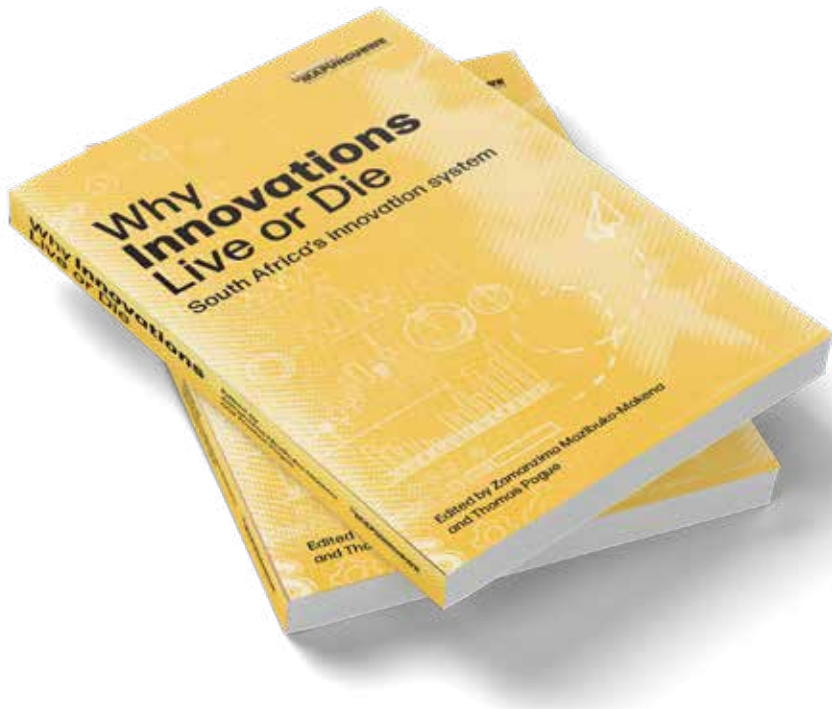


# A MISTRA Policy Brief



*A research project  
of the Mapungubwe  
Institute for  
Strategic Reflection  
(MISTRA)  
Launched February 2024*

## ***Why Innovations Live or Die: South Africa's innovation system***

South Africa has made great progress in developing its scientific and technological capabilities and in introducing policies to support economic and social development through science and technology. Despite this progress, the country faces challenges in delivering on the commercialisation of highly promising research, including some world-class research projects. While recognising that innovative activities are inherently unpredictable and unlikely to

be linear, improving the commercialisation and success of new products would mean that South Africa would be better able to produce innovations that support economic growth and social development. It could also establish itself as a more competitive innovation destination. Ultimately, effective development of technologies requires investment, knowledge of institutional environments, specialised skills and understanding of opportunity niches.

# Core argument

MISTRA's publication describes a range of successful and unsuccessful journeys taken in pursuit of technology commercialisation, as well as the co-evolution of these technologies within broader economic dynamics. Various chapters also assess the outcomes of these journeys and their relationships to issues such as development, social power and agency. The fundamental questions asked are about the relevance of innovations to the country's citizens, and whether the system promotes economic growth, social inclusion and initiative across all sectors of the population. Contributors argue that the philosophical

outlook that informs innovation policy; the attitude of mind in both the public and private sectors; and the content and timeframes attached to national development planning are as important as technical issues related to scientific expertise, training pipelines and resource allocation. In other words, the authors make a case for a system of innovation that functions as a holistic domain, straddling a variety of disciplines and spatial issues. The book also underlines the importance of broadening the vistas of research and avoiding socially costly path dependencies.

# Policy recommendations

## Prioritise adaptation and adoption of existing technologies

There is an excessive focus in current technology policy on supplying novel technologies rather than supporting standard engineering and/or structural deepening. An important policy implication of MISTRA's book is the recognition that the adaptation and adoption of existing technologies require distinct technology policy.

- Profile varied firms' innovation models to ascertain national and sectoral patterns of capabilities. This information would be a starting point for policy to monitor the implementation of a balance between technology demand and supply-side interventions.
- Assist intermediation and quasi-autonomous, non-governmental organisations (quangos) to overcome bureaucratic, siloed modes of operating. This is because such organisations hold promise to build capabilities within groups or companies aspiring to commercialise technologies. Cross-departmental coordination, actor interaction and the sharing of knowledge resources should be facilitated.
- Develop dynamic capabilities within the public sector. There must be systematic articulation between a range of regulatory, financial and 'soft' policy interventions aimed at tackling market and system failures. Such articulation would shape and change barriers to innovation at firm level; and the innovation capabilities of all categories of firms would grow, across the broad national system of innovation (NSI).
- Foster competitive environments, and develop workforce skills of sufficiently high standards to support the adaption and adoption of existing technologies.
- There are two key prerequisites for all of the above proposals to be implemented: enhanced human capital and a diverse range of technologies. Both of these factors will require significant investment. It is important to establish the extent and nature of the investment needed as without it there can be no reorientation towards new solutions, or adaptations within existing technologies

## Increase focus on the socioeconomic impacts of technologies

There is a need to recognise the ways in which technology is targeted towards particular goals, narratives or markets by those with power. That recognition of how elites shape the direction, use and progress of technology is fundamental to MISTRA's new book. There must be more deliberate and practical consideration of public-sector innovation within the broader NSI at both national and sub-national levels. A different approach to innovation and development should be adopted: one that is based on a broad framing of the NSI's approach and takes account of the political economies and geopolitical imbalances faced by developing countries.

