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Water, Energy and Food for Thought

Interregional exchange on WEF Nexus Institutionalisation

06 July 2021

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Global Water Partnership
Southern Africa

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Agenda

- Opening words by Sophie Breul-Busson (EU)
- Short introduction round by moderator (GIZ)
- Presentation by Kidanemariam Tiruneh (GWP-SA) on SADC's Nexus Governance Framework + Q&A
- Interview round with guest speakers: Dipak Gyawali, Former Minister of Water of Nepal, and Seppo Rekolainen, Chair of UNECE's Nexus Task Force
- Closing words by Mariana Rodriguez Gomez Cornejo (GIZ)

Kidanemariam Jembere Tiruneh GWP-SA

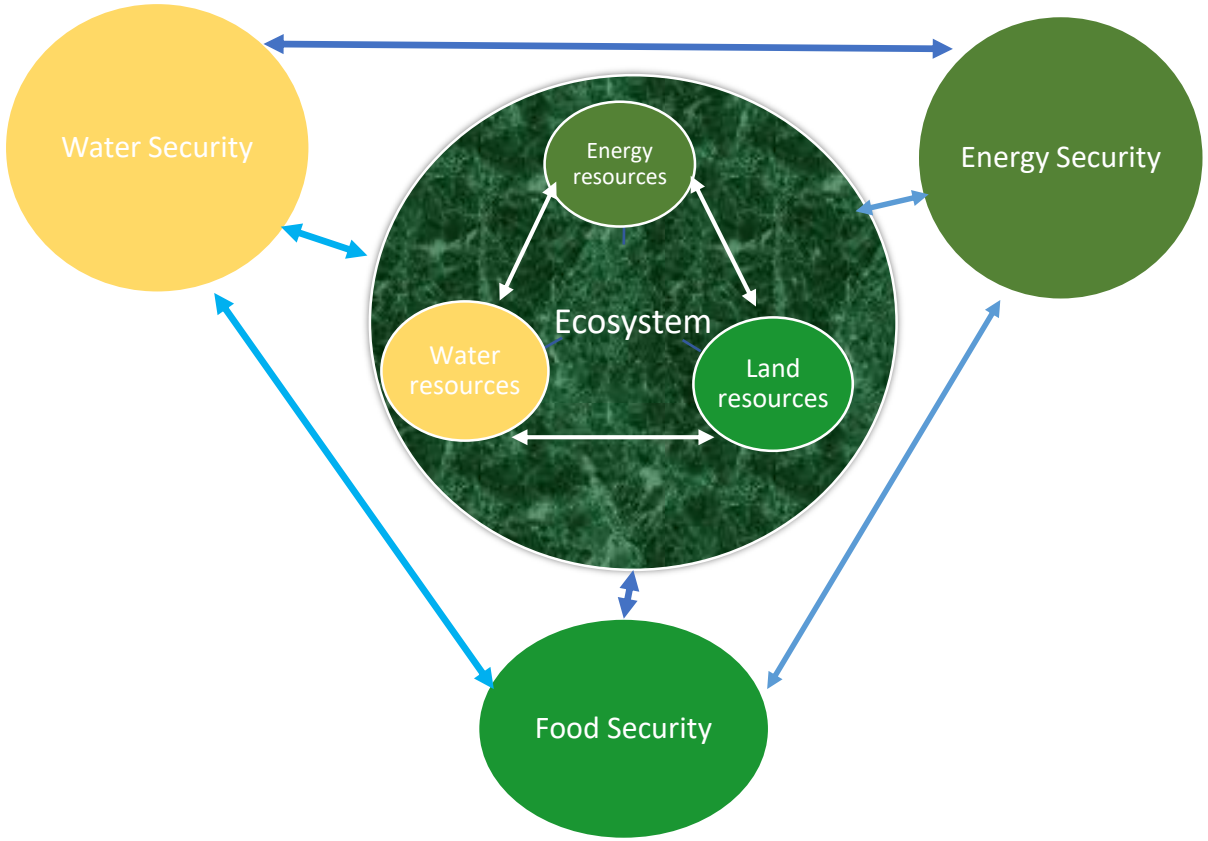
Technical Advisor at Global Water Partnership Southern Africa

Institutionalizing the Water-Energy-Food (WEF) Nexus approach: experience from the SADC Region

