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Living Labs towards sustainable groundwater management: case study in Malia, Crete, Greece

George Karatzas¹, **Anthi-Eirini Vozinaki**¹, Ioannis Trichakis^{1,2}, Ioanna Anyfanti¹, Christina Stylianoydaki¹, Emmanouil Varouchakis¹, Christos Goumas¹, Pier Paolo Roggero³, Thuraya Mellah^{4,5}, Hanene Akroust⁵, and Seifeddine Jomaa⁶

¹Technical University of Crete, School of Environmental Engineering, Environmental Engineering, Chania, Greece (karatzas@mred.tuc.gr)

²European Commission, Joint Research Centre (JRC), Italy

³University of Sassari (UNISS), Italy

⁴Higher School of Digital Economy (ESEN), University Manouba

⁵Wastewaters and Environment Laboratory, Centre of water research and technologies (CERTe), University of Carthage

⁶Department of Aquatic Ecosystem Analysis and Management, Helmholtz Centre for Environment Research - UFZ, Magdeburg, Germany

This work carries the social learning process out via Living Labs in order to construct a common vision on sustainable groundwater management. In this process, the scientific and local knowledge are integrated. This study is part of Sustain-COAST project co-funded by PRIMA programme. Stakeholders' active engagement is realized via Living Labs, which are participatory actions that encourage the dialogue among private and public actors, create institutionalized space for discussion and vision sharing, and analyze the stakeholder-suggested mitigation options.

A stakeholder mapping took place, that is the list of all the key groups, organizations, and people involved to water management in the study area. Further analysis was carried out to better understand stakeholders' roles and perspectives, within the first Living Lab, organized in Malia. 55 stakeholders interacted gathered, including water users, policy makers, local and regional authorities, water management and supply associations, socio-ecological and cultural associations, NGOs, citizens, technicians, external experts, scientists.

Stakeholders got involved in social learning actions, knowing each other, expressed their motivations and expectations to participate in the first Living Lab and the project. Afterwards, a participatory session followed by implementing digital ICT tools (Mentimeter App.), which is an opinion survey technique that might improve societal awareness and stakeholders' active engagement in water management. Afterwards, an interactive participatory map activity took place, which enabled the study site's characterization according to key-stakeholders' perception, knowledge, and expertise on water management issues in the area. Stakeholders collaborated in groups and filled maps of the study area with significant spatial data and information. Participants were asked to express their common vision on Malia in an entertaining puzzle activity.

The aforementioned interactive sessions enabled the extraction of the raised water issues in Malia as well as the suggestion of possible options. The need for sustainable and balanced development taking into account principles of law and equal accessibility for all was specifically noted by stakeholders. Stakeholders evaluated the Living Labs as an innovative interactive and interesting way of exchanging views among institutions and citizens, through participation and technological means. Living Labs are expected to provide significant information exchange among institutions and actors and provide realistic and socially acceptable suggestions for the local community.

Stakeholders are directly involved and motivated to maintain their active engagement in a long-lasting process via future Living Labs in Malia. Such actions increase governance capacity by addressing people's skills in jointly decision-making and engaging stakeholders in a social learning process through participation. Actions that encourage dialogue among different actors and use innovative mediation techniques form the best options to improve and integrate water governance.

Keywords: Living Labs; Innovative governance; Water resources management; Stakeholder mapping; Social learning processes; Stakeholders' engagement

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