

Thought Leader

EMBRACING 4IR

PROFESSOR TSHILIDZI MARWALA suggests ways in which South Africa should take advantage of the opportunities presented by the fourth industrial revolution.

Our 4IR national strategy is based on eight recommendations. It's important to note this strategy is applicable to the entire continent. The recommendations are made through an African lens, and have the potential to help Africa leapfrog as a whole.

Invest in human capital. As the concerns around human irrelevance and job losses arise, a comprehensive view of the entire human capital system must be developed, and leverage points that can be accelerated by 4IR need to be identified. Through the adoption of a skills revolution, there should be a focus on communication, logical and numerical skills from school level. These skills should fit into the ability to code, think computationally and have a holistic approach to problem-solving. This investment can be scaled for exponential skills pipeline development and market absorption.

Establish a national artificial intelligence (AI) institute. This would focus on the application of AI in health, agriculture, finance, mining, manufacturing, government and regulations. It would be responsible for supporting capacity development within neural networks, natural language processing and computer vision (among others). To spur the industrial and research applications of AI, we need to make high-performance computing available for widespread use. This institute would focus on research and development, as well as implementation capabilities in AI. A mandate to include training will bolster the investment in human capital.

Establish a platform for advanced manufacturing of new materials in the context of 4IR. It needs to be supported by a state-led research initiative to grow the sector, and develop and apply new materials through the technologies of 4IR.

Secure and avail data to enable innovation. This is critical to building e-government portals and services across sectors such as health, transport and justice, and could be achieved through the creation of a national data centre, which would consolidate the available computational power and become the national data repository for all our data. This can be done alongside existing data centre companies. However, cybersecurity will need to be bolstered substantially in order to safeguard the public.

Incentivise future industries, platforms and applications for 4IR technologies. Companies should be incentivised to use 4IR technologies to improve South



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African competitiveness. These incentives should include tax breaks as well as support for research and development, using organisations such as the Council for Scientific and Industrial Research, the National Research Foundation, the Medical Research Council and the Agricultural Research Council.

Build 4IR infrastructure that integrates with existing economic and social infrastructure. We need to look at the generation and delivery of energy, and the extension and improvement of water infrastructure as well as the health and educational infrastructure to create a coherent and comprehensive network. The first step will be for government to develop a set of infrastructure priorities for the country, with achievable timelines.

Review, amend or create policy and legislation. Parliament should look at all our legislation and update it in line with 4IR. This would require the legislature and the state executives to be trained to become 4IR- and science-literate to implement changes.

Establish a 4IR strategy implementation coordination council within the presidency. This will coordinate government departments responsible for 4IR. In addition to this, the council will coordinate activities across the public and private sectors, labour and academia.

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