Kidanemariam Jembere
GWP Southern Africa/African Coordination Unit

Presentation for the Water, Energy and Food for Thought: Interregional exchange on WEF Nexus Institutionalisation
Organized by the Global Nexus Secretariat (GiZ)
28th June 2021

1. Understanding what is WEF Nexus approach and what does it do for the SADC Region?



The SADC WEF Nexus Conceptual Framework

The Natural System:
Water, land and energy resources are interlinked in the natural system

Natural Resource Use Efficiency
- ✓ resource use efficiency
- ✓ climate resilient and green development
- ✓ Ecosystems integrity

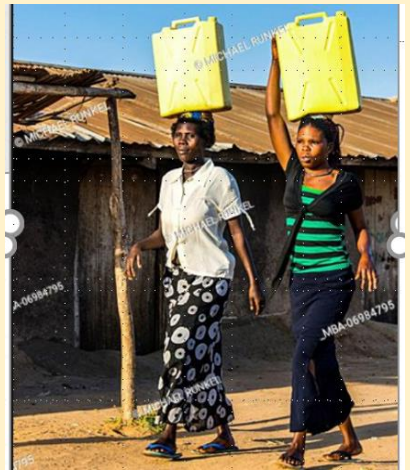
The Human System:
Water, energy, food security are interlinked in the system

Simultaneous WEF Security:
- ✓ coherent/aligned policies
- ✓ coordinated sectors
- ✓ joint decisions
- ✓ integrated plans, programs, projects

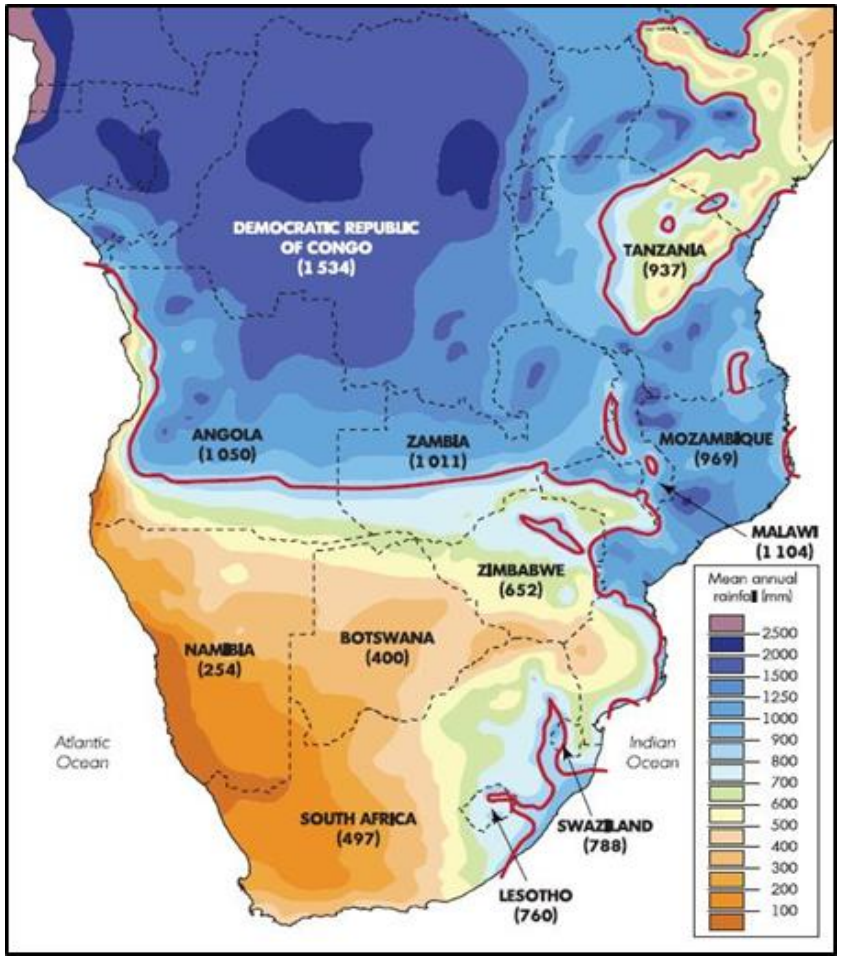
How to achieve both objectives?
- ✓ WEF Nexus Governance: SADC Regional WEF Nexus Framework
- ✓ Investment: SADC WEF Nexus Investment Project Screening Tool

