

Water-Energy-Food-Health Nexus Renewable Resources Initiative

-WEFRAH-

Using holistic, systems level thinking toward achieving water, energy, and food security:

Improving health.

Harmonizing humans with nature.

Implementing integrated solutions.

Vision

AUB is a regional hub for innovation and interconnectedness in renewable resources in arid and semi-arid regions through the water-energy-food-health nexus.

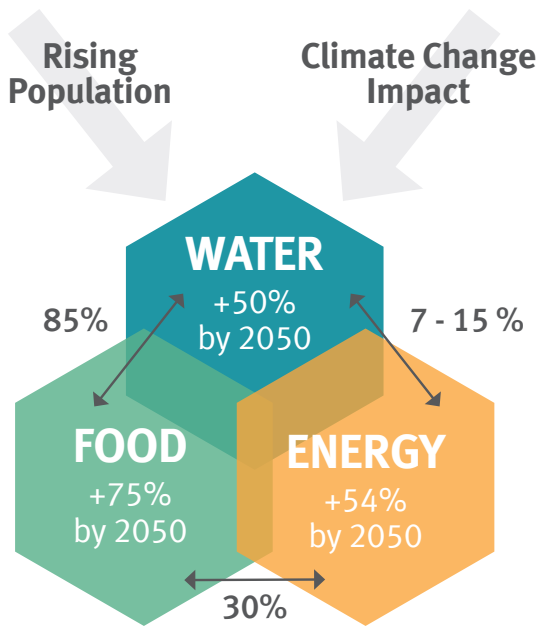
“*Creating abundance through synergy*”

Goals

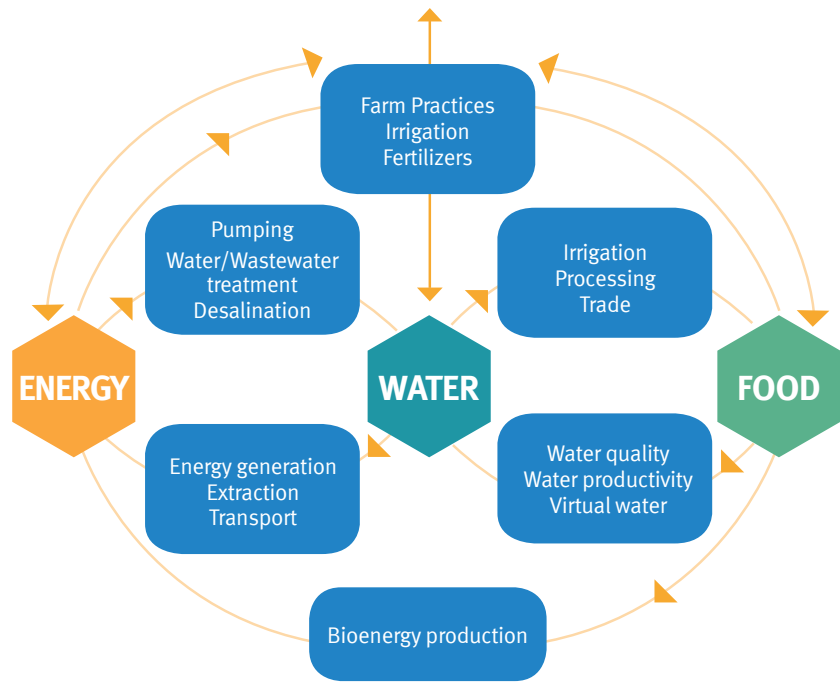
- Increase collaboration on topics related to primary renewable resources among campus faculties, schools, and research and policy units.
- Increase the body of knowledge about the Water-Energy-Food-Health Nexus system.
- Develop a critical mass of cross-faculty, interdisciplinary teams at AUB to encourage successful competition for large scale external funding opportunities.
- Expand WEFRAH research, education, and capacity development opportunities at AREC.
- Expand regional and international cooperation, particularly in WEFRAH Nexus systems.



Sustainable ecosystems require inter-connective models of primary resources



Ecosystems, Human Health and Well-Being



WEFRAH: increasing resilience of human and earth systems through improved understanding and management of their complex system of systems

WEFRAH Research Clusters (2019-2021)

1. Smart Farming

Machine Learning approaches to reduce water and energy consumption in field irrigation

Artificial Intelligence (AI) powered arable farming service

2. Renewable Energy

Climate control towards sustainable poultry production

3. Fate of Antibiotics

Antibiotics in soil; their uptake by vegetable crops, production quality, soil microbiology, and removal through advanced oxidation

4. Sheep of the Future

Toward a new coupling of pastoralism, ecosystems, and consumers in an age of environmental degradation

5. Improved Water and Energy Use

Recycling food waste for better production and healthier food

6. Food System-Based Prototype

Healthy, Sustainable and Safe Diets (HeSSaD): the case of school-aged children in the Bekaa Valley, Lebanon

7. The 3Rs: Reduce, Recover, Recycle

Food waste management initiative

8. Integrating the WEFRAH Nexus

Humanitarian engineering, capacity building, field deployment

The WEFRAH Community

Business | Health Care | Social Sciences | Engineering | Natural Sciences | Arts & Design | Nutrition | Public Health | Agriculture | Nature and Ecosystem | Technology | Policy | Others

Key Partnerships and Long-term Viability

The Advancing Research Enabling Communities Center (AREC) is the hub for WEFRAH projects and activities and is supported by all faculties, schools, and centers. WEFRAH intends to build capacity for AUB in this crucial area.

Seed funding is expected to create capacity for sustained external funding from key partnerships with public and private sectors, civil society, local university partners, as well as regional and international collaborations.