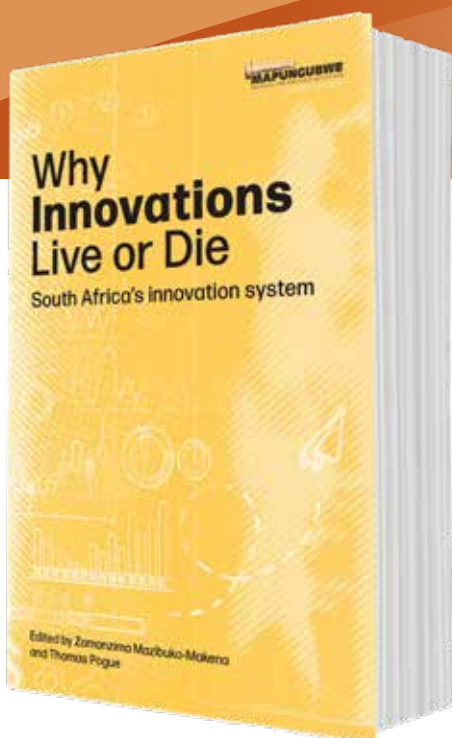
- An inclusive and transformative focus on new technologies must be fostered, especially those developed by public agencies. Incentives should be offered to researchers and programmes in public agencies to develop technologies with public-value outcomes. Greater funding would assist such policies, and allow an increased flow of resources towards technology transfer processes that emphasise public-value inputs and outcomes.
- A more developmental, human-centred public-sector innovation policy must be implemented to increase the impact of South Africa's technologies on the country's socioeconomic needs. Such policy would impact both on the challenges being addressed by the technologies and on the ways in which innovators are enabled to address such challenges.
- Policy initiatives should include the formation of a public-sector innovation 'living lab' that would foster collaborative arrangements and include state and non-state actors. These types of policies are related to other efforts, including developing public-interest technologies, which seek to prioritise historically disadvantaged populations while leveraging resources to generate better socioeconomic outcomes.
- There should be consideration of the socioeconomic impacts of technology and this should not be limited to public agencies only. Rather, the development of new technologies should be interrogated to assess the social costs and benefits for all sectors of society. Such an interrogation would address the legacies of the unequal distribution of the benefits associated with the technologies' journeys, and facilitate the development of policies that realise, where needed, the transformation of existing technological domains.
- The so-called 'innovation chasm paradigm' does not offer insight into whether any aspect of the innovation system is failing to support the commercialisation of technologies. In fact, its implication of viable South African technologies waiting to be commercialised seems dangerously misleading about the actual features that need to be addressed to enable the South African innovation system to realise its development goals. Therefore, focus should be more on the broader innovation ecosystem as part of a more impactful and aligned technology policy.

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## Move away from traditional, siloed models of responsibilities across and within agents

A move towards technology policies aimed at wider social benefits requires innovators to reframe the missions of their technologies. Change of this kind involves significant rethinking of science, technology and innovation policies to provide enhanced directionality and coordination.

- Policy interventions are needed to foster greater efficiency in the system. Examples of such interventions include demand-side mechanisms focused on building opportunity niches.
- Better understanding is required of what can be done to foster a connected state that works across various departments and spheres of government to advance South Africa's development goals. This entails moving beyond a traditional focus on binary distinctions (such as those between 'product' and 'process' innovation, or between innovations based on science and technology as opposed to innovation derived from learning-by-doing, by-using and by-interacting). These binaries provide limited policy direction and can lead to misalignment and gaps.
- There is a disconnect between decision-makers and public officials at the coalface of service delivery, and what is produced through the narrow conception of the NSI. This disjuncture results in failures or unscaled innovations. National government needs to broaden its approach to better enable the role of other spheres of government, especially cities, through funding, alignment and scaling of innovations that work.
- A more integrated approach needs to be adopted to manage dynamic innovation 'life and death' cycles. Mechanisms need to be developed to prevent failure, bridge chasms in funding and capacity and protect new niches whilst retiring innovations that have run their course. This would represent a distinct change in and reconceptualisation of current technology policy. Importantly, it also requires active and purposeful management of technology failures, so that the lessons and capabilities generated become systemic contributions to a process of further discovery rather than isolated and abandoned investments.
- Government needs to shift its approach to fostering technologies from specific projects and technologies to a broader and more systemic one. There must be an emphasis on investment in emerging technologies rather than on the pursuit of science for a particular commercial aim.



*The published book containing the research report entitled Why Innovations Live or Die: South Africa's innovation system can be purchased from: [sales@jacana.co.za](mailto:sales@jacana.co.za) | Tel: +27 011 628 3200*

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