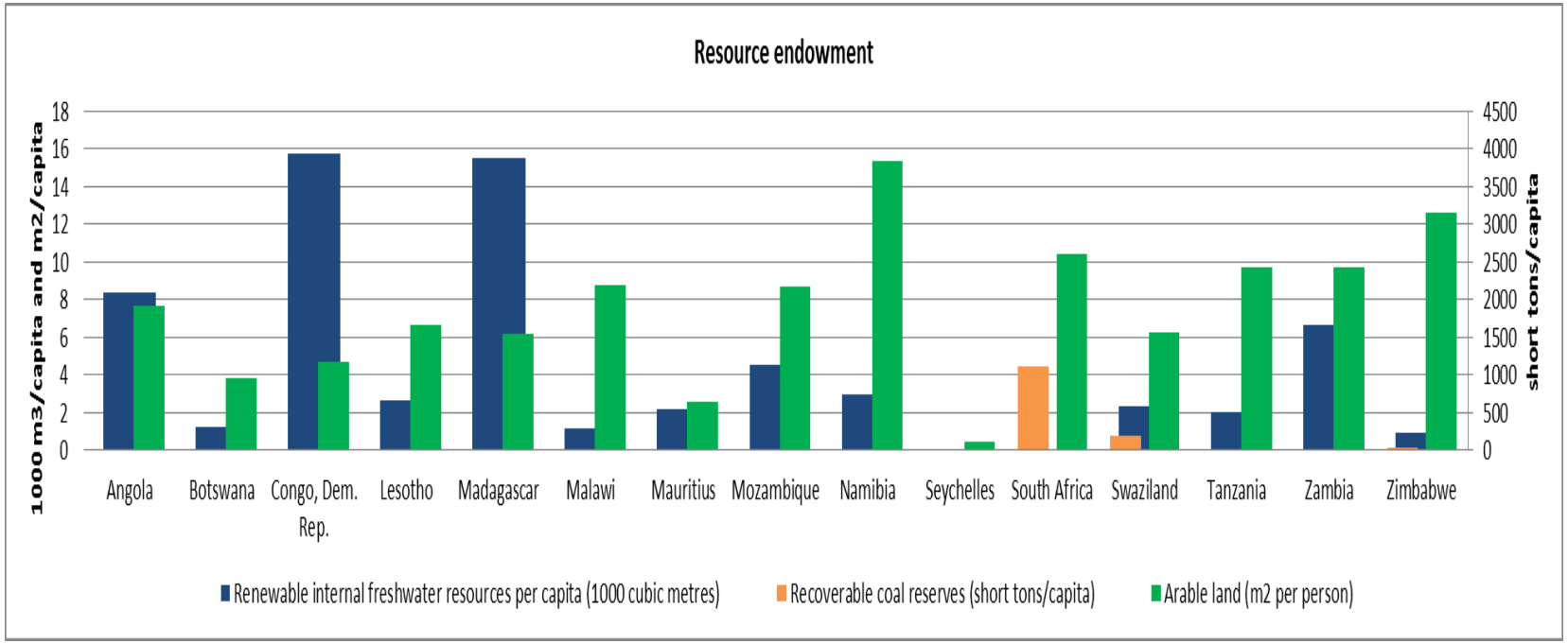
→ managing trade-offs and increasing synergies

