Conférence Parmenides IX – GID-CIHEAM – Bari – octobre 2021
Gestion durable des bassins versants méditerranéens face aux impacts des changements sociétaux et climatiques

Abdelouahid FOUIAL
Session 2 Report

SESSION 2: ROUND TABLES ON VULNERABILITIES

Moderator: Mr. Thierry CHAMBOLLE, Academy of technologies (France)

Rapporteur: Mr Abdelouahid FOUIAL, CIHEAM Bari

This report summarizes the main challenges and mitigation strategies raised during the three round tables detailed below:

Name	Organization	Title of the presentation
Round table 2.1: Water quality, saline lifts, alkalization		
Mr. Guilhem BOURRIE	Académie d'Agriculture (France)	L'apport de la géochimie des sols et des eaux
Mr. Mohammed HACHICHA	University of Carthage, National Research Institute of Rural Engineering, Water and Forests (INRGREF) (Tunisia)	Water and salt regimes under irrigation with brackish/saline water in Tunisian semi-arid context
Mr. Baelhadj HAMDI-AÏSSA	Ouargla University (Algeria)	L'agrosystème oasien face aux défis du changement climatique
Mr. Manuel SAPIANO	Energy and Water Agency (Malta)	Managing a vulnerable groundwater resource
Round table 2.2: Flash floods, risk of flooding (land use, urban planning, forecasts and alerts)		
Ms. Catherine FOUCHIER	INRAE Modulization (France)	Mise en place du service Vigicrues Flash
Mr. Régis THEPOT	(France)	Connaissance partagée sur les risques et dialogue multi parties prenantes
Round table 2.3: Indicators of vulnerability, water and soil quality		
Ms. Fabienne TROLARD	INRAE (France)	Sol – eau – ressources agricoles : l'apport des indicateurs de vulnérabilité des territoires face aux crises

Mr. Marco MARANI	University of Padua, Academia dei Lincei (Italy)	The case of Venice and its lagoon, with regard to the risk inundation in different scenarios (climate change, storm surge barriers, sea-levels etc.)
Mr. Pandi ZDRULI	(CIHEAM Bari)	Indicators of soil quality

The main challenges

The session focused on the vulnerabilities of the natural resources to climate change, population growth and its impact such as agricultural intensification, urbanization, and human activities.

Human activities have ignored for long decades their impact of the climate leading to high temperatures, irregular rainfall, flooding, erosion of the soils, rise of sea level and, hence, the impact on food security and the livelihood of millions living in coastal areas and arid regions.

Therefore, we must act now to mitigate some these impacts or at least stop the degradation at the levels that they are now since some negative impacts could not be reversed:

The actions that need to be considered is:

- Focusing on arid and desert regions: knowing that these areas are quite vulnerable to any kind of imbalance, maintaining the biodiversity is extremely important to avoid salinization and desertification. Water (groundwater) and soil in this context must be managed in an integrated way by considering new strategies, technologies, and policies (e.g., Localized irrigation systems, intercropping to reduce evaporation and improve water savings), but also maintain a close consideration of the local contexts to improve the socioeconomic and environmental resiliency.
- Now focusing on coastal regions and islands, the main issue is groundwater overexploitation due to the fact that urbanization is concentrated near the coastal areas and in the case of islands, lack of surface water resources and tourism. The overexploitation of groundwater can lead to seawater intrusion to the aquifer. Therefore, the degradation of groundwater quality. When this water is used for irrigation, it will also lead to degradation of the soil quality.
- Climate change had significant impact on rainfall, increasing flooding events, droughts, sea level rise.

Mitigation strategies

- Control and reduce the salinization and alkalinization of the soils and salinization and pollution of water resources, especially aquifers.
- So, we must maintain an acceptable levels of salt in the soils and water. Because if we reach a non-return situation, the mitigation will be very expensive or impossible.
- Groundwater cannot be protected in isolation; integrated water management must be taken into consideration.

- Use of alternative water resources such TWW and desalinated brackish and sea water to reduce the pressure on freshwater resources.
- Engaging with water users.
- Use policy approaches focusing of water demand (demand management at an inclusive level)
- Comprehensive monitoring strategies that include techniques, technology and modeling and accounts for comprehensive scenarios and not for a business-as-usual evolution.
- Solution combining agronomic approaches that integrate new cropping patterns, intercropping, soil conservation practices, and engineering aspects that consider irrigation systems and scheduling tailored to water quality and not just water quantity.
- Early warning system for natural disasters: that anticipate flooding and increase meteorological vigilance. This includes real time modeling accounting for rain and snow, improving the spatial resolution (from 1 km to 100 m and down to 25 m) and providing a reliable and easily accessed platforms.
- Modeling future integrated scenarios is extremely important. That include climate change, land use and water use.
- Adopting an ecosystem Approach (protecting lagoons, marches…) positively impacts the sustainability of coastal areas including the mitigation of sea level rise.
- Prioritization of actions (urbanization, ruralism, agriculture and environment).

The above mitigation strategies can be used in the framework of international cooperation and projects

Challenges:

- Global changes (population growth, climate change – urbanization).
- Water scarcity and pressure on natural resources soil and water (quantity and quality) by the agricultural sector.

In the perspective of water (surface and ground), land, and ecosystem, an international cooperation is a must in order to accomplish:

- Advanced monitoring that includes techniques, technologies, and modeling.
- Implementation of good practices (technical, governance) and study of impacts.
- Platform of exchange and evaluation.
- Inclusive science-policy framework of action (gender and youth in the core).