

28th ICSSOE Thematic Report

Greening Industrialization in Southern Africa through digitalization, infrastructure development and regional integration : leveraging the AfCFTA

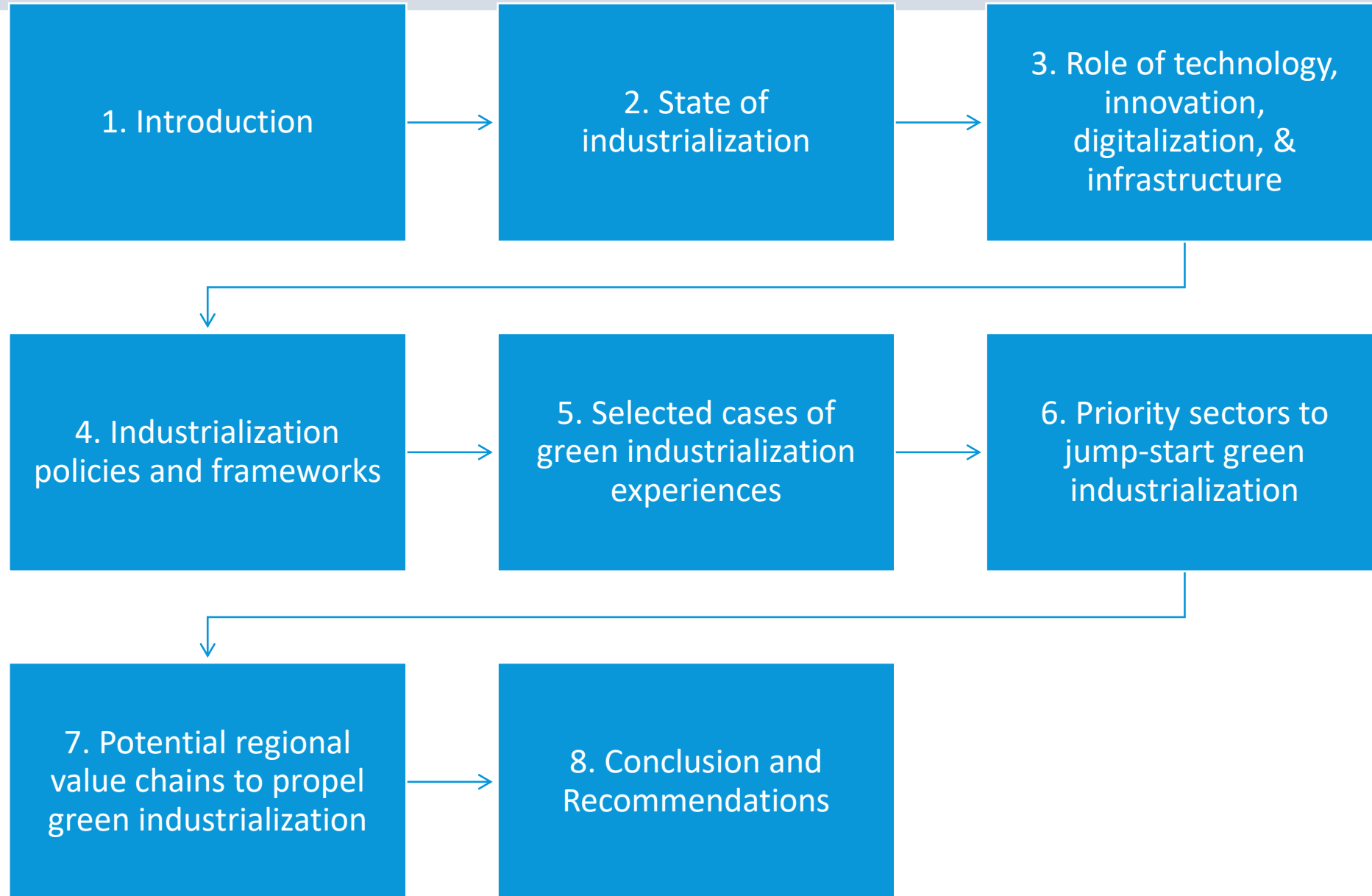
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Presentation Outline



Introduction

- The Southern African region has high commodity dependence and a low degree of industrialization:
 - This is inconsistent with structural transformation and sustainable economic development to reduce poverty and increase equity in the region significantly
 - Member states unable to sustain manufacturing value added beyond 15% of GDP, except Eswatini (29%) and Lesotho (16%)
 - Between 2014 and 2019, the poverty headcount ratio at \$3.65 a day (2017 PPP) (% of population) ranged from 40% to 89% except in Mauritius (2%)
- Vulnerability to economic and climate shocks compound each other, especially in developing countries:
 - locking countries into an eco-development trap of permanent disruption, economic precarity and slow productivity growth
- In the face of global climate change, increasing natural resource degradation and rising environmental pollution, member states:
 - embrace industrialization increasing, the green (and blue) economies
 - are pursuing economic growth without externalizing the negative environmental costs of development

Introduction Ctd.

- Increasing industrialization to drive economic transformation will increase the use of resources:
 - greening the process contributes to developing a more competitive, resource-efficient, climate-resilient industrial sector that increases manufacturing value add and creates jobs while preserving environmental resources
- Unanswered questions remain about the feasibility of greening industrialization in Southern Africa:
 - particularly regarding sustaining growth and the conditions under which this might best happen
- Others suggest that as latecomers to industrialization, African countries have the advantage of:
 - not grappling with technology lock-in and associated path-dependencies, which often constrain change

Introduction Ctd.

Africa's current and future industrialization drive is confronted with the issues of:

green industrialization, digitalization, energy access and affordability, transport logistics and regional integration

Digitalization can contribute to achieving environmentally and socio-economically sustainable industrialization

Deepening regional integration provisions, investing in complementary infrastructure, building industrial capabilities, and investing in the institutions are critical to accelerating green industrialization

At the center of the industrialization drive is the African Continental Free Trade Area (AfCFTA):

a critical framework supporting an increased pace of continental industrialization and, in some cases, re-industrialization

Digitalization, infrastructure development, ICT, energy access and regional integration will be **key** in enhancing the benefits of the AfCFTA among regional member states

Objectives

The study's main objective was to:

- conduct an analysis of the current state of green industrialization, digitalization and infrastructure development
- undertake a gap analysis of the current industrial policies and frameworks in terms of alignment with green industrialization process, and
- identify potential sectors and value chains that could promote green industrialization

The report focuses on the Southern African member states:

Angola, Botswana, Eswatini, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe