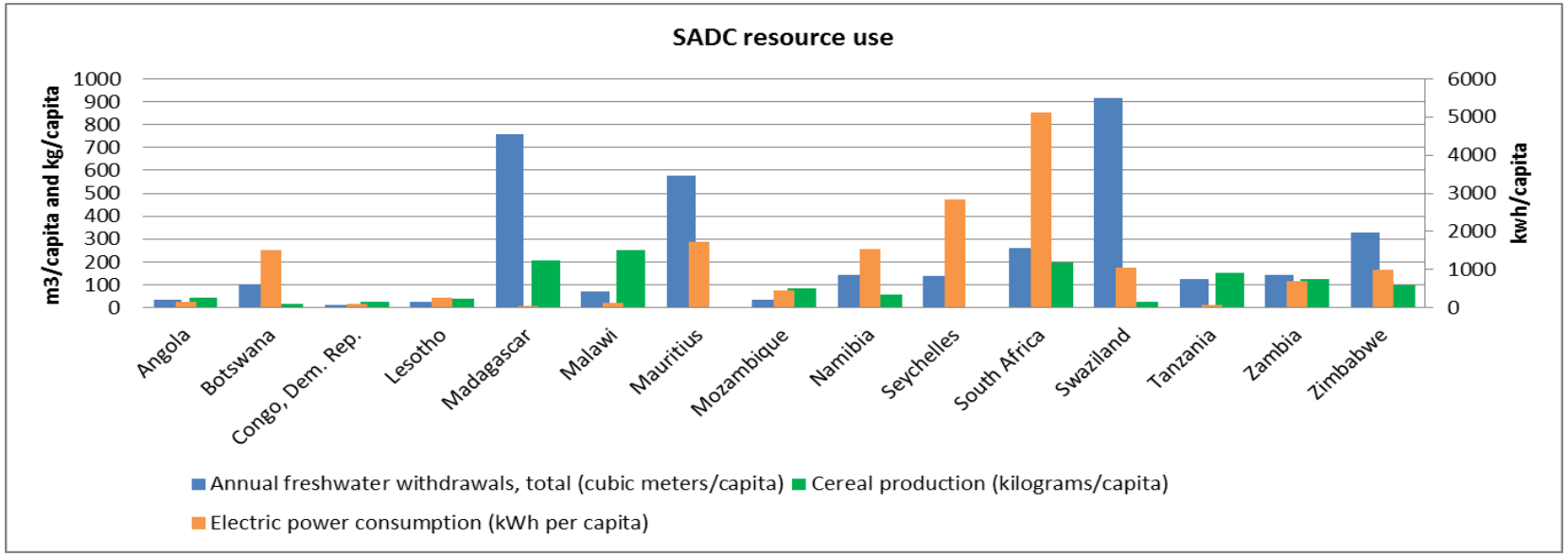
The Nexus approach for WEF security in the SADC Region

Food Security	Energy Security	Water Security
▪ About 90% rain-fed agriculture---vulnerable to climate change impacts ▪ Only 7% irrigation potential developed. ▪ Water security is the main challenge as the sector is highly vulnerable to the impacts of climate change 	▪ Access to electricity is about 48% (75% urban and 32% rural) ▪ 62% of electricity is from coal, 21% from hydropower ▪ The region has vast energy resources (hydropower, coal, biomass and solar). ▪ The hydropower potential is estimated at ~ 1080 TWh/year. The current utilized capacity is ~31 TWh/year 	▪ Water resources potential is estimated at 2 300 km3/year of the renewable freshwater resources. Total water storage is only 14% of the available annual renewable water resources ▪ The distribution of the resources in a major concern- (~300 mm/year in Namibia to 1530 mm/year in D.R. Congo). ▪ Access to drinking water is 60% and to sanitation is about 40% (2012) 

