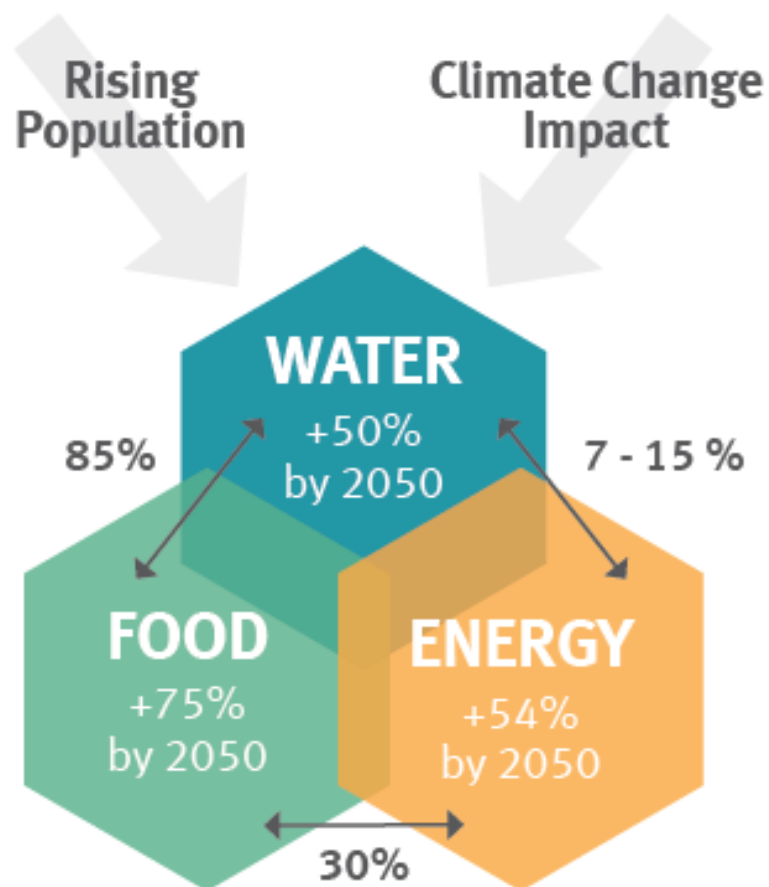


Water- Energy- Food- Health Nexus Renewable Resources Initiative: WEFRAH

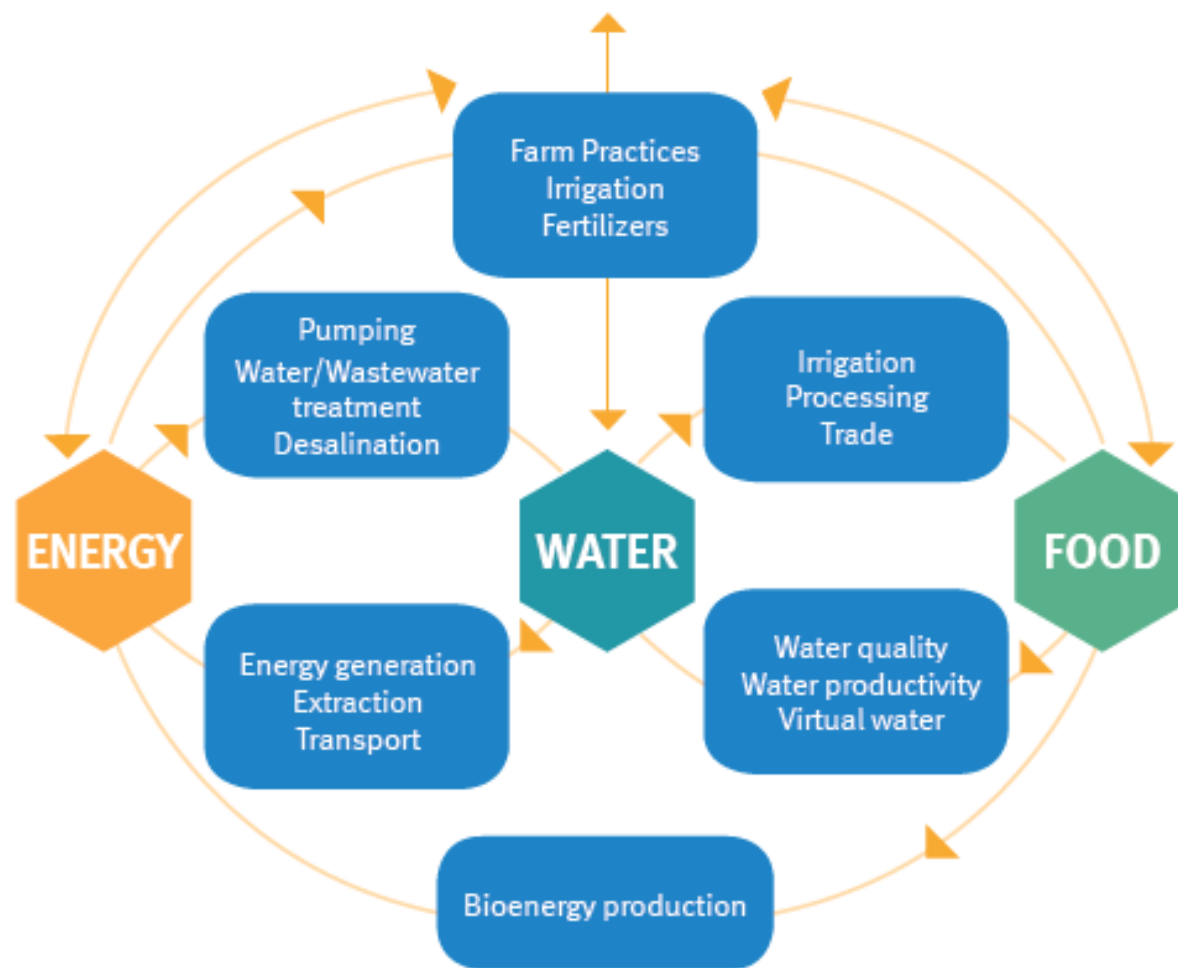
Expert Group Meeting on “Enhancing capacity building addressing Water and Energy interlinkages for Sustainable Development in the Arab Region”

