

Module 3

Water - Energy - Food

Water - Energy - Food, or WEF, is a vital combination which is of increasing interest in the last few years after the global crisis that has affected global energy and food demands in 2007 and 2008. The challenge of the “Water, Energy and Food Security Nexus” perspective is central to the Green Economy and sustainability. The three words express the real components for decent human life.

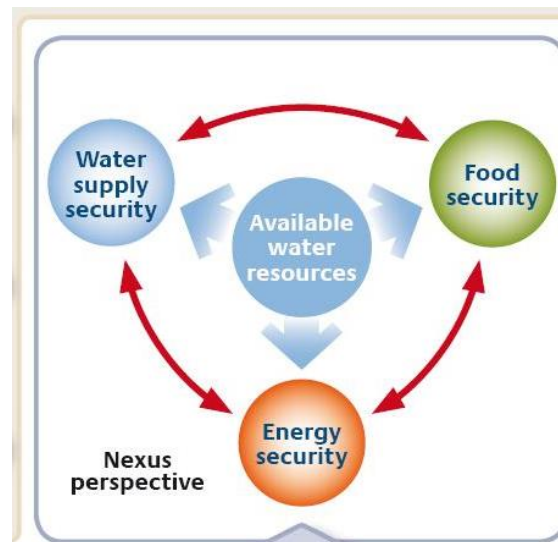


Figure 1. Water-food-energy nexus - Web photo

Water is the main element for life on the planet and an input for producing agricultural goods in the fields and along the entire agro-food supply chain. Energy is required to produce and distribute water and food, i.e., energy is used to pump water from groundwater or surface water sources, to power tractors and irrigation machinery, and to process and transport agricultural goods.

Agriculture is currently the largest user of water at the global level, accounting for 70% of total withdrawal. The food production and supply chain accounts for about 30% of total global energy consumption.

Water security, defined in terms of people’s access to safe drinking water and sanitation, is one of the basic human rights according to the Millennium Development Goals (MDGs).

Energy security has been defined as "access to clean, reliable and affordable energy services for cooking and heating, lighting, communications and productive uses" (United Nations)

Food security is defined by the Food and Agricultural Organization (FAO) as "availability and access to sufficient, safe and nutritious food to meet the dietary needs and food preferences for an active and healthy life." The three elements are in direct relation with climate change and biodiversity.

Generally, there is a global mandate to set suitable regulations to save the three elements in a secure way for the people as essential human rights. However, there are some problems related to achieving this goal. These problems vary from one region to another.

Global attention has been directed to renewable energy generated from sunlight, wind, water (hydropower), tides, waves, biomass and geothermal heat. Although renewable energy is environmentally sound, the global use of renewable energy is still humble but with investment in R&D in renewable energy the risks of climate change can be mitigated.

With respect to water, it is expected that the next war in several parts of the world may be because of the scarcity of clean water. In addition, adequate agriculture and food security will be at stake.

Water scarcity can be as a result of two mechanisms: physical (absolute) water scarcity and economic water scarcity. Physical water scarcity is the result of inadequate natural water resources to supply a region's demand, and economic water scarcity is the result of the poor investment and management of the sufficiently available water resources.

Therefore, great efforts must be exerted to enhance water desalination, development of salt-tolerant crops, and waste water reuse. Also, supply and demand management of water resources is very important to control water losses.

After decades of relative neglect, agriculture and food security are high on the global development agenda. The need to produce a sufficient supply of food is due to the recent increases in food prices, the large number of food insecure people in the world and concerns over the sustainable use of land and water resources. These problems are exacerbated by the threat of climate change and other global changes, including demographic changes, urbanization, change of forest cover, change of diets, foreign

land investments, and the accelerated production of other agricultural goods (fuel, fiber and fodder) on scarce land resources.

Agricultural water management plays a central role in food production and food security. On the one hand, poor water management practices contribute to the depletion and degradation of land and water resources. On the other hand, improved water management plays a vital role in increasing food production and reducing food insecurity as well as supporting sustainable land and water resources development.

Crucial in this area are the key characteristics of Islam which are the belief in one God (Allah) and the belief in the Day of Judgment (Hereafter). These are the core of the social and environmental responsibilities of both individuals and the corporate sector. The relationship between humans and nature is based on harmony, since all creatures obey the laws (*sunan*) of God. Harmonization of human will with the teachings of Islam leads to a responsible, balanced and good life (*Hayat Tayebah*). Being mindful of the purpose and meaning of every single human endeavor, every human activity, is given a transcendent dimension; it becomes meaningful, of value, and goal-centered (Al-Jayyousi, 2012).

The Islamic worldview is based on an eco-cosmic understanding of the harmony between humans and nature and the value of nurturing the aesthetic and natural intelligence of humans as trustees. The Islamic notion of *Zohd* which means living lightly on the earth and having low ecological footprints is a key for securing a healthy planet. All forms of environmental problems like pollution and global warming and climate change according to the Islamic interpretation is attributed to human misconduct or mischief (*Fassad*) (Al-Jayyousi, 2012).