The WEF Nexus approach for regional cooperation, development, integration







Uneven distribution of Water, Energy, Land resources-SADC

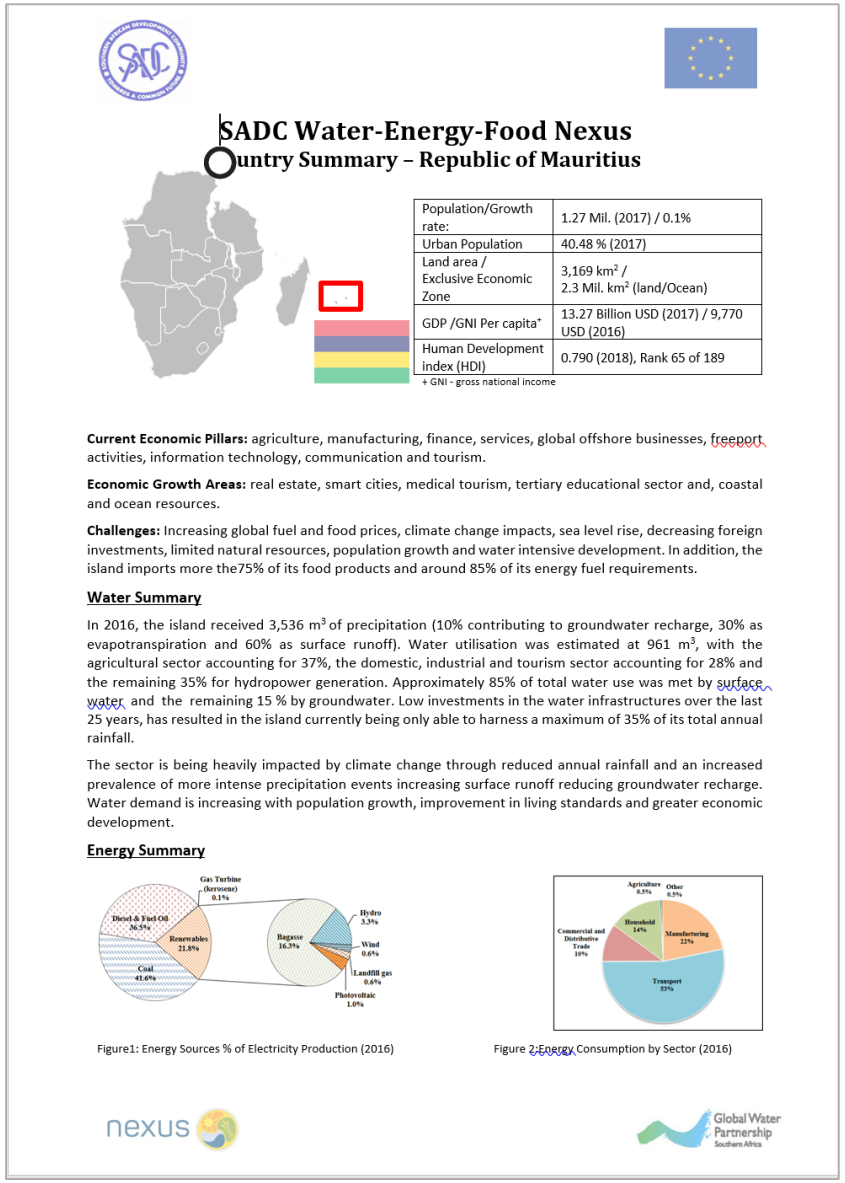
The WEF Nexus approach for coherent policies

Coherence analysis for WEF

3 (High), 2 (Partial), 1(Limited) & 0 (No) coherence

	WEF Security				WEL Resource Use Efficiency				Overall
	Water	Energy	Food	WEF mean score	Climate change	Biodiversity Ecosystems	Land	WEL mean score	Overall mean score WEF and WEL
Regional Water Policy (SADC, 2005)	-	3	3	**3**	1	2	1	**1,33**	**2.12**
Regional Water Strategy (SADC, 2006)	-	3	3	**3**	3	2	1	**2**	**2.37**
Guidelines for Strengthening RBOs (SADC, 2010a)	-	1	1	**1**	1	3	1	**1,67**	**1.75**
Climate Change Adaptation in SADC, Strategy for the Water Sector (2011)	-	2	2	**2**	-	1	1	**1**	**1.71**
Regional Strategic Action Plan. Integrated Water Resources Development and Management, 2016-2020 (SADC, 2016a)	-	3	3	**3**	3	3	2	**2,67**	**2.85**
Regional Infrastructure Development Master Plan, Energy Sector (2012)	3	-	1	**2**	3	1	1	**1,67**	**1.5**
Renewable Energy and Energy Efficiency Strategy and Action Plan, 2016-2030 (SADC, 2016b)	2	-	2	**2**	3	1	1	**1,67**	**2**
Regional Energy Access Strategy and Action Plan (SADC, 2010b)	1	-	1	**1**	0	0	1	**0,33**	**0.77**
Regional Agricultural Policy (SADC, 2014)	3	3	-	**3**	3	1	3	**2,33**	**2.25**
Regional Food and Nutrition Security Strategy (SADC, 2015a)	2	0	-	**1**	3	0	2	**1,67**	**1.37**
Regional Indicative Strategy Development Plan, 2015-2020 (2015b)	3	2	3	**2.66**	3	2	2	**2,33**	**2.44**
Regional Biodiversity Strategy (2008)	1	1	2	**1.33**	2	-	3	**1,67**	**1.75**
Subject mean coherence	**2.14**	**2**	**2.1**	**-**	**2.27**	**1.45**	**1.58**	**-**	**-**

WEF Nexus opportunities for SADC Member States: Nexus Perspective Papers



SADC Water-Energy-Food Nexus
Country Summary – Republic of Mauritius

Population/Growth rate:	1.27 Mil. (2017) / 0.1%
Urban Population	40.48 % (2017)
Land area / Exclusive Economic Zone	3,169 km² / 2.3 Mil. km² (land/Ocean)
GDP /GNI Per capita*	13.27 Billion USD (2017) / 9,770 USD (2016)
Human Development index (HDI)	0.790 (2018), Rank 65 of 189

+ GNI - gross national income

Current Economic Pillars: agriculture, manufacturing, finance, services, global offshore businesses, freeport activities, information technology, communication and tourism.

