



## Climate ~ Water ~ Energy ~ Food Nexus

### Concept note

Water, energy and food are intrinsically linked. While food demand is met by agriculture, land, water and energy are important inputs. Increasing food production implies increasing water and energy consumption. The agriculture sector is already the largest consumer of ground water (approximately 70-80% of total ground water consumption). The agriculture produce is grown, processed and distributed using energy in various stages across the supply chain. For example energy is used in machinery like tractors or irrigation pumps. Besides synergies there are trade-offs between consumption of water and energy, with food production. Water and energy are also critical inputs to other economic activities important for economic growth and development. Increasing food production will therefore face a steep competition from other economic activities for the use of these resources. Some of these activities such as fertilizer industry are also important input to agricultural production. Hence the question of food security is intimately linked with the questions of water security and energy security. The nexus between food security-water security and energy security is further complicated by the dynamics of climate change. The dominant mode of increasing energy supply i.e. consumption of fossil fuels increases the threat of climate change which in turn negatively affects water availability and food production. In Paris last year, global community agreed to limit the temperature rise to 2 Degree Celsius. However, the current trends in negotiations and mitigation plans of countries are insufficient to achieve this goal and temperature rise is on the trajectory of 3 to 4 Degree Celsius having serious implications for the productivity of various crops in different climatic zones. Even if, the 2 Degree target is achieved there would be implications for food and water security. Global response to food security challenge therefore has to be cognisant of and in coordination with the responses to the challenges of water security, energy security and climate resilience. The global community has recognised the challenges of climate change, food security, energy security and water security. However, the responses are often in isolation within pre-defined sectoral boundaries. National responses are grappling with the issues of fragmented sectoral

responsibilities, lack of coordination and limited capacity to consider broader cross-sectoral impacts. A nexus approach to sectoral management, through enhanced dialogue, collaboration and coordination, is needed to ensure that co-benefits and trade-offs are considered and that appropriate safeguards are put in place.

**Key Questions:**

- 1) How to ensure food security while also meeting the needs for water, energy and improving the environment?
- 2) What are the opportunities to improve water and energy efficiency and reduce food wastage such that every improvement in one area yields gains in all areas? How do we take a synergistic approach?
- 3) What should be the strategies for building climate resilience so as to meet the future demands of water, energy and food productivity?
- 4) How to make use of scientific talent, technological advances, grassroots innovations and social entrepreneurship to this end?
- 5) How to enhance international collaborative responses to facilitate building of national capacities to enable nexus thinking?