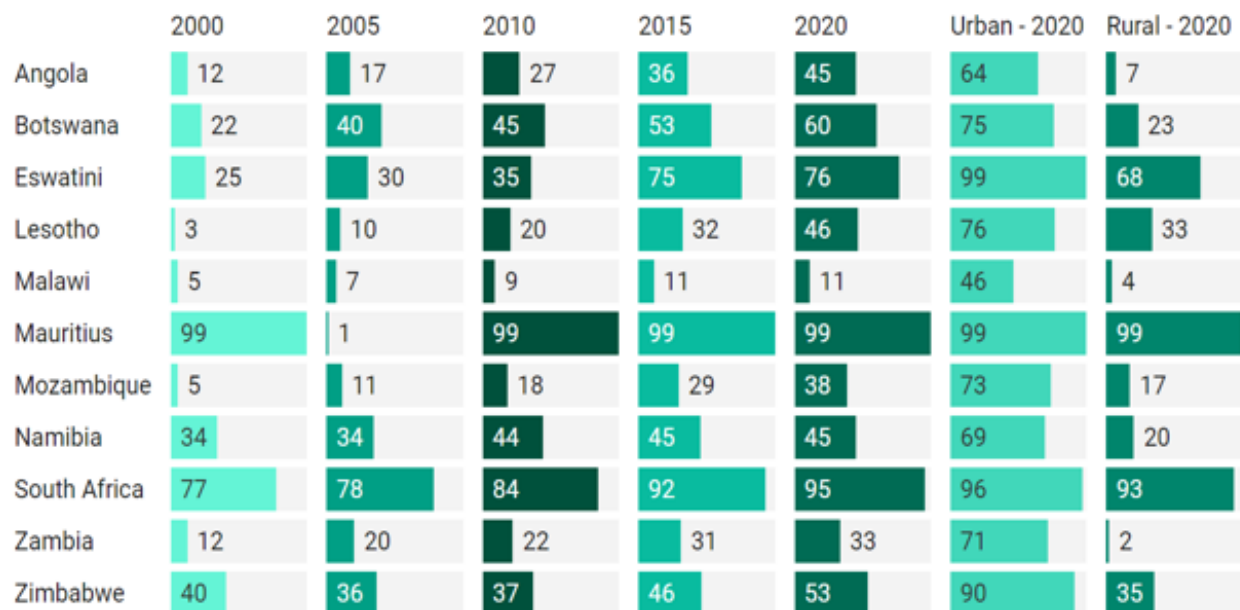


Infrastructure Development and digitalization

Data from the region

Energy

Proportion of the population with access to electricity (%)

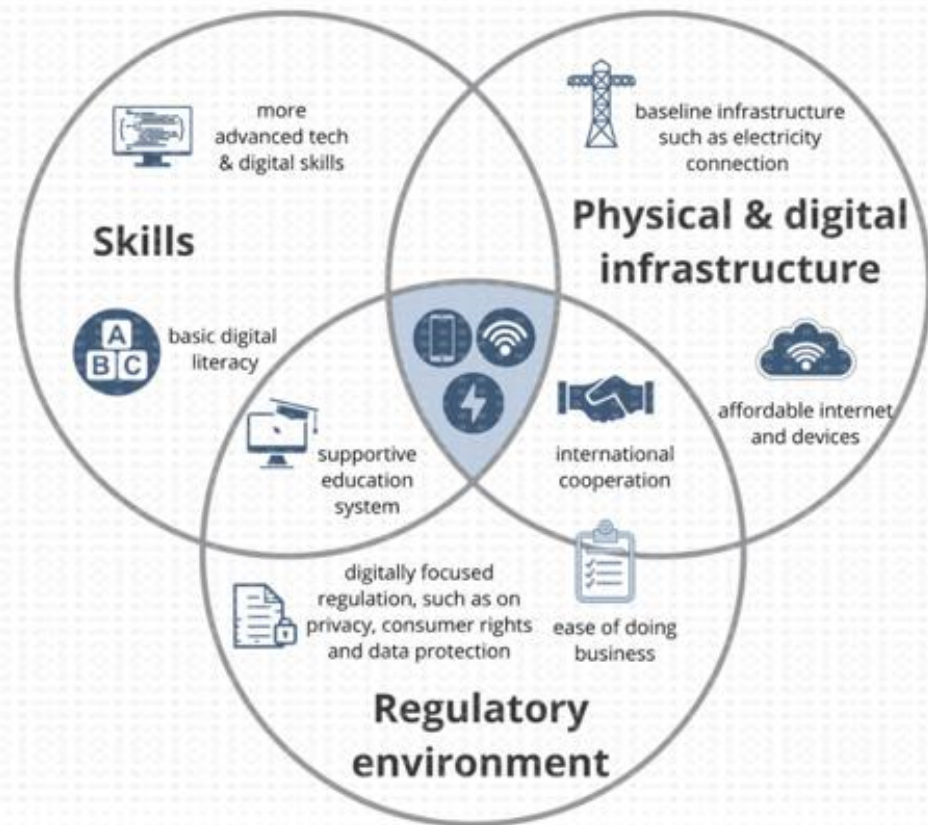


Source: Own construction based on data from IEA (2021)

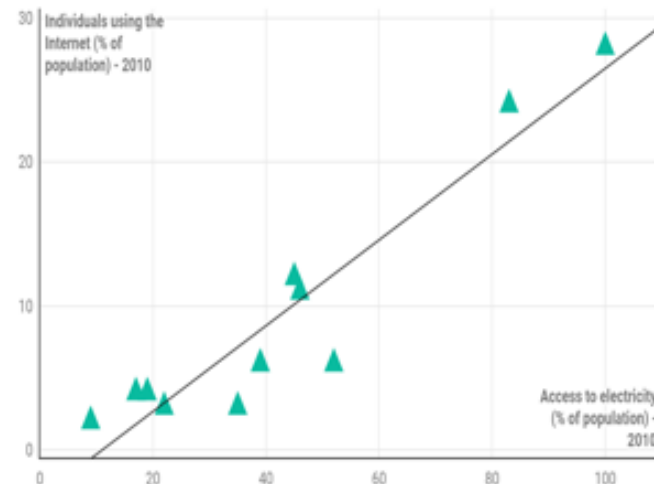
- Access to electricity in the member states remains a challenge across the region
- Botswana, Eswatini, Mauritius, South Africa and Zimbabwe
 - have at least 50% of their population with access to electricity by 2020
- The energy challenges experienced in the region include:
 - recurrent load shedding and power outages
 - shocks in oil and gas markets
 - inefficient energy supply and consumption patterns
 - limited power generation capacity
 - lack of interconnectivity of power grids
- Challenges significantly affect economic activities and constrain the potential growth of the manufacturing sector
- High opportunity costs in terms of lost output

Energy: Interlinkages between energy, ICT and digital infrastructure

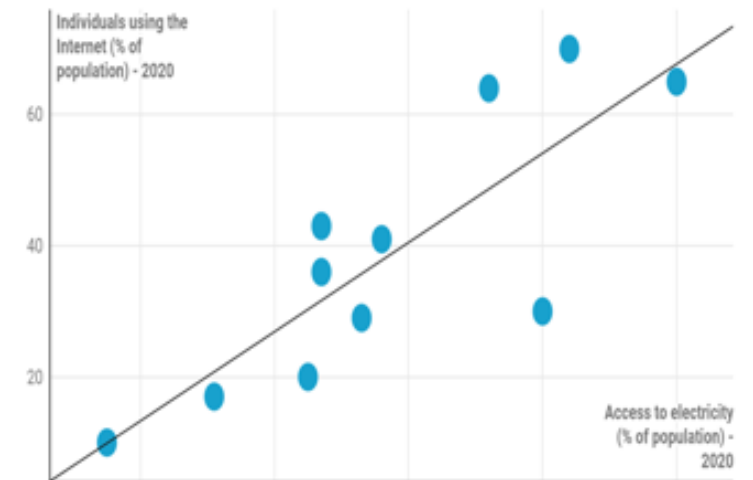
- Interlinkages between energy, ICT and digital infrastructure important in driving the digital economy and green industrialization in the region



Access to electricity and the internet (2010)



Access to electricity and the internet (2020)



Source: Own construction based on WDI data, World Bank (2022)