Economic Growth Areas: real estate, smart cities, medical tourism, tertiary educational sector and, coastal and ocean resources.

Challenges: Increasing global fuel and food prices, climate change impacts, sea level rise, decreasing foreign investments, limited natural resources, population growth and water intensive development. In addition, the island imports more the75% of its food products and around 85% of its energy fuel requirements.

Water Summary

In 2016, the island received 3,536 m³ of precipitation (10% contributing to groundwater recharge, 30% as evapotranspiration and 60% as surface runoff). Water utilisation was estimated at 961 m³, with the agricultural sector accounting for 37%, the domestic, industrial and tourism sector accounting for 28% and the remaining 35% for hydropower generation. Approximately 85% of total water use was met by surface water and the remaining 15 % by groundwater. Low investments in the water infrastructures over the last 25 years, has resulted in the island currently being only able to harness a maximum of 35% of its total annual rainfall.

The sector is being heavily impacted by climate change through reduced annual rainfall and an increased prevalence of more intense precipitation events increasing surface runoff reducing groundwater recharge. Water demand is increasing with population growth, improvement in living standards and greater economic development.

Energy Summary

Figure1: Energy Sources % of Electricity Production (2016)

Figure 2:Energy Consumption by Sector (2016)

WEF Nexus opportunities in the SADC Member States

- National Development Plans (NDPs)/SDGs:
  - NDP (Zambia, Namibia, South Africa;
  - SDGs (Botswana, Mozambique, Seychelles, Lesotho & South Africa)
- Climate Change Response: South Africa in the NAP process
- Efficiency and sustainability in Priority Sectors:
  - ✓ Agriculture/Livestock: Botswana, Lesotho, eswatini
  - ✓ Energy-Mauritius, Mozambique
  - ✓ Environment-Angola, Lesotho
  - ✓ Water-Botswana, Namibia, South Africa
  - ✓ Industry-Tanzania, DRC, South Africa
- Multi-purpose dam projects (eg. Angola, Malawi, Zimbabwe, Tanzania, Madagascar, Lesotho)
- Others-circular economy-Namibia

The WEF Nexus to facilitate investment….through identification and screening of projects

The SADC WEF Nexus Project Screening Tool

15 Investment Projects Screened

Complexity of analysis and date requirement

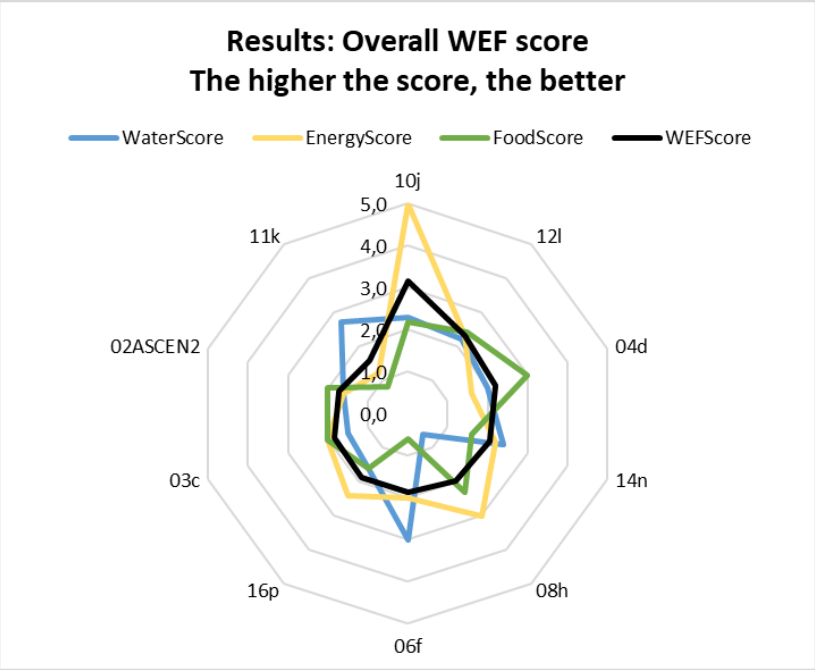
3. Project appraisal (BCA)

