How effectively (or not) can science and research be turned into adopted solutions and policies?

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How to create an impact on policies, operations, and society across the interdisciplinary sectors in which we - as researchers - are involved? Managing the Water-Energy-Food-Ecosystem (WEFE) nexus and pursuing climate resilience is the core task of several European (EU) projects and is in the highest interests of our society. The European Commission's research funding programs attempt to address a large range of topics and offer unique opportunities for scientists to create a tangible impact on the environment and society.

We are currently involved in different EU projects, including AWESOME (PRIMA), which aims at managing the WEFE nexus across sectors and scales in the South Mediterranean exploring innovative technologies such as soilless agriculture in the Nile Delta; CLINT (H2020), which is developing Machine Learning (ML) techniques to improve climate science in the detection, causation, and attribution of extreme events to advance climate services; IMPETUS (H2020), whose efforts are dedicated on the elaboration of climate data space enhanced with ML algorithms to support the elaboration of climate policies; REACT4MED (PRIMA), which focuses on combating land degradation and desertification by improving sustainable land and water management through the identification of local good restoration practices and their potential upscaling; Gaza H2.0: Innovation and water efficiency (EuropeAid), which aims at promoting efficient and sustainable water supply and demand as well as knowledge transfer to enhance resilience against water scarcity in Gaza; GoNEXUS (H2020), which is developing an evaluation framework to design and assess innovative solutions for an efficient and sustainable coordinated governance of the WEFE nexus; NexusNet (COST), which creates the network and the community of WEF nexus advocates for a low-carbon economy in Europe and beyond; NEXOGENESIS (H2020), which focuses on streamlining water-related policies with artificial intelligence and reinforcement learning; MAGO

(PRIMA), which builds web applications for water and agriculture in the Mediterranean; BIONEXT (HEU), which is interlinked with the Intergovernmental Panel on Biodiversity and Ecosystem Services and aims at creating transformative change through nexus analysis.

Despite the efforts of the scientific community, there is still a gap between research and practice. Researchers face difficulties in engaging stakeholders and decision-makers to jointly explore and shape the developed solutions, as well as to truly adopt them. The large-scale implementation of suitable technological solutions might require time and financial resources beyond the project's lifetime and capacity. The lack of follow-ups and collaboration among projects with similar aims can be some of the reasons lying behind. Also, the complexity of finding open data in data-scarce regions makes results less trustable in the eyes of international agencies, while the pressure of publishing often turns research tasks into pure academic exercises. To what extent does the European strategy work? Is it only gaining scientific advances or also leading to local policy changes? Engaging important local actors (e.g., ministries), small-medium enterprises and societal members in the project consortia, empowering scientists by ensuring feedback loops with local governmental agencies, including the human dimension into modelling, and running effective capacity-building campaigns can be some food for thoughts to shape new strategies.