Source: Tralac (2022a)

Energy: Renewables in total energy consumption

Energy: Share of modern renewables in total final energy consumption (%)



- The share of modern renewables in total final energy consumption showed that only Eswatini and Malawi had at least a 40% share
- 2019 average for the member states was 16.30%
- The growing demand for clean energy sources can help attract increased investments to:
 - mainstream modern renewable energy sources in their energy mix
- Need to be mindful of the balance across renewables and other sources of energy to ensure stable provision of energy services

Source: Own construction based on data from IEA (2021)

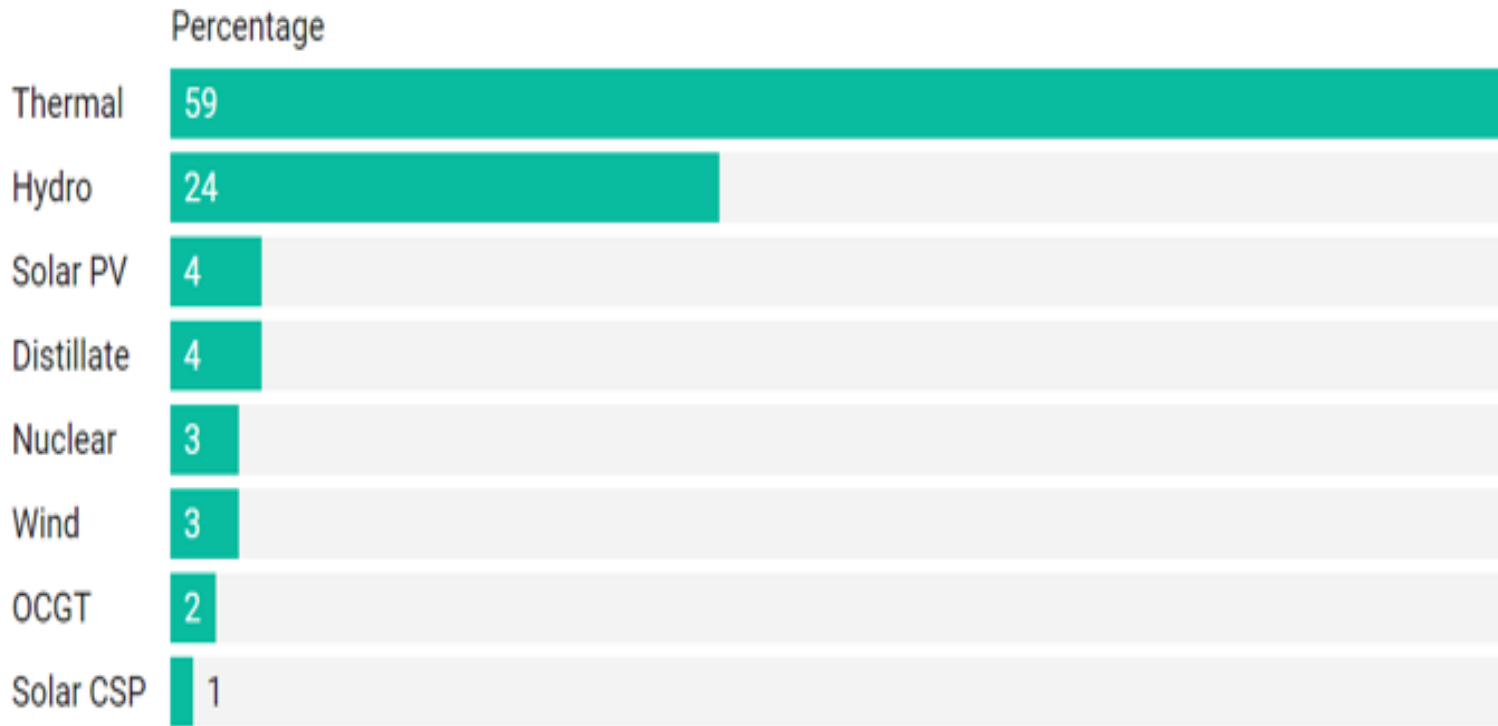
Energy : SAPP Demand and Supply as of March 2021

	Installed Generation Capacity (MW)	Operating Capacity (MW)	Current Peak Demand (MW)	Peak Demand Plus Reserves	Capacity Excess/ Shortfall (MW)
Angola	5,878	4,877	2,209	2,687	2,190
Botswana	892	322	587	675	-353
Eswatini	71	65	226	259	-194
Lesotho	74	70	150	173	-103
Malawi	506	330	351	380	-50
Mozambique	2,796	2,642	1,948	2,240	402
Namibia	624	390	695	695	-306
South Africa	60,326	48,215	35,005	40,256	7,959
Zambia	2,891	2,736	2,510	2,887	-151
Zimbabwe	2,412	1,400	1,724	1,896	-496
Total	76,470	61,047	45,405	52,148	8,898

- Southern African Power Pool (SAPP) is a platform for trading in power among member states
 - Trade under SAPP contributes to regional integration through enhanced energy trade through the interconnectors
- As of March 2021, the SAPP demand and supply situation was as follows:
 - Installed capacity (for the member states excluding Mauritius): 76,470MW
 - Operating capacity: 61, 047 MW
 - Demand and reserve: 52 148 MW
 - 8,898 MW excess capacity
- Excess capacity partly due to reduced electricity demand triggered by the COVID-19 pandemic

Source: Own construction based on data from SAPP (2021) | Exclude data from DRC and Tanzania

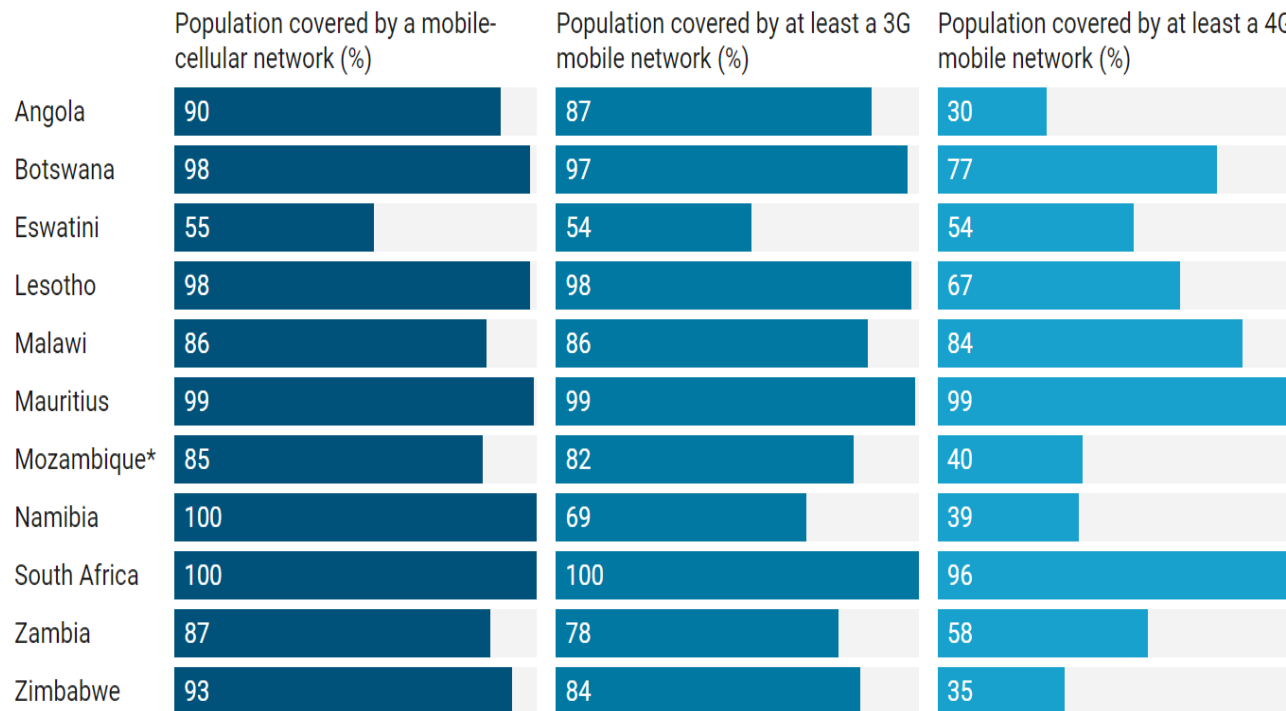
Energy: SAPP installed generation mix as of March 2021



