

PREMISS

PARTNERSHIP FOR RESEARCH TO ENHANCE METHODOLOGIES
IN SUSTAINABILITY SCIENCE



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Project key information

Project leader: Alexis Drogoul, UMI 209, UMMISCO, IRD, Sorbonne Université, Bondy, France; alexis.drogoul@ird.fr
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Partner institutions

IRD UMMISCO, Thuyloi University, University of Pretoria, Bilgi University, Taiwan National University

Context

Many technological innovations based on Artificial Intelligence contribute to the achievement of the sustainable development goal dedicated to industry, innovation and infrastructure (SDG 9). Among them, agent-based modeling and IoT-based crowdsourcing methods appear as promising approaches for two main reasons: (1) on the one hand, enable scientists and stakeholders to virtually explore the sustainability of different pathways in the management of complex socio-environmental systems and, (2) on the other hand, empower stakeholders so that they themselves can monitor the progress of the chosen pathways.

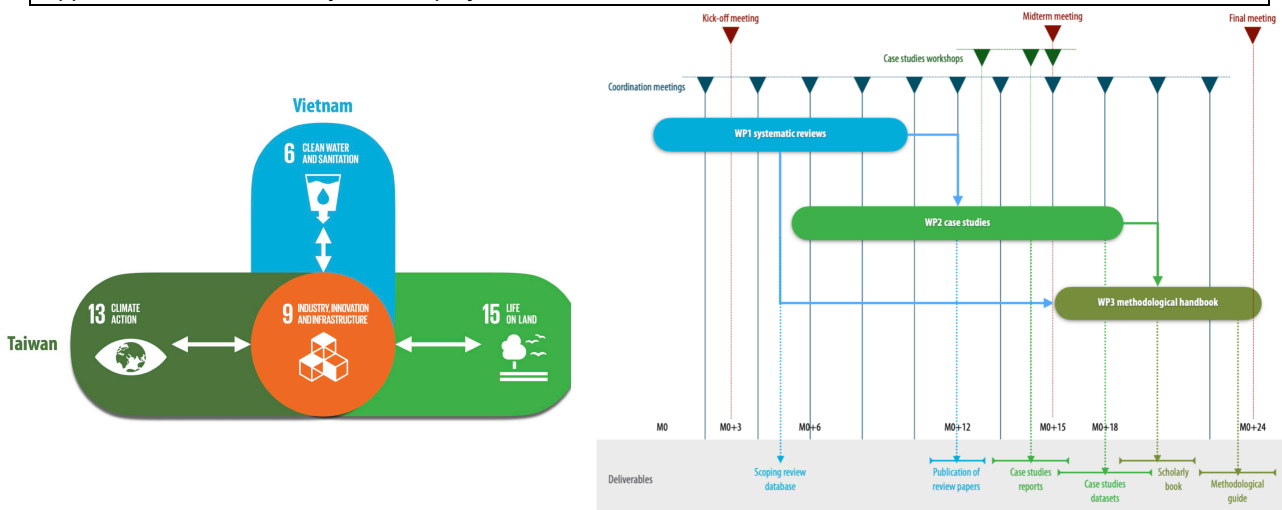
PREMISS is about answering to what extent innovative technologies, namely agent-based modeling approaches and IoT-based citizen science, can support transdisciplinary approaches to the design of sustainable pathways and the achievement of the 2030 Sustainable Development Agenda.

Objectives

The objective of PREMISS is to go further and demonstrate the extent to which a combination of these two technologies can effectively support transdisciplinary approaches, which are based on the integration of knowledge between disciplines and actors in society, which promote the creative and collaborative design of new problem-solving methods, and which are gradually becoming an essential part of the sustainability science paradigm to address complex socio-environmental problems.

Organisation and expected results

The PREMISS, handled by an international consortium gathering South-African, French, Turkish, Vietnamese and Taiwanese academic and non-academic partners, will (1) deliver a systematic review of the literature that addresses these subjects, with the goal of producing operational and policy conclusions alongside at least two scientific review papers; (2) implement and manage three case studies that represent the three nexuses formed by SDG 9 and, respectively, SDG 6 (about the sustainable management of irrigation systems, through participatory modeling, in Vietnam), SDG 13 (about citizen science and participatory environmental mapping in Taiwan) and SDG 15 (about the adoption and impact of sensor networks on precision agriculture in Turkey); (3) deliver a scholarly book and a methodological guide providing new perspectives and sets of recommendations to support transdisciplinary approaches in sustainability science projects.



Applications in the South

Implementation and assessment of two case studies that represent the nexuses formed by SDG 9 and, respectively, SDG 6 (clean water and sanitation, about the sustainable management of irrigation systems in Vietnam), SDG 13 (climate action, about participatory environmental mapping in Taiwan):

- CS1 - Vietnam: participatory simulations and sensing for the management of irrigation systems. Objective: to build an integrated and hybrid framework consisting of innovative approaches (IoT for data collection/assessment, agent-based modeling, participatory simulations) for supporting transdisciplinary approaches to addressing these threats.
- CS2 - Taiwan: informing local climate action with environmental sensing and monitoring using IoT-based crowdsourcing. Objective: create a metropolitan Taipei urban climate map, that can support local climate action plans, using the data obtained by the sensors and local knowledge, in a participatory sensing and citizen science approach.

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