



## I. Abstract

Water, energy, and food are critical for human survival and sustainable well-being. All three are subject to rapidly growing global demand, and all face resource constraints, with billions of people lacking access to them. Clearly, meeting these critical needs represents an important challenge facing society today.

Progress towards achieving several SDGs is directly related to the sustainable use of natural resources such as land, food, water and energy. The food, water and energy sectors have their own SDGs (SDGs 2, 6 and 7, respectively), but their interlinkages also relate to other SDGs, including those related to health (SDG 3), climate change (SDGs 9 and 13), sustainable production and

The effects of changes in climatic conditions on the development of renewable energy,  
Interactions between hydrological cycles and local climate;  
Energy and agri-food systems are major drivers of climate change;  
Agriculture and water are among the most climate-vulnerable sectors;  
Policies and practices related to the WEF sectors – such as those included in climate-smart agriculture (e.g. less energy and/or water intensive farming practices, use of renewable energy in food chains, ways to reduce GHG emissions from livestock, integrated production systems), are part of the solutions to climate change mitigation and adaptation.

The three sectors of the Nexus are both highly vulnerable to climate change and contribute heavily to that change through their GHG emissions. Adaptation is therefore intrinsically linked to water, energy, and food security [2]. Examples of improved adaptation linked to the WEF sectors include:

Local production of clean energy, as it increases self-sufficiency in energy and can also be a source of extra income in rural areas from energy jobs and the sale of extra energy to the grid;

Water scarcity management through the use of drip irrigation, irrigation using sewage water cleaned through biogas production, or aquaponics;

Use of drought-resistant crop varieties;

Integrated food systems that optimise resource use – such as integrated food energy systems (e.g. biogas from manure, agri-photovoltaics), annual and perennial crops (e.g. agroforestry), and crop livestock systems.

Based on the above the WEF Nexus approach can help with the aligning 2030 Development Agenda with its SDGs and the Paris Agreement with its nationally determined contributions through the



Source: [4]

The WEF Nexus approach therefore enhances the implementation of the Health concept<sup>1</sup>

The above shows that the Water-Energy (and Food) Nexus Approach can enhance climate-SDG interlinkages in at least three ways [5]:

It can address trade-offs and identify possible synergies between water and energy use in food production;

It can address the need to be holistic in their implementation that address the health (and other) aspects of the system.

Initiatives applying the WEF Nexus approach exist. Several have been successfully applied in different parts of the world, but their scaling up face several challenges. These concern in particular governance issues, including lack of policy coherence, weak institutional coordination and information, as well as stakeholder power differences and politics at different levels.

Scaling up successful WEF nexus experiences would require a major paradigm shift in the fragmented way programmes are currently implemented in the WEF sectors. This means that developing a stepwise process through practical approaches might be better than striving for the ideal.

UN - Energy has recently made the following recommendations in terms of priority action to advance the WEF Nexus approach in the implementation of the SDGs and the Paris Agreement [5]:

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