- The installed capacity energy generation mix is:
 - mainly thermal (coal) (59%) followed by hydro-power (24%)
- Other energy sources include:
 - Solar PV and Distillate at 4%
 - Nuclear and wind contributing at 3%
- Opportunities to expand the contribution of clean energy sources

Source: Own construction based on data from SAPP (2021)| Exclude data from DRC and Tanzania

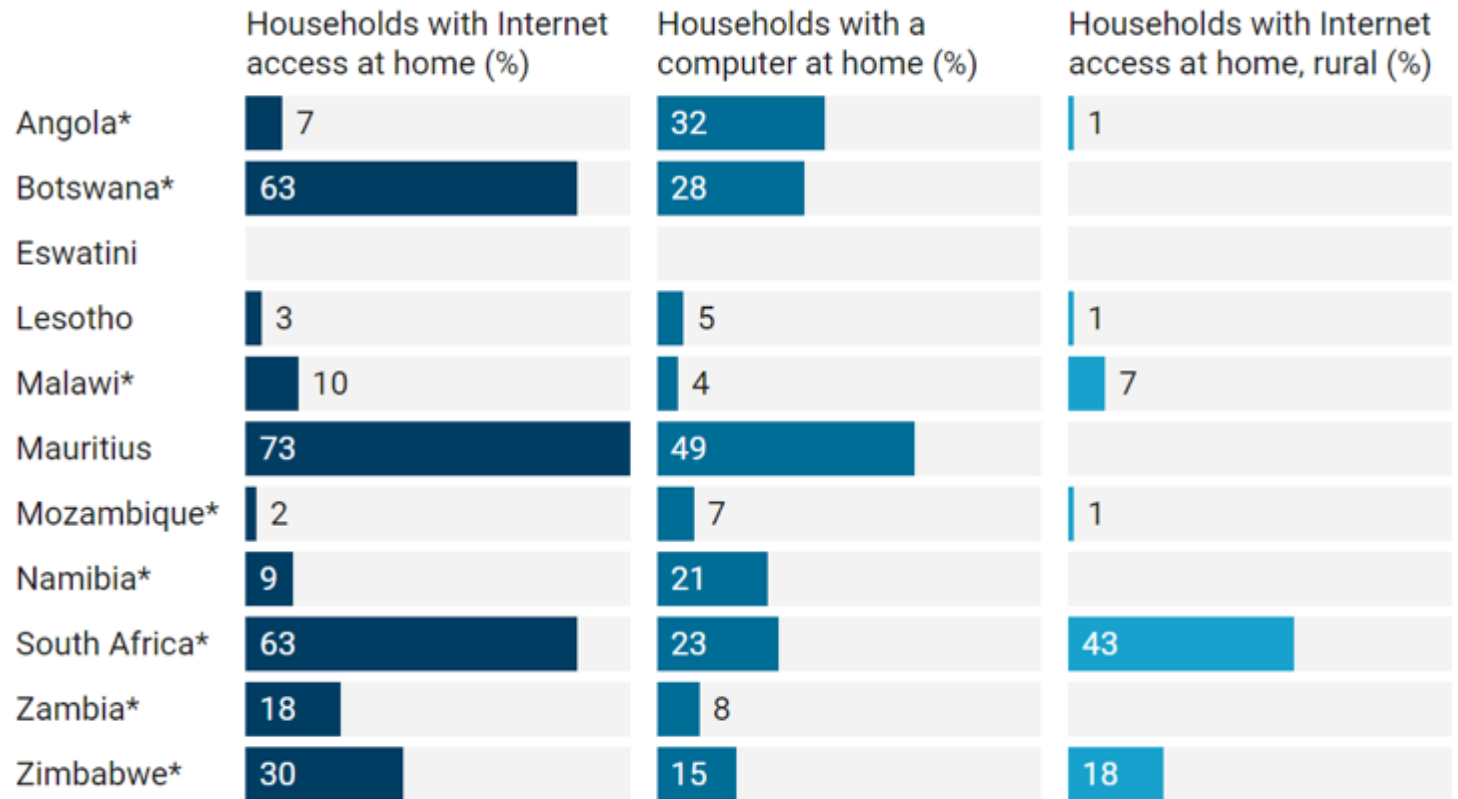
ICT and Digital Infrastructure: Infrastructure and access (network coverage 2020)



Source: Own construction based on data from ITU

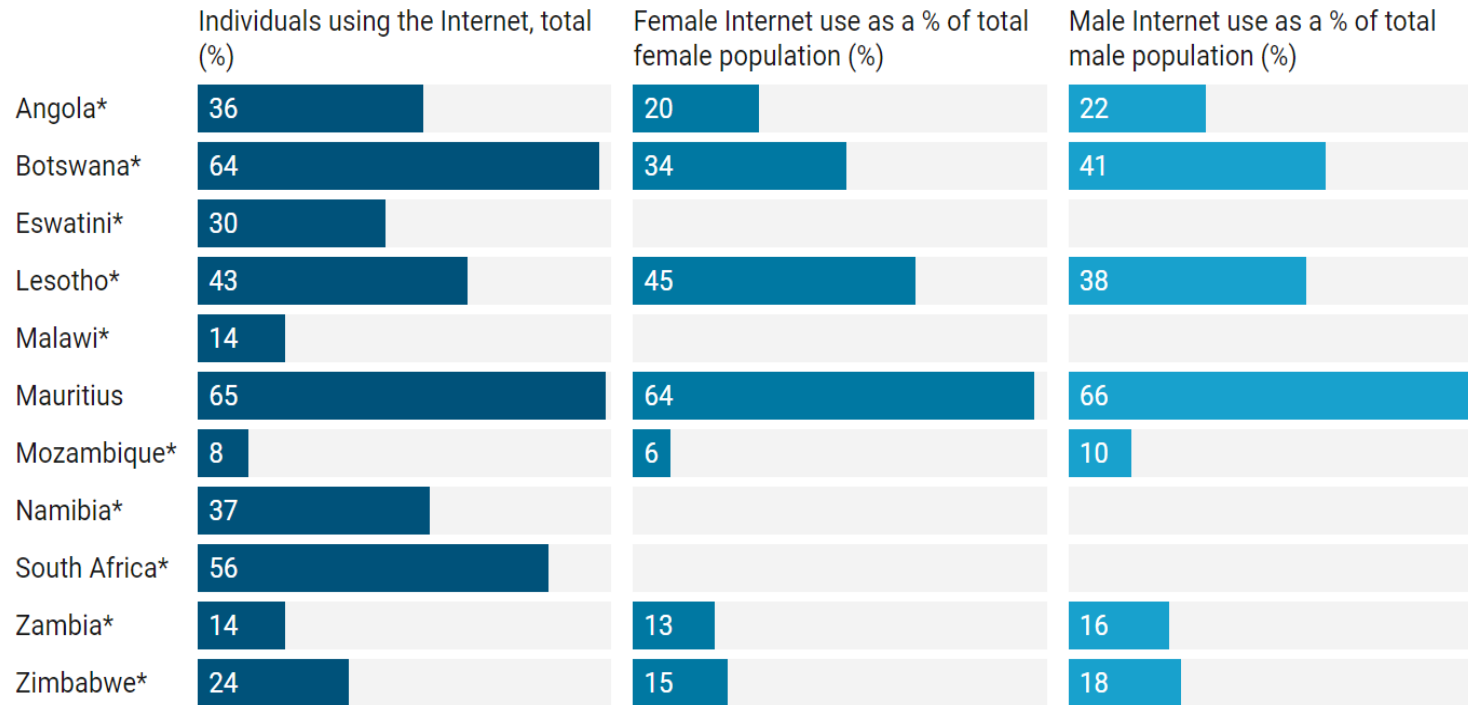
- All countries reported at least 85% cellular network coverage except Eswatini (55%)
- High coverage rates of 3G (the first to enable video calls and faster data transfer)
- Broadband penetration such as 3G helps improve economic growth and job creation by:
 - strengthening connections between goods, markets, people, and jobs
 - improving access to digital innovations (such as digital financial platforms)
 - Increasing access for the economically disadvantaged, such as youth, women and the disabled, particularly in remote or rural areas

