



Bridging the gap between water science and solutions – A joint conference

9th IWRM

14th STAHY

1st EBHE



Socio-agro-hydrological indicators for the assessment of the WEFE nexus sustainability

Mohammad Merheb¹, Christophe Cudennec¹, Tommaso Pacetti², Marco Lompi², Jerome El Jeitany², Enrica Caporali²

(1) Institut Agro, INRAE, SAS, Rennes, France

(2) University of Florence, Firenze, Italy

Sustainability has become a central focus of scientific and political discourse in recent decades. Many management paradigms are being proposed to better ensure sustainable development at various organizational levels. The WEFE nexus is one such paradigm that has gained enormous traction since the 2011 Bonn conference. There is a need to monitor the transition towards more integrated and sustainable WEFE nexus practices and to assess the impact of this transition on associated socio-economic systems. Thus, we present a nexus sustainability assessment tool comprised of a set of indicators that characterize the biophysical dimension of WEFE, i.e., the water, energy, food, and ecosystem aspects, while also integrating the assessment of social, economic, and governance dimensions. This tool builds upon a large literature base in terms of sustainability assessment, especially the SDGs, farm sustainability assessment tools, and the footprint method. It further adds indicators to monitor social behavior related to the management of common resources, inspired by Ostrom's principles. The tool is designed to operate at the catchment level of organization but is flexible enough to be adapted to other lower levels (e.g., irrigation perimeters) or more complex levels. The data needed for the tool's implementation are easily accessible from online databases, the output of various open-source models, national and regional databases, and expert judgment. The tool will be applied to four Nexus Ecosystem Labs (NELs) in the Mediterranean region as part of the PRIMA-funded Nexus Nature Ecosystem Society Solution (NEXUS-NESS) project.