Information document: Table of contents of Zero Order Draft (ZOD) of the MedECC Special Report on climate-water-energy-food-ecosystems nexus

MedECC Special Report Climate-water-energy-food-ecosystems nexus

Table of Contents

- 1. Introduction: Water-Energy-Food-Ecosystems (WEFE) nexus concept in the Mediterranean area
 - 1.1. The nexus concept: from silo to systemic thinking
 - 1.2. Why do we need a nexus approach particularly in the Mediterranean?
 - 1.2.1. The Mediterranean context
 - 1.2.2. The siloed analysis of water, energy, food resources and ecosystems from MedECC first Mediterranean Assessment Report (MAR1)
 - 1.2.3. How do we evaluate WEFE approach performance? Evaluating cross-sectoral impacts
 - Box 1.1: Example of agrivoltaics as a possibility for addressing the WEFE nexus

Box 1.2: Examples of synergies and trade-offs of the WEFE nexus and SDGs

2. Drivers of change and their impacts on WEFE in the Mediterranean region

2.1. The complexity of assessing the impacts on WEFE: the rationale of the approach

2.2. External drivers of change related to WEFE in the Mediterranean

- 2.2.1. Current and future trends of the direct drivers of change
 - 2.2.1.1. Climate change
 - 2.2.1.2. Land use and Land Cover Changes
 - 2.2.1.3. Pollution
- 2.2.2.Current and future trends of the indirect drivers of change

2.3. Observed and projected impacts of the external drivers of change on WEFE

- 2.3.1. Impacts on water security
 - 2.3.1.1. Direct drivers
 - 2.3.1.1.1. Climate change
 - 2.3.1.1.2. Land use and land cover change
 - 2.3.1.2. Impacts of the indirect drivers
 - 2.3.1.2.1. Population growth, urbanisation, industrialization and changes in lifestyles
 - 2.3.1.2.2. Technological innovation
- 2.3.2. Impacts on food security
 - 2.3.2.1. Direct drivers
 - 2.3.2.1.1. Climate change
 - 2.3.2.1.2. Pollution
 - 2.3.2.1.3. Land use change
 - 2.3.2.2. Indirect drivers
 - 2.3.2.2.1. War

2.3.2.2.2. Impacts of population growth, industrialisation, urbanisation, and changes in lifestyles

- 2.3.3. Impacts on energy security
 - 2.3.3.1. Direct drivers
 - 2.3.3.1.1. Impacts of climate change
 - 2.3.3.2. Indirect drivers
 - 2.3.3.2.1. Impacts of population growth
 - 2.3.3.2.2. Impacts of urbanisation
 - 2.3.3.2.3. Impacts of industrialisation
 - 2.3.3.2.4. Impacts of pollution
 - 2.3.3.2.5. Impacts of war
- 2.3.4. Impacts on ecosystems health and services
 - 2.3.4.1. Direct drivers
 - 2.3.4.1.1. Climate change

2.4. Cascading impacts: the true picture of the impacts of drivers of change on WEFE 2.4.1.Water in focus

- 2.4.1.1. Groundwater
- 2.4.1.2. Reclaimed wastewater
- 2.4.1.3. Energy
- 2.4.1.4. Wetlands and ecosystems
- 2.4.2.Food in focus

2.4.2.1. Cascading effect of food on other WEFE components

Box 2.1 Intensive irrigated cropping systems

Box 2.2: Intensive livestock production systems

- 2.4.3. Energy in focus
- 2.4.4. Ecosystems in focus

3. WEFE nexus adaptation and mitigation strategies

3.1. Needs in terms of adaptation and mitigation for the nexus

3.2. Climate change mitigation and adaptation options in the nexus across the Mediterranean region

3.2.1. Technological solutions

Box 3.1 Water reuse for irrigation

Box 3.2 Marginal land for bioenergy: an opportunity for supporting sustainable development and achieving EU climate pledges

Box 3.3 Agrivoltaics

3.2.2. Early warning and forecasting

3.2.3. Nature-based solutions

Box 3.4 The water-energy-ecosystems nexus in the context of River Basin Management Plans: the Llobregat river basin, Spain

3.2.4. Behavioural change

3.3. Opportunities provided by the nexus: trade-offs/synergies in the water, energy and food resources across the Mediterranean region

3.3.1. Agroecological management practices

3.3.2. Recovering the Mediterranean diet

3.3.3. Forest management through landscape-level interventions

Box 3.5 Opportunities using solar energy (innovation) for groundwater pumping in Kebili Region (Tunisia): new challenges for water resources

3.4. Challenges of mitigation and adaptation interventions

- 3.4.1. Governance and political challenges
- 3.4.2. Financial challenges
- 3.4.3. Scientific challenges
- 3.4.4. Geographic challenges

Box 3.6 Case study: transboundary basins, the Sava River Basin

4. Contributions of WEFE Nexus to sustainability

- **4.1.** The looming resource challenge and the interconnected nature of the Sustainable Development Goals in the Mediterranean region
- 4.2. Nexus solutions for sustainable development in the Mediterranean region
- **4.3.** From concept to implementation OR In search of appropriate WEFE nexus indicators strategies
 - 4.3.1. Overview of nexus indicators
 - 4.3.2. Overview of applications of nexus indicators in the Mediterranean area
 - 4.3.3.Can nexus indicator monitor sustainability?

4.4. Managing Nexus synergies and trade-offs for sustainable resource use and management

Information document: Table of contents of Zero Order Draft (ZOD) of the MedECC Special Report on climate-water-energy-food-ecosystems nexus

5. Governance, policies and research options for the WEFE nexus

5.1. State-of-art of current policies

- 5.1.1.WEFE policy inventory
- 5.1.2. Lessons learnt at policy level of at least 2 elements of Nexus
- 5.1.3. Gaps and synergies at legislative level in the frame of WEFE diplomacy

5.2. Governance

- 5.2.1.Key actors and stakeholders involved in the WEFE governance
- 5.2.2. Coordination and cooperation among actors at all levels and scales of the WEFE governance
- 5.2.3. Science-policy interface (SPI) as one way of reinforcing coherence
- 5.2.4. Enhancing WEFE governance and integrity/transformative framework

5.3. Factors enabling the WEFE nexus

- 5.3.1. Technological and social innovations
- 5.3.2. Capacity building and raising awareness
- Box 5.1 The WEFE nexus at the household level

5.3.3. Innovative funding mechanisms