Beirut, 25-26 June 2019

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*

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.

Vision

- AUB is a regional hub for innovation in water-energy-food-health nexus and interconnectedness in renewable resources in arid and semi-arid regions through the water-energy-food-health nexus.
- WEFRAH's outcome and action oriented approach links naturally and organically to the Sustainable Development Goals (SDGs) 2030 by presenting a contextualized, relevant approach to their achievement in the MENA region.

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

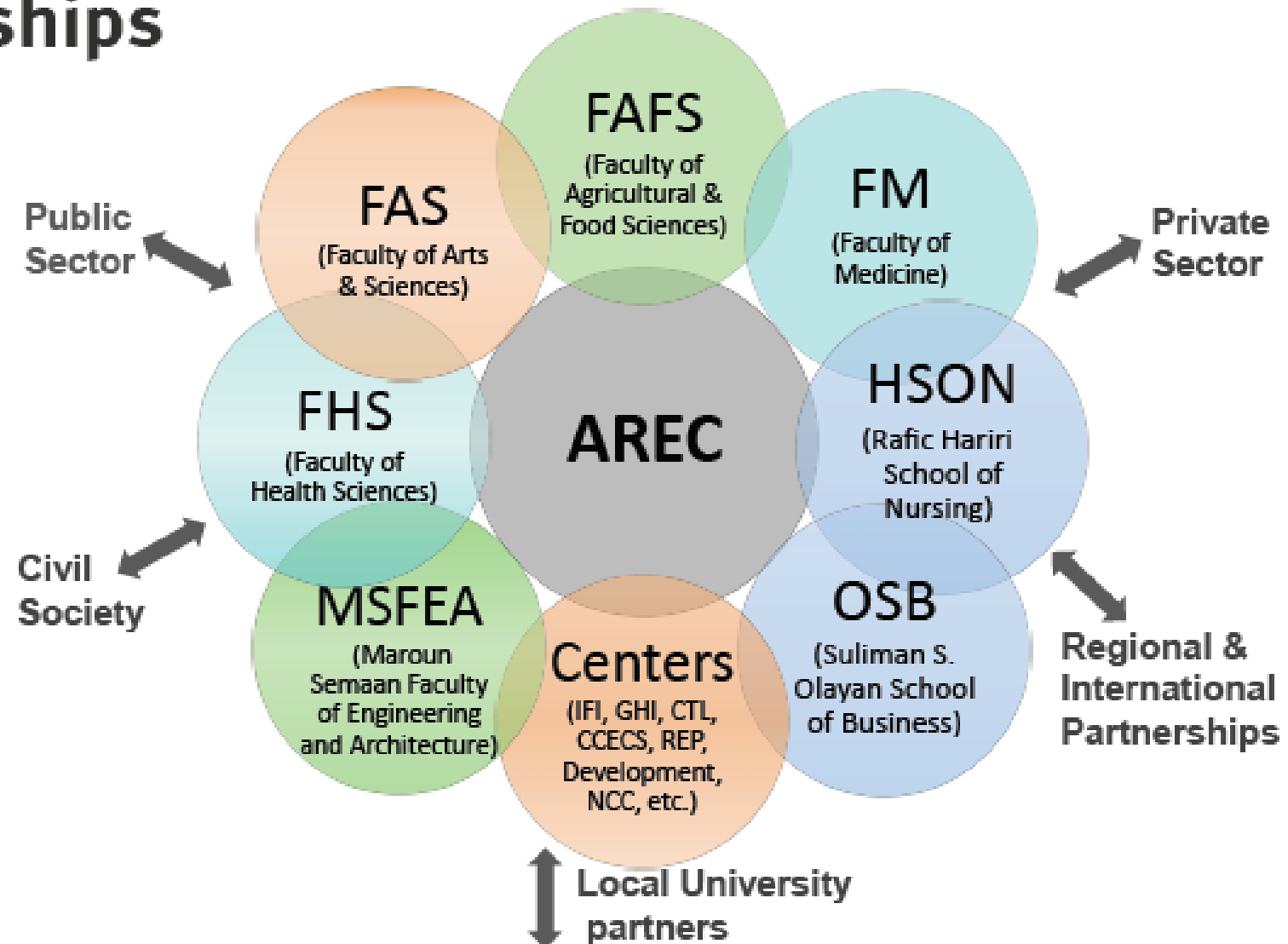
7. The 3Rs: Reduce, Recover, Recycle

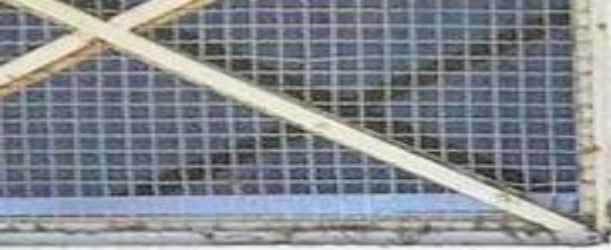
Food waste management initiative

8. Integrating the WEFRAH Nexus

Humanitarian engineering, capacity building, field deployment

Key Partnerships





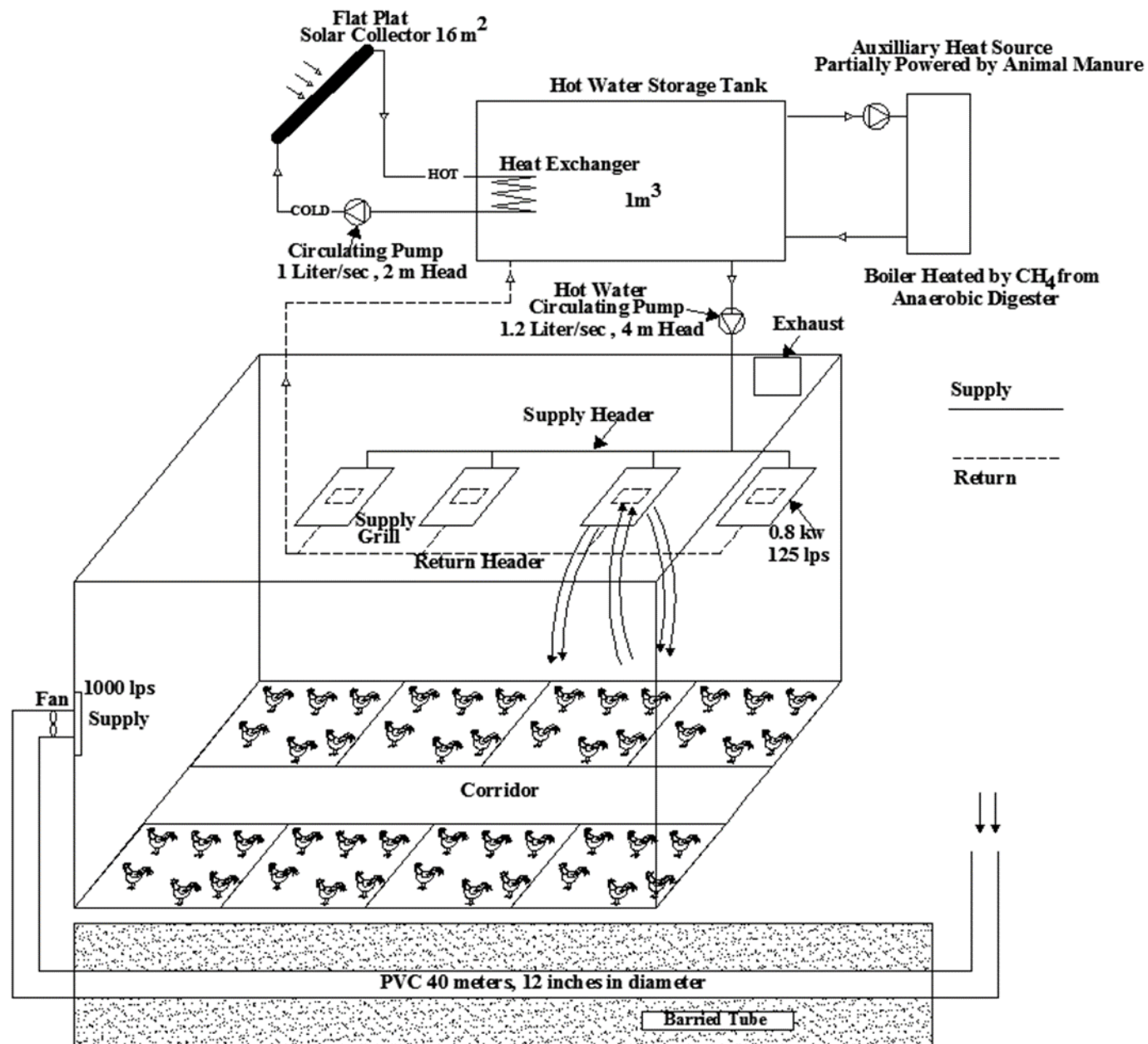
CLEAN TECHNOLOGIES INNOVATION UNIT

Supply & Materials Granted By The Economic
And Social Commission For Western Asia (ESCWA)