ICT and Digital Infrastructure: Infrastructure and access (ICT access at home, 2020)



- Household internet use remains low in the region:
 - Only Botswana, Mauritius and South Africa had internet access above 50% in 2020
 - Ownership of a computer at home is less than 50% in all the countries
- The main challenge to internet access is affordability
- The development of smart systems connected to the internet of things (IoT) can:
 - generate unique opportunities to strategically to attain an equitable, environmentally sustainable and healthy society

ICT and Digital infrastructure: Percentage of population using the internet (2020)



Increased connectivity presents opportunities for businesses and communities to create new pathways for economic development, e.g.:

A **10%** increase in mobile internet penetration increases GDP per capita by **2.5%** in Africa (ITU, 2019)

A **10%** increase in digitization increases GDP per capita by **1.9%** in Africa (Katz & Callorda, 2018)

Improved internet connectivity also facilitates market access, strengthening regional integration efforts

Source: Own construction based on data from ITU

Transport and logistics: International trade costs

Country	Average cost of trade within continent as % of merchandise value, manufactured goods, 2019	Average cost of trade with all countries as % of merchandise value, manufactured goods, 2019	Average cost of trade within continent as % of merchandise value, primary goods, 2019	Average cost of trade with all countries as % of merchandise value, primary goods, 2019
Angola	170	151	266	435
Malawi	147	259	156	261
Mauritius	132	152	215	262
South Africa	84	100	124	154
Zimbabwe	76	262	96	299
Eswatini	66	121	106	148
Namibia	63	143	109	248
Mozambique	62	117	110	247
Botswana	58	138	97	317
Lesotho	44	136	86	137
Zambia	-	-	176	305

- The average cost of trade for the focus countries is high when considered as a percentage of the merchandise value of primary goods with all countries
- Causes of high trade costs include poor transport infrastructure, non-tariff barriers and weak trade-related services, like trade finance, payments, and logistics
- High-trade costs adversely impact the development of regional value chains, and the effect is more severe for backward participation than forward participation
 - trend reinforces the commodity-based, extractive industry patterns of trade currently dominating the region and undermining value chain development within and across countries of the region

Source: [://www.compareyourcountry.org/africa-development-dynamics-indicators](http://www.compareyourcountry.org/africa-development-dynamics-indicators)

Transport and logistics: Logistics Performance index

Measuring the Quality of trade and transport-related infrastructure (1=low to 5=high)



- The logistics performance index measured by trade and transport-related infrastructure quality remains low in the region, e.g.:
 - The logistics performance index less than 2.5 in Angola, Lesotho, Malawi, Zambia and Zimbabwe
- Notable decreases in the index for some countries; for example:
 - Lesotho dropped from 2.12 in 2014 to 1.96 in 2016
 - Zimbabwe shows a decline from 2014 (2.25) to 2018 (1.83)
- Improvements in transport infrastructure and logistics are:
 - important to facilitate regional trade and integration

Source: Own construction based on WDI data, World Bank (2022)

Transport and Logistics: Africa Regional Integration Index (2019)

	Regional integration	Trade integration	Productive integration	Macroeconomic integration	Infrastructural integration	Free movement of people
Angola	0.23	0.2	0.28	0.09	0.11	0.46
Botswana	0.33	0.48	0.33	0.39	0.22	0.22
Eswatini	0.25	0.59	0.09	0.3	0.1	0.22
Lesotho	0.3	0.57	0.06	0.32	0.05	0.56
Malawi	0.3	0.28	0.12	0.37	0.11	0.66
Mauritius	0.37	0.24	0.12	0.72	0.45	0.34
Mozambique	0.42	0.35	0.25	0.66	0.11	0.8
Namibia	0.34	0.59	0.36	0.37	0.2	0.22
South Africa	0.67	0.54	0.99	0.63	0.89	0.22
Zambia	0.33	0.41	0.4	0.23	0.22	0.39
Zimbabwe	0.4	0.39	0.28	0.41	0.23	0.68
Average	0.36	0.42	0.3	0.41	0.24	0.44

The overall level of integration among the member states (0.36) is low

The infrastructural integration index (0.24) is the lowest among the different ARII indices

The regional infrastructural integration index includes the:

- infrastructure development index (transport, electricity, information and communications technology; and water and sanitation)
- the proportion of intra-regional flights
- total regional electricity trade (net) per capita; and
- the average cost of roaming

Source: Own construction based on data from AUC, et al., (2019)



