Department of Water Affair and the National Water Act, the Department of Environmental Affair and the National Environmental Management Act of the Department of Trade and Industry.
Establish a regulator	The establishment of the regulator should be done in a way that ensures alignment with current processes to establish a water regulator beyond just IWP and considers the wider institutional framework. The principles of the regulator are to: ■ Ensure credible quality control of water being used and entering the South African Water System. ■ Ensure low negative impact on municipal business models to ensure that the introduction of IWP does harm democratic local government. ■ Ensure IWP has limited environmental impacts that might threaten South African water ecosystems.
Establish IWP Procurement Programmes	Process The process principles of the establishment of an IWP Procurement Programmes are: ■ To ensure a proven market for independent water production so that efforts to establish IWP opportunities is not wasted. ■ To establish a credible, reliable and fair framework for public procurement from independent water producers to give appropriate confidence in the projects. Commercial The commercial principles of the programme are: ■ To ensure credible off-takers of water produced by IWP to provide security and credibility for the required investment. ■ To establish bankability of IWP projects to attract the required investment. ■ To support producers and off-takers to prepare transactions in a complex governance framework.
Investigate emerging innovations for water production	The principle of this process is to ensure technologies used are proven before use to maintain reliable water production and water quality, while preventing investment losses.
Investigate the further use of Section 51 of the Water Services Act to enable independent community water provision in a sustainable way	This process should enable communities to provide their own water and sanitation, through water committee, where municipal service provision fails, and allow them to choose the manner in which they do so but ensuring that it is done in a sustainable way.

Related report:

Independent Water Production and Producers in South Africa (WRC Report no. 3012/1/22).

For more information, contact WRC Executive Manager, Mr Jay Bhagwan(email: jayb@wrc.org.za).