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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.

Mapping transition pathways for water graduates to support water sector innovation in South Africa

A Water Research Commission (WRC) funded study explored ways to improve the academic approach to entrepreneurial transition of water sector graduates, with the aim to map entrepreneurship, innovation and intrapreneurship water sector pathways in South Africa. This initial scoping and mapping exercise aimed to map the terrain to enable better understanding of where to focus further research and discussion.

Background

There are a number of programmes and organisations that aim to support entrepreneurs and innovators, some of which are water-sector specific and/or focused on graduates. Currently, however, these efforts are fragmented. While the Water Research, Development and Innovation (RDI) Roadmap provides a high-level planning and strategy guide for resource allocation in the water sector towards capacity building, no guide exists on how to support entrepreneurship, innovation and intrapreneurship in the water sector.

The enquiry and the mapping of the pathways were focused on four questions: (1) What is the readiness of water graduates in supporting innovation and entrepreneurial solutions in South Africa? (2) What skill sets and capabilities need to be strengthened to enable water graduates to transition into entrepreneurial and innovation pathways? (3) What are the potential entrepreneurial and innovation business models available to water graduates to consider? (4) What is the role of universities, development partners and water sector institutions in helping to support and encourage these capabilities and SMME pipelines for water security in SA?

The methodology utilised was a qualitative approach and involved desktop research and conducting fourteen

interviews with three samples: (1) Organisations that incubate entrepreneurs in the water sector; (2) Water entrepreneurs; (3) Organisation that work with innovators or/ and intrapreneurs.

Main findings

Findings indicated that most graduates are not yet ready to start an enterprise, this is partly due to graduates needing further capabilities, and resources. The fact that most graduates are not yet ready to start an enterprise, does not mean that they never will. Graduates that develop entrepreneurship self-efficacy will be able to engage in entrepreneurship at different points in their life's journey, when an opportunity (or need) arises.

Early introduction in high school to entrepreneurship programmes can support these capabilities developing at a younger age. Only a small number of graduates will transition directly from studies into building and enterprise. Many other factors such as work experience, developing professional networks and securing self-capital result in many graduates deciding to first seek employment prior to starting a business. However, in the longer term, a more significant percentage will return to entrepreneurship. The development of entrepreneurship self-efficacy will enable a person to return to entrepreneurship at different points in their life journey when an opportunity (or need) arises.

The research study investigated the potential business models available to water graduates to consider as viable market entries. Findings suggest that the proposed Independent Water Producers (IWP) policy, will open access to markets and business models which were previously mandated only for government entities, widening the range of viable business in the sector. Furthermore, (municipal) procurement guidelines need to be reviewed in order to be more inclusive of Small Medium Micro Enterprise (SMMEs) that offer sustainable and innovative water management service provisions. A value chain model is suggested as a strategic way to support specific water markets ecosystem development.

The research also explored the role universities could play as a pipeline for research, development and innovation, preparing entrepreneurs within specific clusters of specialisation, in line with the Water RDI Roadmap. By partnering with niche water/green economy incubators, centres of excellence could be created – offering the balance of technical and research expertise as well as market intelligence and networks. Such centres of excellence could attract further public-private collaboration as well as investment funding for commercialisation.

Findings emphasise the importance of innovators having the option of owning their IP and a possible way for this to happen. The role of brokers is also highlighted. These are brokers between the innovator and private sector investment in commercialising IP. There are also intrapreneur brokers within private or public sector organisations that could broker the relationship between a new technology and their organisation, facilitate the uptake and assimilation of innovations within their organisation.

Main recommendations

In terms of **a potential pathway to accelerate the transition from graduate to entrepreneur in the water sector, as well as bring about innovation in the water sector**, the following are recommended:

- Funnel graduates to choose their university based on the water (RDI) Roadmap's research focus areas (RFAs) and cluster of interest. Outcome: To enable the streamlining of research, innovation and expertise for each RFA and cluster.
- Universities to partner with niche water/green economy incubators to assist with building and commercialising the IP of new water technology. The role of the universities will be to ensure research expertise, and the role of the incubators will be to develop entrepreneurial skills and capabilities. Outcome: to align sector expertise, market intelligence and technological expertise, to identify new technology with high potential IP and ensure they reach the market
- Develop a new role of a water innovation extension officer – an intrapreneur, within private or public sector organisations. These extension officers (intrapreneurs) would broker the relationship between a new technology and their organisations.
- In terms of the proposed Independent Water Producers policy, in the future, water entrepreneurs will have access to markets and business models which were previously mandated only for government entities. Diverse business models, such as social enterprises, are available to incumbents, enabling SMMEs to enter the value chain. Outcome: independent water producers and social enterprises will be able to create and operate sustainable businesses, resulting in increased opportunities within the value chain;
- Create a forum including the following key stakeholder: higher education institutions (HEI), technical transfer offices, water innovation brokers, entrepreneurs, and public and private sector organisations. This forum will provide a space for knowledge sharing and networking. Outcome: current market intelligence is linked to the specific Research Focus Areas and will be fed back to HEI research clusters. National System of Innovation leveraged via a central coordinating body.

Related report:

Mapping academic to entrepreneurial and intrapreneurial transition pathways for water graduates to support water sector innovation in South Africa (WRC Report no. 30371/1/22). Visit: <https://wrcwebsite.azurewebsites.net/wp-content/uploads/mdocs/30371.pdf> to download the report.