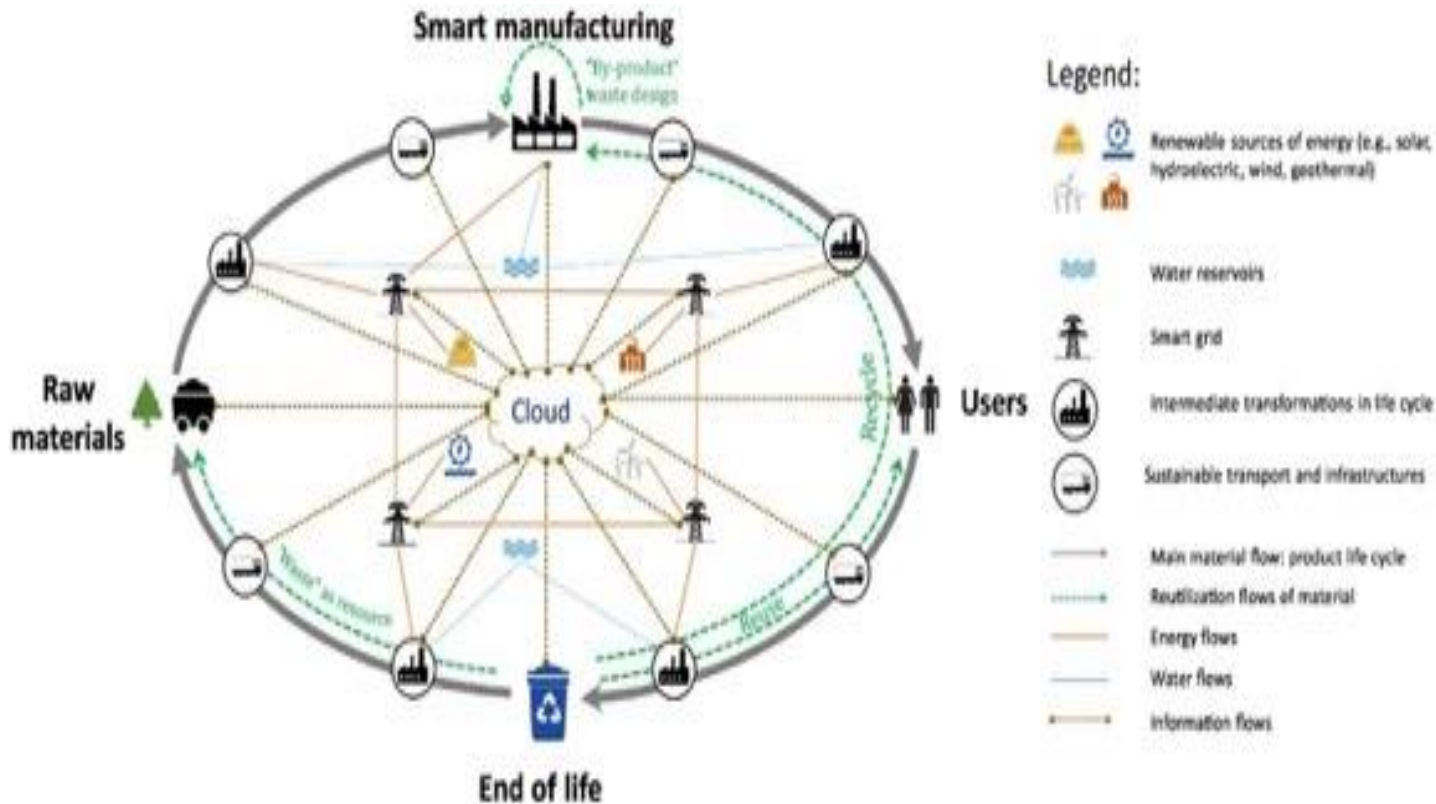
The role of technology, innovation and digitalization

Technology and Innovation

- Various technologies and innovations alter production and service activities within and across value chains
- New opportunities to accelerate innovation in production are driven by advances in:
 - increased applications of robotics, additive manufacturing, data analysis and systems, digital platforms and digital supply chains
- Green technologies and innovations can help meet the increasing demand for:
 - goods and services produced in environmentally friendly settings from production to consumption and the end of their life cycle
- Unlike developed countries, which were able to address environmental and developmental challenges in sequence, for African countries and other developing countries:
 - there is increasing pressure to integrate environmental challenges in producing goods and services. (EU green deal on trade policy, new enforcements to give teeth to environmental sustainability drive)

Technology and Innovation ctd.

Vision of the product life cycle in 4IR integrated with **material**, **energy**, and **information flows** through **digital technologies**



Source: Mondejar, et al., (2021)

- Innovations in green manufacturing can enhance private sector participation in developing strategic national and regional value chains:
 - E.g., digital innovations can enhance efficiency in trade-related logistics, customs and finance and facilitate increases in intra-regional African trade
- Technologies and innovations embed the integration of the entire product life-cycle:
 - from raw material acquisition and manufacturing (and intermediate transformation) stages to the product's end of life
- New technological developments and innovations foster sustainable and environmentally friendly approaches to manufacturing, integrating renewable resources and recycling bio-based materials

Digitalization

- Digitalization is having transformative impacts on the economy, society and the planet
- Digitalization enables entrepreneurs and businesses to rethink business models that are sustainable, impactful and connected to other economic sectors
- Digital technologies and innovations are improving the efficiency of logistics, customs and finances, enhancing cross-border trade and creating new opportunities for small and informal producers
- Digital technologies and applications are increasingly being developed and applied to enhance productivity and efficiency in various socio-economic, industry, environmental, sustainable and climate systems

Digitalization ctd.

Linking digital technology, government policies and manufacturing capabilities



Source: Banga & te Velde (2018)

- Digital technologies in production directly affect the efficiency of manufacturing, and
 - those in transactions and distribution have an indirect impact through government policies like trade facilitation and public infrastructure
- Government policies for a digital industrial transformation include those focused on:
 - building digital capabilities, fostering competitiveness and delivering an inclusive digital economy
- Firm capabilities include digital and other capabilities



United Nations
Economic Commission for Africa



Industrialization policies and frameworks

National Industrial and Industrialization Policy Frameworks

Consideration of green industrialization in industrial policies and green economy plans

Country	Industrial Policy		Green Economy Policy/Plan/Strategy	
	Year	Consideration of green industrialization	Year	Consideration of green industrialization
Angola	2021			Yes*
Botswana	2014	No		
Eswatini	2015	No	2016	Yes*
Lesotho	2007	No	2021	Yes*
Malawi	2016	No		
Mauritius	2020	Yes	2015 and 2021	Yes
Mozambique	2016	No	2016	Yes
Namibia	2012	No	2012	Yes
South Africa	2018	Yes	2021	Yes
Zambia	2018	No	2022	Yes
Zimbabwe	2019	Yes*		

Limited domestication of the continental and regional policy frameworks on green industrialization

Implementation of regional agreements is delayed as member states:
ratify them at different times (some taking years) based on different processes

The strong commitment, in some cases, is not followed through to implementation due to:

- Lack of resources
- Weak institutional capacity
- Lack of capacity to unpack regional statutes
- unfavorable political environment

Country industrial policies do not explicitly elaborate on green industrialization

- Mauritius and South Africa have national policy or plans that articulates green industrialization

Green economy plans, where available, highlighted:

- either green industrialization/ green jobs or green economy as a strategic focus for the country

Climate change policies and nationally determined contributions to UNFCCC:

- show that green industrialization/ green economy/ green jobs are part of efforts to reduce greenhouse emissions

Sustainable development highlighted as a strategic focus:

- especially in policies/plans developed after 2015



Selected cases of projects that support greening industrialization in Southern Africa

Illustration 1 – Eco Industrial Parks Programme

East London Industrial Development Zone (ELIDZ)

The South African government established the ELIDZ in 2003 to provide:

- a robust catalyst for economic development and diversification in the country

Part of the government's Special Economic Zones Programme aimed at:

- developing, operating and maintaining modern purpose-built infrastructure and attracting strategic investments

The EIP approach helps:

- develop a conducive business environment that can attract global investments in green technological innovations and applications to drive green industrialization
- build global competitiveness for local companies encouraging them to enter regional and global value chains

Illustration of the key components of eco-industrial parks



Illustration 1 – Eco Industrial Parks Programme Ctd.

