

WEF NEXUS



Driving the Water-Energy-Food nexus in the context of sustainable development

The Water – Energy – Food (WEF) nexus refers to the interconnections that exist between water, energy and food sectors. Since 2011, the WEF nexus approach has been promoted as an integrated and sustainable approach to managing key sectors related to water resources, energy and food security.
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These three are critical to sustainable development, with synergies and trade-offs, that if not managed well can derail sustainable development efforts. This realisation led to global leaders meeting in 2011 at the World Economic Forum in Davos, Switzerland, agreeing to drive the WEF nexus in a sustainable or integrated way.

Although the Millennium Development Goals missed an opportunity to clearly factor the WEF nexus especially in its targets, there is hope that the approach will be adopted under the Sustainable Development Goals (SDGs) framework. After

the Sustainable Development Goals agenda was established by the United Nations (UN) in 2015, the WEF nexus activities were factored in as part of the SDGs, especially goals 2, 6 & 7 (Figure 1). Based on the decisions taken by the UN on the SDGs, various countries, including South Africa, are at various stages of driving the WEF nexus both at technical and policy levels.

In response to the global trend in adopting the WEF nexus approach, in 2012, the Water Research Commission (WRC) initiated its WEF Nexus Lighthouse with a goal to start championing water, energy, food planning and development



Figure 1. The 17 Sustainable Development Goals agreed upon by 193 countries in UN General Assembly in 2015 (Source: UN 2015).



for South Africa in a sustainable manner. Since then, the WRC through its Research & Development (R&D) branch, has organised various activities under the banner of this lighthouse. This includes:

- (a) Profiling WEF activities championed by the WRC and its partners to facilitate knowledge sharing, and coordinate and align activities;
- (b) Hosting a series of dialogues involving key stakeholders aimed at improving understanding of the WEF nexus and the opportunities for integration of knowledge and solutions for improved uptake;
- (c) Hosting a series of dialogues and workshops on specific thematic focus areas such as biogas and biofuel generation in relation to water use and food security;
- (d) Hosting international workshop & science-policy dialogues with key strategic partners and global communities of practice; and
- (e) Publishing scientific papers for knowledge dissemination.

As a knowledge generation organisation, the WRC has a responsibility to drive alignment of its thrusts and programmes or focus areas linked with national priorities such as the National Development Plan (NDP) and other policies. This also extends to alignment with regional initiatives such as the SADC Secretariat's programme 8 on the WEF and the African Union's (AU) Vision 2063, among others.

As a country, South Africa has a responsibility to champion the WEF nexus. The challenges that South Africa is facing make it urgent for the country to adopt sustainable development approaches such as the WEF nexus. These include, but are not exclusive to the poverty-unemployment-inequality nexus; rapid population growth; rural to urban migration due to lack of job opportunities in rural areas; water scarcity, which is being exacerbated by climate variability and change; increasing demand for food due to population growth and dietary transitions and increasing food insecurity among the rural poor; increasing energy demand to meet South Africa's

economic development goals, and the focus on agriculture, specifically expansion of irrigation, as a driver of rural economic development and employment creation.

Tackling these challenges will require coordinated efforts among different economic sectors, mostly water, energy and agriculture. The WEF nexus emphasises the inextricable linkages between the three sectors and that actions in one area often have impacts in one or both of the others.

There are key challenges that are being faced across these three sectors. For example, conversion of productive agricultural land for industrial or residential use threatens food security. Other examples include the expansion of coal-mining activities linked to energy generation in Mpumalanga, which threatens both water resources and food security. Other examples include the drive to increase irrigated agriculture, which places pressure on available water resources and creates new demand for energy for pumping water.

What these examples highlight is that, while all these initiatives have good intent to develop the country, lack of WEF nexus trade-offs could threaten their ability to translate into meaningful and sustainable development. The WRC, therefore, has a responsibility to raise awareness about the WEF nexus interlinkages and to create a platform for discussion of practical solutions that include the negotiation of synergies and trade-offs linked to the WEF nexus issues.

The WEF nexus presents an opportunity to promote integrated planning in a sustainable manner. It also presents a framework for directly achieving some of the SDGs such as Goals 2, 6 and 7 with indirect potential to achieve SDGs 1, 8 and 9 through job creation and innovations linked to the WEF nexus sensitive planning. The WRC, for its part, will continue to drive research, development and innovation linked to knowledge generation on the WEF nexus. The translation of this knowledge into an actionable plan that can be adopted by policy makers remains the next frontier.