

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](#)) 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-NEWTRAL** – Smart comprehensive training to mainstream new approaches for climate-neutral cities through citizen engagement and decision-making support for innovative governance and integrative planning. European Commission. Call: HORIZON-MSCA-200-DN-01. GA 101119603. 2024-2026.
- > **SPORE-MED** – Sustainable uPgraded WWTPs for resOurce recovery, water Reuse and hEalth surveillance in the MEDiterranean region. PRIMA Foundation. Call: PRIMA-Section 1-Water Management-Call 2023. GA 2322. 2024-2027.
- > **MORIARTY** - Bridging the Water Gap: A Step Forward in Multifaceted Risk Evaluation in Supply Scenarios with Regenerated Water. Spanish National Research Agency. Call: Proyectos de Generación de Conocimiento. Ref: PID2024-155733OB-I00. 2025-2028.
- > **D-PATTERN** -Interdisciplinary approach to evaluate decentralisation in urban water management: two case studies in Spain. Spanish Research Agency AEI. Call "Proyectos de Generación de Conocimiento". Ref PID2023-150071OB-I00. 2024-2027
- > **Menys Malbaratament, Més Sobirania: Estratègies de Governança Local per a la Sobirania Alimentària a Girona.** AGAUR. Programa de Doctorats Industrials. 2022-2025.

Publications

Recalde Aza, Y., Sánchez Galvis, L. K., Popartan, L. A., Rodríguez-Roda, I., **Understanding barriers and enablers for the implementation of water-related nature-based solutions in the Andes: A mixed-methods study**, *Urban Forestry & Urban Greening* (2026), 119, 129367.

Chaabouni, O., & Bärnthaler, R. **Integrating post-growth economics into transformative adaptation: Property relations, capital, and democratic planning.** *Ecological Economics* (2026), 242, 108895.

Gomez Vaca, A.N.; Popartan, L.A.; Selvas, G.A.; Nuss-Girona, S.; Abily, M.; Rodríguez-Roda, I. **Virtual City Simulator: A Scenario-Based Tool for Multidimensional Urban Flood Long-Term Vulnerability Assessment and Planning in Mediterranean Cities.** *Water* (2025), 17, 3538.

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. **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* (2024), 54, 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* (2024), 107.

Edwards, E, Popartan L.A. (eds) **Urban Natures: Making Visible, (Re)Connecting and (Re)Politicising**, Berghan Books SBN 978-1-80539-082-4, 2023.

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*, 12, Article number 2511.

Research networks and collaborations

- > **COST Water4Reuse** - 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 behaviour and applied pshichometry
- > **Institut Català de Recerca de l'Aigua**