2. Project impact assessment & prioritisation based on a multi-criteria decision support framework

1 Project screening for WEF Nexus based on a decision tree-identifies nexus opportunities

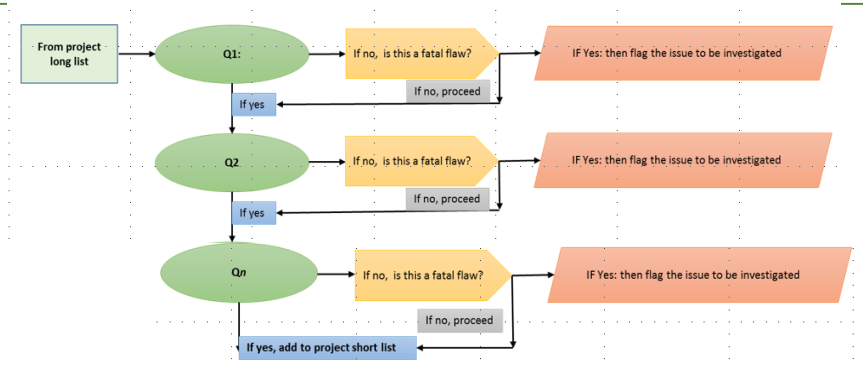
0. Project identification and description: project info/data fed

