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Multi-Stakeholder Development of a Serious Game to Explore the Water-Energy-Food-Land-Climate Nexus: The SIM4NEXUS Approach

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Description / Abstract

Water, energy, food, land and climate form a tightly-connected nexus in which actions on one sector impact other sectors, creating feedbacks and unanticipated consequences. This is especially because at present, much scientific research and many policies are constrained to single discipline/sector silos that are often not interacting (e.g., water-related research/policy). However, experimenting with the interaction and determining how a change in one sector could impact another may require unreasonable time frames, be very difficult in practice and may be potentially dangerous, triggering any one of a number of unanticipated side-effects. Current modelling often neglects knowledge from practice. Therefore, a safe environment is required to test the potential cross-sectoral implications of policy decisions in one sector on other sectors. Serious games offer such an environment by creating realistic 'simulations', where long-term impacts of policies may be tested and rated. This paper describes how the ongoing (2016–2020) Horizon2020 project SIM4NEXUS will develop serious games investigating potential plausible cross-nexus implications and synergies due to policy interventions for 12 multi-scale case studies ranging from regional to global. What sets these games apart is that stakeholders and partners are involved in all aspects of the modelling definition and process, from case study conceptualisation, quantitative model development including the implementation and validation of each serious game. Learning from playing a serious game is justified by adopting a proof-of-concept for a specific regional case study in Sardinia (Italy). The value of multi-stakeholder involvement is demonstrated, and critical lessons learned for serious game development in general are presented.

Publication year

2017

Publisher

Multidisciplinary Digital Publishing Institute - MDPI

Keywords

Water, Energy, Food and Ecosystems Nexus (WEFE Nexus)

Thematic Tagging

Water services Youth

Language English

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Serious Games

C2.03

Source URL: <https://www.iwrmactionhub.org/resource/multi-stakeholder-development-serious-game-explore-water-energy-food-land-climate-nexus>