

Research, development and innovation

Research, development and innovation roadmap

The Water Research Commission (WRC) has played a leading role in the development of South Africa's Water Research, Development and Innovation Roadmap (2015-2025).

Background

Increasing water scarcity is a challenge the world over. Numerous international water bodies, including the Water Resources Group 2030 and the World Economic Forum (WEF) have identified water as a priority concern.

For four years, WEF Global Risk Reports have identified water as one of the three most important challenges worldwide; in 2015, for the first time, it has moved to the top, as the biggest societal and economic risk for the next ten years. The report assesses risks that are global in nature and have the potential to cause significant negative impact across entire countries and industries.

Risks from water overuse and shortage, poor water infrastructure and management came out on top – not as future problems but as facts today which are rapidly worsening.

Based on rising population, economic growth projections, scarcity of resources as well as current use and efficiency levels, South Africa will demand 17% more water than exists by 2030. The net deficit between supply and demand could grow to between 2.7 and 3.8 billion m³.

In addition, it is crucial to recognise that South Africa's water supplies are already almost fully allocated. This means that new businesses and industries will find it increasingly difficult to access water licences, particularly in more overdrawn catchments. Also, where licences are allocated, increasing strain will be placed on the natural systems to produce water of adequate quality and quantity.

This reality places renewed emphasis on the need for

innovative solutions, technologies and processes as well as highly skilled individuals that will be able to rise to the challenge of navigating these complexities going into the future.

About the Roadmap

The National Water Research, Development and Innovation (RDI) Roadmap provides a structured framework to focus the contribution of RDI activity to the implementation of national policy, strategy and planning in water resources management in South Africa. The vision of the roadmap is that South Africa is a leading among middle-income countries in the development and deployment of water management practices and technologies. It competes with leading countries in providing sustainable solutions.

In short, the RDI Roadmap is a high-level planning tool that facilitates and guides refocusing of research, reprioritisation of funds, synergizing of existing initiatives and ring-fencing of new resources in order to facilitate a more effective water innovation system.

Contribution of RDI towards development

This has been achieved by means of a National Water Research, Development and Deployment (RDD) of innovations programme focused on:

- Delivery of at least one breakthrough technology every five years
- Increasing the number of small- and medium-sized enterprises operating in the water sector

- Increasing access to water for rural communities, including provision of sanitation for all, in a sustainable manner

Together, this creates significant economic, health, social and environmental benefit.

The contribution of RDD to achieving the vision results from a focus on four key objectives: Increase the availability of water; improve the governance, planning and management of supply and delivery; enable water and sanitation services to operate as a sustainable 'business'; and increase the efficiency and productivity of water use.

Consultative process

The roadmap was developed through an exhaustive, structured process of eliciting staged responses from the professional community, reviewing the inputs, and assessing their implications.

The road-mapping process included participation, input, review and revision from key stakeholders in industry, government and organisations within the National System of Innovation. The roadmap provides strategic direction, a set of action plans and an implementation framework to guide, plan, coordinate and manage South Africa's portfolio investment for the next ten years in seven identified clusters of RDD activity. The investment aspiration and potential return on investment is also mapped out.

The result of this process is a set of seven plans which, over the period 2015-2025 develop out pathways to progress from the 2015 situation to a much improved future state, by implementing interventions in research, development, testing, demonstration, and deployment of new technologies and know-how, as well as demonstration and deployment of emerging technologies.

Seven identified clusters of RDD activity

Water supply

1. Increase ability to make use of more sources of water, including alternatives.
2. Improve governance, planning and management of supply and delivery.
3. Improve adequacy and performance of supply infrastructure.
4. Run water as a financially sustainable 'business' by improving operational performance.

Water demand

5. Improve governance, planning and management of demand and use.
6. Reduce losses and increase efficiency of productive use.
7. Improve performance of pricing, monitoring, billing, metering and collection.

Recipe for water sector success

Developing, strengthening and embedding South Africa's RDD capability and capacity within and between research institutions, academic institutions, industry and government, will enable faster and more effective deployment of context-appropriate technologies and create opportunities for export of know-how and technology into the African continent and beyond.

The Water RDI Roadmap thus provides a set of research, development and deployment clusters (or focal areas) and associated high level action plans to guide investments over a ten-year period. The Roadmap also lays out an investment ambition to achieve these plans.

The root contribution of the Roadmap to sector success comes through allowing better coordination, improved decision-making and greater enablement, principally through the systematic translation of research into operational practice.

Further reading:

To order the report *South Africa's Water Research, Development and Innovation (RDI) Roadmap: 2015-2025* (**Report No. 2305/1/15**) contact Publications at Tel: (012) 330-0340, Email: orders@wrc.org.za or Visit: www.wrc.org.za