0. Long List of investment projects

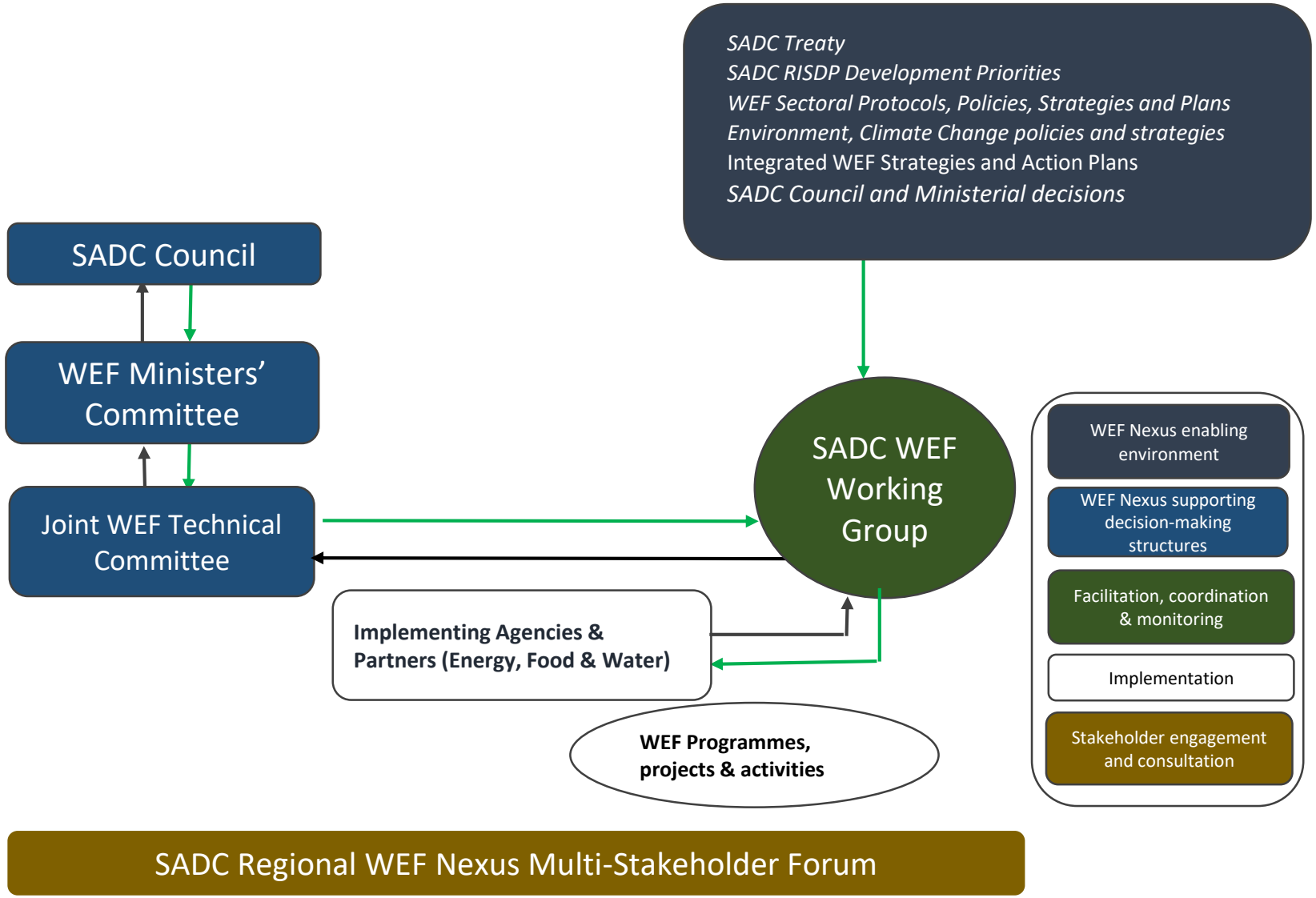


The relative impact of projects for WEF defined (based on weighting the parameters) Eg. How much will the project contribute to improved water use efficiency? MCDA

WEF opportunities of projects identified (trade offs & synergies)
Eg. Q1. Will this project contribute to improved water use efficiency? Yes/No. Provides feedback to project owners.



The SADC Regional WEF Nexus Framework



The process of developing the SADC WEF Nexus Framework and investment projects

Inception	Technical Inputs	Dialogue Process	Outputs	Validation	Adoption
• Stakeholder analysis • Preliminary Regional level WEF analysis	• Regional Nexus Assessment • National Nexus Assessment • Discussion Papers: on WEF Nexus Governance and on Investment Projects • Preliminary list of investment projects	✓ *SADC Joint Energy & Water Ministers - June 2018* ✓ *SADC Agri. Ministers* ✓ SADC Council Decision (Aug 2018)	• Draft Regional WEF Nexus Framework • Draft WEF Nexus Project Screening/appraisal Tool • Draft List of investment projects	✓ *SADC Joint Energy & Water Ministers - May 2019* ✓ *SADC Agri. Ministers, June 2019* ✓ *Validation by MSs Sep 2019*	• Nexus Framework Document Adopted

7th SADC RBOs Workshop — **Jan – May 2017**

8th SADC Multi-stakeholder Dialogue & 1st WEF Nexus Technical Dialogue — **Nov. 2017**

2nd WEF Nexus Technical Dialogue — **Nov 2018**

WEF Nexus Workshop & 9th SADC WEF Nexus Dialogue — **March 2019**

SADC WE Nexus validation workshop — **Sept 2019**

SADC Joint Energy and Water Ministers – Oct 2020 ***Approved the Regional Framework*** — **Oct 2020**

parallel process to identify and screen investment projects

Key Lessons from the SADC Region

Adopting a WEF Nexus approach is a long process that requires:

1. **A High level political support and ownership.** SADC took the WEF nexus discussions at higher levels—SADC Council of Ministers, SADC Ministers for Water, Energy and Agriculture
2. **A continuous multi-stakeholder/sectoral dialogue/engagement**: The SADC process built on the existing regional dialogues…from water to WEF dialogue platform
3. **Build on existing structures rather than creating new ones.** SADC regional framework is building on the existing SADC structures
4. **Capacity for analysis to support decisions**. Research to generate knowledge and information for decision
5. **Define the scope and objectives of the Nexus approach**. SADC defined the conceptual understanding and objectives of the Nexus approach for regional development

Dipak Gyawali

Former Minister of Water Resources of Nepal; Pragya (Academician); Nepal Academy of Science and Technology (NAST); Chair of Interdisciplinary Analysts (IDA); Chair, Nepal Water Conservation Foundation

Seppo Rekolainen

Former Director at the Finnish Ministry of Agriculture and Forestry

Chair of the Task Force on the Water-Food-Energy-Ecosystems Nexus under the UNECE Water Convention

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