Some of the lessons learned contributing to the success of the ELIDZ include:

Fostering the exchange of synergies (industrial symbiosis) by facilitating companies to gain competitive advantage through:

- the physical exchange of materials, energy, water and by-products that reduce/eliminate resource waste and environmental impacts of their activities

Ensuring a conducive business environment that can attract global investments:

- in green technological innovations and applications to drive green industrialization

Building global competitiveness for local companies:

- encouraging them to enter regional and global value chains

Strict entry criteria in EIP zones are critical to driving green industrial growth and development in the target regions:

- by only targeting 'clean industries', the ELIDZ has facilitated the development of the renewable energy sector as an alternative to fossil fuel energy

ELIDZ's strategic outcomes



Source: <https://www.elidz.co.za>

Illustration 2 – The Southern Corridor Development Initiative

- The Namibian government's strategic focus is to :
 - achieve large-scale, low-cost renewable energy development and
 - design models for sustainably maximizing fiscal revenue and local development in renewable energy investments and green ammonia production
- The government conceived the SCDI as the country's first-gigawatt-scale fully vertically integrated green hydrogen project
- The SCDI, comprising ~26,000mk2, has the potential to produce up to 3 million tons per annum of green hydrogen
- By 2040 potential development outcomes for Namibia include:
 - GDP boost of USD\$15 billion - USD\$19 billion per year and USD\$6 billion – USD\$8 billion contribution to the trade balance
 - Expected to export 14GW of clean power into the SAPP and avoid GHG emissions of 45-60 Mt CO2e per year

Tsau//Khaeb National Park (Hyphen SCDI) Project



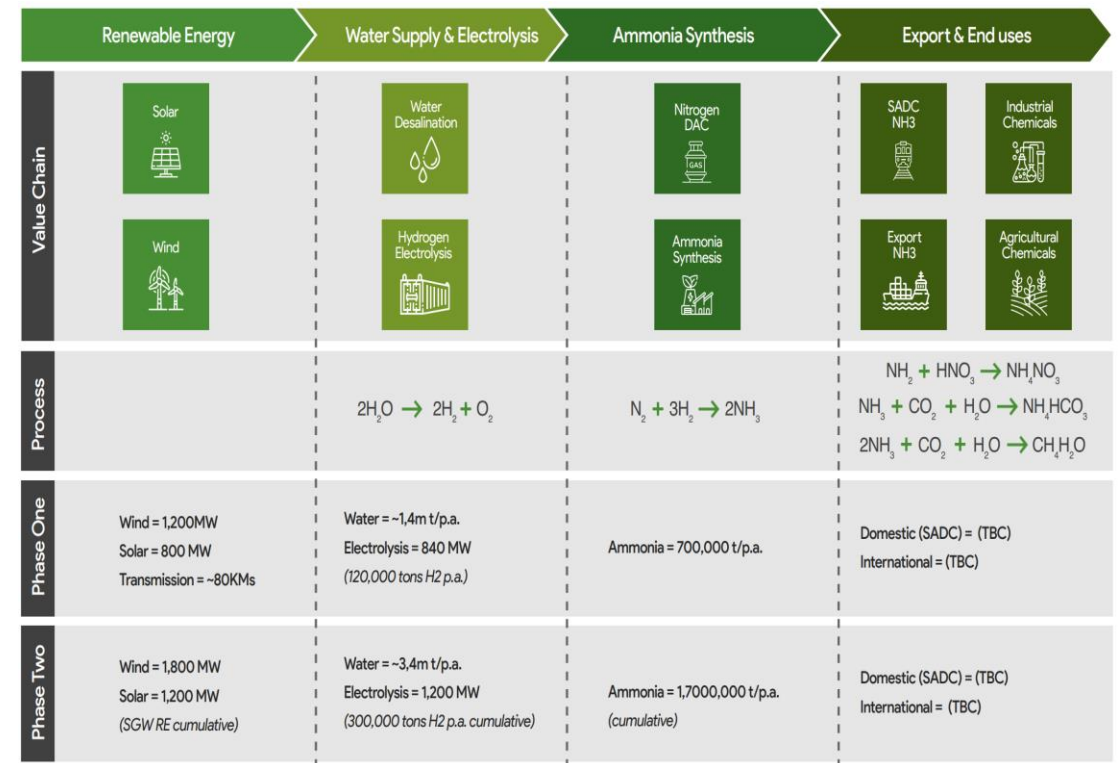
Simplified visual layout of the SCDI in the Tsau //Khaeb Region

Source: GoN (2022)

Illustration 2 – The Southern Corridor Development Initiative Ctd.

- The project will provide a renewable energy capacity of 5GW by 2030 (2GW to be commissioned in January 2027)
- Other downstream products include green ammonia and methanol that can be produced in Namibia and exported globally at lower cost than local production
 - include support to target off-taker sectors such as fertilizer, shipping and chemicals
- Local benefits include creating about 15 000 full-time jobs during the four-year construction period, and 90% of these will be Namibians
- The project will ensure 20% youth participation, and Hyphen has already started skills development and bursary programs

Summary of some of the key project components and phases



Source: GoN (2022)



A Green lens: Priority Sectors to accelerate industrialization in Southern Africa

Credible Priority Sectors

Agriculture

Energy

Manufacturing

Waste

Agriculture and Agro-processing

The sector is also an important source of inputs for the manufacturing sector

Lack of a robust agro-industrial sector that can lift millions from poverty and increase global food supply chains

Limited value addition in many focus countries, and most products are exported in raw form, particularly in agriculture and mining

Increasing pressure on agroecosystems from the ever-growing global demand for food, feed, fiber and clean energy

• Green industrialization opportunities include:

- Embedding sustainable production and consumption in agricultural value chains to reduce the natural resource footprint and increase the sector's productivity
- Investments in digital technologies to scale up the application of sustainable and resource-efficient management practices in food production and processing systems and increase productivity
- Use of the Internet of Things to help farmers optimize productivity and reduce waste through data-driven 'precision farming' technologies

Energy Sector

Access to reliable energy is critical to growing the manufacturing sector, fostering economic transformation and accelerating green industrialization in the region

The region has sufficient energy resources to meet its needs, but they are mainly underdeveloped and unevenly distributed, which calls for the need for regional energy integration

Member states face challenges in maintaining existing energy generation capacity and investing in new generation capacity

- Green industrialization opportunities include:
 - The transition to less-energy-intensive industries, cleaner technologies and fuels
 - Implementation of energy efficiency policies
 - Investments in green infrastructure and management practices and skills upgrades
- Member states have designed and implemented various renewable energy initiatives such as:
 - solar water heating, energy-efficient management initiatives etc.

