

RESEARCH PORTFOLIO

Socio-natural systems

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Name of scientists in charge

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Group description

The Laboratory of Chemical and Environmental Engineering ([LEQUIA](http://lequia.udg.edu)) is a research group of the University of Girona (UdG) devoted to the development of eco-innovative environmental solutions. LEQUIA is a part of the UdG's Institute of the Environment (IMA) and participates actively in UdG Campus Water. LEQUIA is a "consolidated research group" recognised by the Catalan Government and a member of TECNIO, a network that brings together leading experts in applied research and technology transfer in Catalonia. The group is multidisciplinary, with chemists, biologists, environmental scientists, engineers, and political scientists, among others.

Research on socio-natural systems

This interdisciplinary research line investigates how **socio-political arrangements, along with perceptions, values and narratives, influence environmental technologies, planning and policies**. The line emerges out of an established research trajectory in LEQUIA: for the past 30 years we have been designing decision-support systems focused on planning, control and evaluation of complex environmental systems. As environmental studies are becoming more interdisciplinary, the group widened its understanding of environmental systems to integrate the social context in which decisions are taken. Our research has so far explored: 1) The ethical-political dimension of technologies, from nature-based solutions to Artificial Intelligence applications; 2) Urban planning, circular economy and sustainable transitions in cities; 2) The hydrosocial cycle: decision-making and conflicts in urban water management and governance.



Projects

- > **C-NEUTRAL** – Smart comprehensive training to mainstream new approaches for climate-neutral cities through citizen engagement and decision-making support for innovative governance and integrative planning. EC. HORIZON-MSCA-200-DN-01. 2024-2026. GA 101119603.
- > **SPORE-MED** –Sustainable uPgraded WWTPs for resOurce recovery, water Reuse and hEalth surveillance in the MEDiterranean region. PRIMA Foundation. PRIMA-Section 1-Water Management-Call 2023-Topic 1.1.1. 2024-2027. GA 2322. www.spore-med.eu
- > **MORIARTY** - Bridging the Water Gap: A Step Forward in Multifaceted Risk Evaluation in Supply Scenarios with Regenerated Water. Spanish National Research Agency. "Proyectos de Generación de Conocimiento". 2025-2028. PID2024-155733OB-I00.
- > **D-PATTERN** -Interdisciplinary approach to evaluate decentralisation in urban water management: two case studies in Spain. Spanish Research Agency. Programme "Proyectos de Generación de Conocimiento". 2024-2027
- > **GiroNat** – Giro hacia la reNaturalización para una Girona más resiliente y saludable. Fundación Biodiversidad. Convocatoria para la renaturalización y resiliencia de ciudades españolas 2021. 2022-2025.
- > **CLEPSIDRA** - Virtual twins for urban water futures: planning scenarios for the hydrosocial cycle. NextGeneration. 2022-2025

Selected publications

- > Castellar, J. and Popartan, L. A., Pucher, B., Pineda-Martos, R., Hecht, K., Katsou, E., Nika E., Junge R., Langergraber G., Atanasova N., Comas J., Monclús, H. (2024) **What does it take to renature cities? An expert-based analysis of barriers and strategies for the implementation of nature-based solutions**, *Journal of Environmental Management*, Volume 354, ISSN 0301-4797.
- > Vidal-Lamolla, P., Molinos-Senante, M., Oliva-Felipe, L., Alvarez-Napagao S., Cortés, U., Martínez-Gomariz, E., Noriega, P., Olsson, G., Poch M. (2024) **Assessing urban water demand-side management policies before their implementation: An agent-based model approach**, *Sustainable Cities and Society*, Volume 107, ISSN 2210-6707.
- > Poch, M., Aldao, C., Godo-Pla, L., Monclús, H., Popartan, L. A., Comas, J., Puig, S., Molinos-Senante, M., (2023) **Increasing resilience through nudges in the urban water cycle: An integrative conceptual framework to support policy decision-making**, *Chemosphere*, Volume 317, 2023 Article number 137850.
- > Edwards, E, Popartan L.A. (eds) (2023) **Urban Natures: Making Visible, (Re)Connecting and (Re)Politicising**, Berghen Books SBN 978-1-80539-082-4
- > Popartan, L. A., Cortés, A., Garrido-Baserba, M., Verdaguer, M., Poch, M., Gibert, K. (2023) **The Digital Revolution in the Urban Water Cycle and Its Ethical–Political Implications: A Critical Perspective**. *Applied Sciences* Volume 12, Article number 2511.

Research networks and collaborations

- > **COST Action Circular City** - <https://circular-city.eu/> - Working Group 5 – Transformation Tools
- > **COST Water4Reuse** - <https://www.cost.eu/actions/CA23104/> Mainstreaming water reuse into the circular economy paradigm
- > **Girona Municipality + Institut Català Tecnologies Ambientals (ICTA), Research&Degrowth, Dark Matter Labs** agreement to explore postgrowth policies at municipal level
- > **Department of Geography, UdG**, Research Group on Environment and Geographic Information Technologies.
- > **COSOPYA, Universidade de Santiago de Compostela**, Research group on social behavior and applied psychometry
- > **Institut Català de Recerca de l'Aigua**