



UNITED NATIONS
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**TECHNOLOGY ASSESSMENT FOR SUSTAINABLE DEVELOPMENT
EXPERIENCE
FROM SOUTH AFRICA**

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BACKGROUND INFORMATION

- ▶ The paper highlights TA into sustainable development: Leveraging New Technologies' Impact through Technology Assessments: Experience from South Africa.
- ▶ The vision of the Department of Agriculture, Land Reform and Rural Development (DALRRD) is to have equitable access to land, integrated rural development, sustainable agriculture, and food security for all.
- ▶ Its mission is to accelerate land reform, catalyse rural development, and improve agricultural production to stimulate economic growth and food security through transformed land ownership patterns.

Background Information Cont.)

- ▶ The Department of Mineral Resources and Energy (DMRE) is mandated to ensure the transparent and efficient regulation of South Africa's mineral resources and minerals industry and the safe and sustainable energy provision supporting socio-economic development.
- ▶ The South African energy sector is dominated by coal, which is plentiful, cheap, and ranked among the world's lowest energy costs. Coal is comprising around 80% of the country's energy mix.
- ▶ Other sources include biomass, such as wood and dung, natural gas, hydropower, nuclear power, solar power, and wind.

Source of Energy and Installed Capacity in South Africa

Source of Energy	Installed Capacity	Percentage
Coal	204,079 MW	50.0%
Lignite	6,620 MW	1.6%
Gas	24,824 MW	6.1%
Diesel	562 MW	0.1%
Hydropower	46,850 MW	11.5%
Wind, Solar & Other RE	118,080 MW	29.0%
Nuclear	6,780 MW	1.7%.

Source: The South Africa Energy Report, Pretoria 2021.

South Africa Key Energy Policies and Legislations

No	Policy and Legislation
1	Petroleum Products Act, 1977.
2	White Paper on the Energy Policy, December 1998.
3	Nuclear Energy Act, 1999.
4	The Gas Act, 2001
5	White Paper on Renewable Energy, November 2003.
6	Nuclear Energy Policy, October 2008.
7	Integrated Resource Plan (IRP) 2010 - 30.
8	National Energy Act, 2008.

Source: The South African Energy Report 2021, Pretoria.

Sustainable Development in South Africa

- ▶ For development to be sustainable in South Africa, each generation must leave the following stock of productive capacity in the form of materials, socio-technological and human assets.
- ▶ These assets should be capable of sustaining and improving the level and growth of utility or well-being per capita enjoyed by the current generation, or at the very least, is equal to that enjoyed by the current generation.
- ▶ In other words, sustainable development requires that the stock of natural, manufactured, social, and human capital should not decline. This has come to be known as the Sustainable Constant Capital Rule (CCR), another concept at the heart of the Technology Assessment in South Africa.

UNCTAD Agriculture and Energy Pilot Project in South Africa

- ▶ The UNCTAD pilot project aims to build TA capacity in the three beneficiary countries by undertaking an exercise on one or more technologies used in agriculture and energy-based, universally using the UNCTAD TA methodology.
- ▶ In democratic South Africa, where the country's resources are shared by 100 % of the population, not like the time of minority past rule, pressure on resources remains severe, raising the spectres of economic uncertainty and conflict again.
- ▶ Technology-related problems are often the result of poor policies, corruption, inadequate regulation, and lack of transparency.
- ▶ To develop TA capacity in South Africa, with approximately 61 million people, the Department of Science and Innovation (DSI) is implementing a pilot project of the UNCTAD.
- ▶ We need massively to increase South Africa's lending and borrowing capacity at ZERO interest rate like developed economies countries. Currently, developing economies countries pay 5 to 10% coupon rates or have no access at all.
- ▶ The problem is that people need to look at the numbers for developing economies countries. We need the absolute numbers of finance to back the national pathways on TA towards sustainable development.

South Africa's Innovation Performance – Historical Perspective

- ▶ In a Democratic SA, all research and development (R&D) performers have seen steady spending increases.
- ▶ Of particular importance is that the share of business enterprises in R&D is high, and its share has been increasing. The business now accounts for 56.3 % of R&D.
- ▶ Higher education account to 21.1% and the Government 20.1% are each responsible for approximately one-fifth of R&D performed, with the not-for-profit sector making up the remainder.
- ▶ The business sector provides 45 % of total R&D funding. 68% of R&D in the business sector is conducted by local businesses and 18.4% by foreign companies. The Government provides 32%, and foreign sources provide 15% of total R&D funding.
- ▶ The Government and the higher education sector are recipients of significant R&D financing from businesses and the foreign sector. This is positive progress, but we still have a long way to go to achieve sustainable development for all South Africans.

1996 & 2019 White Paper on Science and Technology

- ▶ The 1996 White Paper was based on an extensive review of the National System of Innovation (NSI.) which sets the long-term policy direction for the SA Government to ensure a growing role for science, technology, and innovation (STI) in a more prosperous and inclusive society.
- ▶ The aim of early post-1994 STI policy development was: (i) to transform the STI system to serve all SAfricans, (ii) to counter STI policy fragmentation, (iii) to expand and transform human resources, (iv) to provide more support for R&D, (v) to build the required STI institutions, (vi) to increase innovation to support economic growth and socio-economic development, and (vii) to increase the financial resources of the system.
- ▶ In 2002 National Research and Development Strategy and the Ten-Year Innovation Plan for South Africa (2008-2018) were launched.
- ▶ The continued evolution in STI policy saw the adoption of a new White Paper on Science, Technology, and Innovation and the 2021-2031 Science, Technology, and Innovation Decadal Plan in March 2019 and March 2021, respectively.