Manufacturing Sector

The region boasts abundant natural resources that provide important inputs for the industrial/ manufacturing sector critical for economic transformation

Many member states are exploiting natural resources and exporting them in their raw form with limited value addition

Inadequate infrastructure constrains the development of national industries and intra-regional trade

- Green industrialization opportunities include:
 - Increased investment in the value addition of natural resources
 - Improving resource efficiency such as energy, water and other raw materials in the manufacturing sector
 - Mainstreaming sustainable production and manufacturing processes to align with international standards and ensure the manufacturing sector's long-term profitability and social inclusiveness while protecting the environmental resource base

Waste Sector

- The increase in industrial production and consumption would require improvements in waste management to:
 - ensure the benefits from green industrialization are not eroded by waste damage on the environment
- Countries have different waste collection and disposal systems, and there are no regional policies or guidelines
- Sustainable waste management and disposal are essential in the transition to green industrialization
 - The reduce, recycle, reduce (3R approach) presents a guiding principle for all actors in the waste management chain
- The harmonization of waste management standards and introduction of incentives/disincentives to waste recycling and reduction:
 - create enabling conditions for greening the waste sector



Regional value chains – opportunities for greening industrialization

Global value chain participation

Country	Total backward participation (% of GDP), 2019	Total backward participation within same continent (% of GDP), 2019	Total forward participation (% of GDP), 2019	Total forward participation within same continent (% of GDP), 2019	Total value of national exports originating domestically (% of GDP), 2019
Mauritius	7	0	5	0	14
Lesotho	6	1	2	1	7
South Africa	6	0	9	0	22
Eswatini	4	2	2	2	10
Namibia	3	2	3	2	10
Angola	2	0	10	0	24
Zambia	2	0	6	0	16
Malawi	1	0	3	0	8
Botswana	1	0	2	0	8
Mozambique	1	0	2	0	5
Zimbabwe	0	0	5	0	1

- Most member states participate in global value chains through raw natural resources and agricultural commodities exports
- Forward participation in value chains is less than 5% and backward participation (use of foreign input for domestic processing) is zero in eight countries
- Strengthening regional production is important to grow domestic markets which can:
 - help improve backward participation in value chains and enhance private sector investments to create productive jobs

Source: <https://www.compareyourcountry.org/africa-development-dynamics-indicators>

Agro-processing of main agricultural products

- The agro-processing industry mainly consists of:
 - grain milling, vegetable oil, fruits and vegetable processing, dairy, beverages, nuts, forestry and plantation products, fish and fishery products
- Green industrialization opportunities include:
 - promoting value addition and application of sustainable production and processing of these commodities
 - Application to digital technologies to improve value chain efficiency across markets within and across countries
- The growth of the agro-processing sector in the above value chains has the potential to increase incomes and creates jobs

Renewable energy value chains

- The drive for green industrialization presents opportunities for member states to scale up the use of:
 - innovative clean technologies powered by locally available renewable energy resources such as solar energy, small-scale hydro-power, biomass and biogas, and wind power
- The member states boast abundant untapped energy resources such as:
 - hydro power, hydrocarbons, nuclear minerals and renewable energy (solar, wind, geothermal)
- Tapping on these energy resources, especially clean sources, is:
 - critical to address the energy challenges impacting the region's manufacturing sector

Summary of Key Findings - 1

- **Energy:** Recurrent load shedding and power outages, shocks in oil and gas markets, inefficient energy supply and consumption patterns, and limited power generation capacity are some of the key challenges facing the region
- **ICT and Digital Infrastructure:** ICT and digital infrastructure sectors are growing across member states at different paces, however, access to ICT and digital technologies and services varies across countries in the region
- **Transport and logistics:** The poor state of transport infrastructure (such as road infrastructure) and other factors, such as non-tariff barriers and weak logistics, adversely affect the transportation of goods and services across the region
- **Technology and innovation:** New technologies and innovations are being applied to embed sustainable and environmentally friendly approaches to manufacturing, integrate resource efficiency and implement sustainable ways of disposing waste

Summary of Key Findings - 2

- **Digitalization:** The expansion of digitalization, such as applications ranging from robotics, big data, 3D printing, and the Internet of Things:
 - have transformative impacts on the economy, society and the planet
- Digital technologies and innovations are:
 - improving the efficiency of production, logistics, customs and finances
 - enhancing cross-border trade
 - creating new opportunities for small and informal producers
- The increased use and adoption of digital technologies can empower the poor (including youth and women) with:
 - access to information, job opportunities and services improving the inclusiveness of economic growth and development
- **Infrastructure:** The infrastructure deficit (such as in energy, transport, ICT and digital infrastructure):
 - holds back the region's potential to grow and transform into an industrialized region

Summary of Key Findings - 3

One of the key observations from the study is that the national industrial policy frameworks of regional member states do not explicitly elaborate on green industrialization except for the policies in Mauritius and South Africa

The domestication and implementation of regional green industrialization priorities, including those elaborated in SADC and COMESA frameworks at the national level, remains rather weak

Elements of green industrialization/ green growth can be discerned from national policy documents such as climate change plans

Despite the poor green industrialization policy framework and environment, there are green industrialization experiences in Southern Africa which could provide learning points for other member States and could be emulated:

The Eco-Industrial Parks Programme and the Industrial Energy Efficiency Project, the green hydrogen project in Namibia and a project to support the transition to green and inclusive industrialization of the SADC region through helping women businesses are some of the more prominent cases

The key underlying factors to the success of the experiences include a supportive policy environment, development of modern infrastructure (including roads and link to the port etc.) that help attract private sector investments

Summary of Key Findings - 4

- **Priority regional sectors** to jump-start green industrialization in the region include:
 - agriculture and agro-processing, energy, manufacturing, waste, transport and infrastructure
- Opportunities in these sectors include:
 - integrating sustainable production and consumption practices
 - improving resource use efficiency to reduce resource footprint
 - increasing sector productivity
- **Potential value chains** to anchor green industrialization across the member states include:
 - agro-processing of main agricultural products, renewable energy value chains, and green fertilizer (such as ammonia) value chains
- Promoting value addition and application of sustainable production and processing of these value chains presents:
 - potential opportunities for green industrialization, the creation of sustainable jobs and reduction in poverty and inequality

Recommendations - 1

- To accelerate green industrialization in Southern Africa, **Member States** should:
 - Design and implement public-private partnerships to address the energy, ICT and transport infrastructure gaps
 - Develop regulatory and legal frameworks to stimulate digital innovations and incentivize the private sector and other partners to contribute to investing in an inclusive and dynamic digital economy
 - Promote domestic and foreign investments in improved and climate-resilient infrastructure to facilitate intra- and inter-regional and international trade, reduce the cost of doing business for private sector in the manufacturing and other sectors
 - Articulate green industrialization in their national industrial policies
 - Consolidating green industrialization priorities across all national documents and develop concrete action plans for green industrialization
 - Allocate and mobilize resources for implementation of green industrialization priorities

Recommendations - 2

- To deepen green industrialization, the **private sector** should:
 - Continue to proactively invest in technologies to enhance productive and distributive efficiency and facilitate green industrialization:
 - including through investments in clean energy, digital technologies and attendant infrastructure
 - Seek opportunities to collaborate on the development and deployment of innovations which support green manufacturing processes
 - Embrace opportunities to engage in regional and global value chains with green manufacturing focus or linkages:
 - which would assist in driving increased efficiency and competitiveness
 - Invest in improving resource efficiency such as energy, water and other raw materials in the manufacturing sector to:
 - facilitate sustainable use of-limited resources

Recommendations - 3

- To facilitate the sharing of experiences and accelerate the adoption of green industrialization, **regional economic communities** should:
 - Provide a platform for member states and the private sector to share experiences periodically
 - Configure and strengthen regional industrialization frameworks to favour green industrialization and the use of clean energy and energy efficiency
 - Institute standardization, quality assurance and quality management systems that meet international standards, including environmental regulations to facilitate intra-regional trade through AfCFTA

Recommendations - 4

- To promote green industrialization, **development partners** should:
 - Support the development of green industrialization policy frameworks at regional and national levels
 - Support domestication, alignment and harmonization of green industrialization policy frameworks
 - Advocate for fair access to global financial resources which support a just energy transition and greening of industrialization



THANK YOU!