Solar Assisted Localized Heating



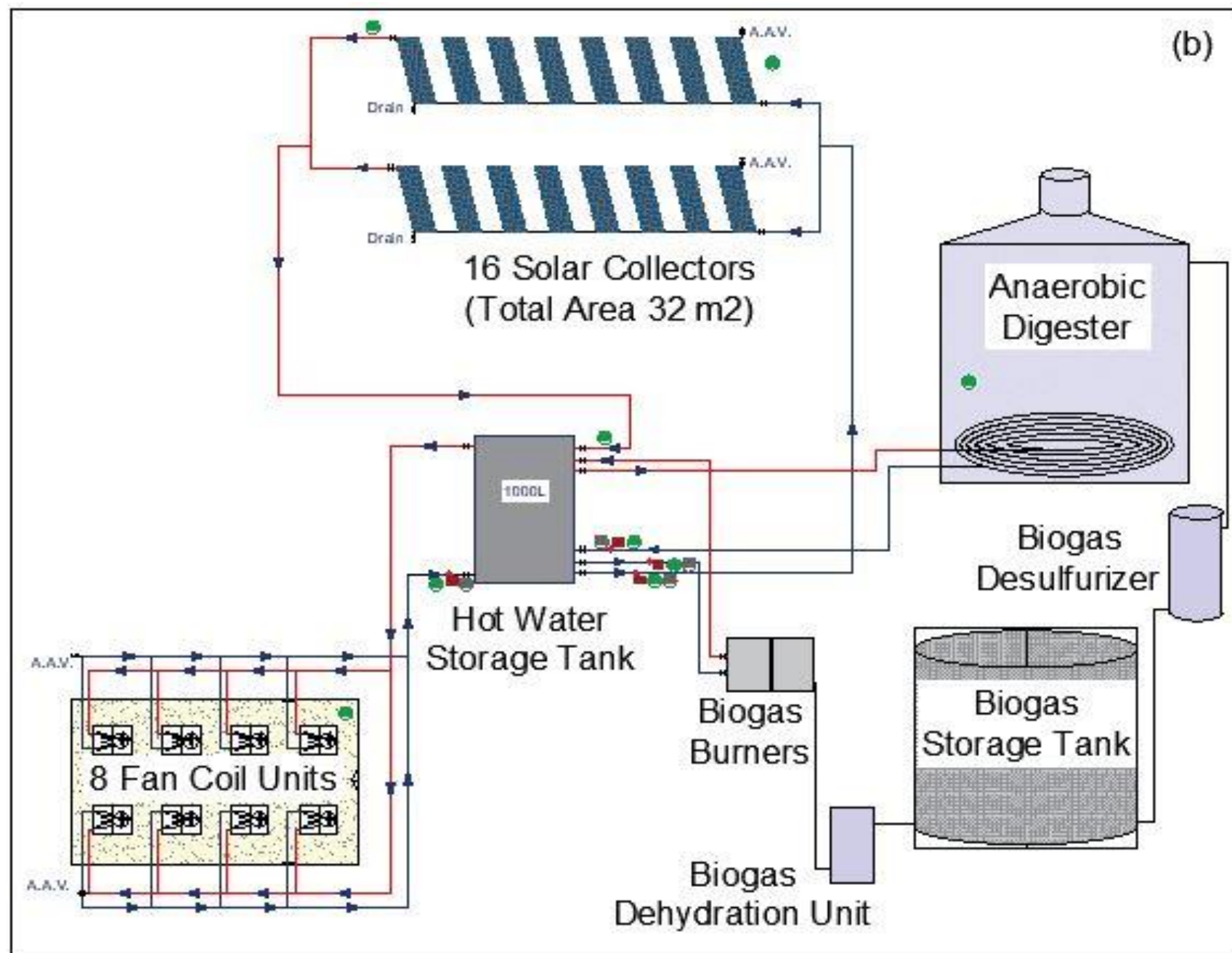


PV System



Anaerobic Digester

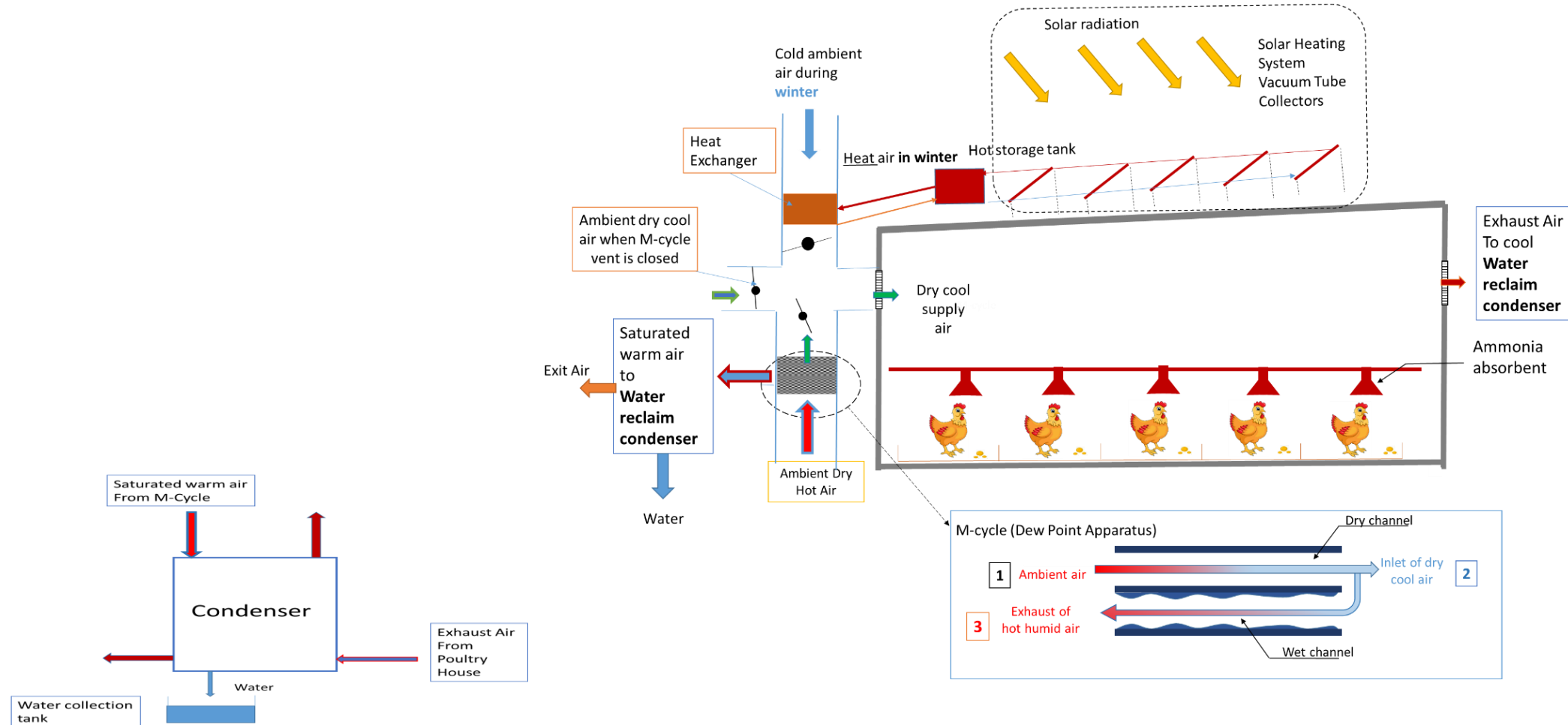




Geothermal: Earth Tube Heat Exchangers



Proposed effective ventilation system of the poultry house and water reclamation condenser



Thank You