The Success of the National System of Innovation in South Africa

- ▶ South Africa's National System of Innovation has been successful to a degree – at least in four ways: (i) it has illustrated the linkages between science and economic activity, (ii) innovation has been placed at the Centre of scientific endeavours, (iii) it has ensured that agenda setting within the macroeconomics public policy sphere prioritises science and technology and, (iv) emphasised on the importance of synergy within the network of institutions in the NSI.
- ▶ The significant role of Science, Technology, and Innovation (STI) in the National Development Plan (NDP) indicates that STI is integrated into government planning.
- ▶ Remember that challenges remain, the Government's effort in setting up institutions, building NSI relationships and facilitating the coherence of STI programmes is beginning to have positive results. Expanding the research system, developing, and transforming high-level is essential for developing TA.

South Africa National Development Plan (Vision 2030)

- ▶ The NDP 2030, adopted in 2012, proposes a multidimensional framework to bring about a virtuous development cycle with progress in one area supporting advances in others. It recognises the role of STI in accelerating economic transformation in South Africa and improving the country's global competitiveness.
- ▶ Vision 2030 on agriculture South Africa's rural communities should have more significant opportunities to participate fully in the country's economic, social, and political life.
- ▶ The vision includes better integration of the country's rural areas, achieved through successful land reform, job creation and poverty alleviation. The driving force behind this will be an expansion of irrigated agriculture, supplemented by dry-land production where feasible.
- ▶ Vision 2030 on energy sector is to promote economic growth and development through adequate energy investment that is competitively priced, dependable, and efficient.
- ▶ Local energy technology production must support job creation on social equity through expanded access to energy services, affordable tariffs, and well-targeted and sustainable subsidies for needy households. On environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change.

South Africa DSI Revised Strategic Plan 2020-2025

- ▶ In the process of implementing the UNCTAD pilot TA project for the 2020-2025 Strategic Plan period, the Department of Science and Innovation (DSI) will work with the Department of Higher Education and Training (DHET) on the implementation of the Historically Disadvantaged Institution Development Programme, an intervention aimed at the holistic development of the country's historically disadvantaged institutions (HDIs).
- ▶ Work on the Decadal Plan is underway, which implements the 2019 White Paper on Science Technology and Innovation (The White Paper) vision, namely STI's enabling inclusive and sustainable South African development in a changing world.
- ▶ The Science Technology and Innovation Decadal Plan (Decadal Plan) has a dual purpose of pivoting the National System of Innovation (NSI) towards making an increased positive impact on South Africa's socio-economic and environmental priorities and maintaining equilibrium between effects (e.g., inclusive innovation) and continued investment and development of the NSI.

Progress on Technology Assessment Pilot Project

Progress in South Africa

- ▶ South Africa's political transition is known as one of the most remarkable political feats of the past Century. The new dispensation in 1994 inherited an ailing science and technology system, with challenges that included the financial consequences of the termination of apartheid technology missions. This had military dominance in the subcontinent, energy self-sufficiency by the apartheid government between 1990 and 1994, and the strategic risks faced by the Southern African Development Community (SADC) from a human, economic and security perspective.
- ▶ South Africa as a member of the United Nations, is committed to the 2030 Agenda for Sustainable Development, agreed to by all members of the United Nations in 2015, which sets out 17 Sustainable Development Goals (SDGs). The 2030 Agenda recognises the role and contribution of STI in implementing all 17 SDGs, with dedicated programmes of support emerging from the STI community.
- ▶ The DSI supports various initiatives to help municipalities localise the SDGs and “JUST TRANSITION”.
- ▶ The Department of Science and Innovation is developing an Energy Science, Technology, and Innovation Plan for South Africa to support the Decadal Plan's implementation. One of the critical elements of the Energy Science, Technology and Innovation Plan is a coherent RDI strategy based on priorities for funding.

The Constitution of the Steering Committee of the Pilot Project

	STEERING COMMITTEE	EXPERT GROUP
1	Agricultural Research Council	Agricultural Research Council
2	Department of Agriculture, Land Reform and Rural Development	Department of Agriculture, Land Reform and Rural Development
3	Department of Science and Innovation (Agric and Energy sections)	Department of Science and Innovation (Agric and Energy sections)
4	South African National Energy Development institute	South African National Energy Development Institute
5	Technology innovation Agency (Agric and Energy)	Green Cape
6	Academy of Science of South Africa (Gender desk)	Academia) University of Pretoria
7	Independent TA Experts/Consultants	UNIDO (SADC office) and others
		Independent TA Experts/Consultants

Learn to Live with Something in the Twenty-first Century

- ▶ The African continent accounted for more than 7.9 million daily barrels in 2019, about 9.6% of world output. Africa is also richly endowed with natural resources, with almost half of its 55 countries known to have proven natural gas reserves. Across the entire continent, natural gas reserves total more than eight hundred trillion cubic feet.
- ▶ This is the first time in history that "collective efforts" failed to move to the position of control of the entire globe; it cannot penetrate anywhere it pleases, moves labour and capital, and manipulate trade. We understand that "collective efforts" cannot develop the entire world because they cannot use the techniques with which they created the central countries of capitalism.
- ▶ Therefore, my appeal to UNCTAD Commission session delegates is summarised in two words, "**DUTY & RESPONSIBILITY**". We must study and understand TA and sustainable development, turn science, technology, and innovation into profit work for human welfare, and learn how to "LEARN TO LIVE WITH SOMETHING" to minimise unnecessary suffering from unnecessary conflict as we witness today. This strange period of turmoil will continue. It is a very unsettling period in which we live history in a way that has never been before because of instantaneous communication. We still need to control the narrative. We are yet to be the subjects of history in an active sense. Indeed, we are the subject of history in a subordinated mind.

**GOD GIVES PEACE TO OUR BEAUTIFUL
WORLD FOR THE FUTURE GENERATION.**

Thank you