



Università
degli Studi
di Palermo



Centro di Sostenibilità
e Transizione Ecologica



PhD in Ecological Transition

Research area on:
***Localizing SDGs through
System Dynamics-triggered
Collaborative Platforms***



Background

The Doctoral Program in Ecological Transition focuses on the 17 Sustainable Development Goals (SDGs) of the UN 2030 Agenda, addressing global challenges like climate change, biodiversity loss, and equitable access to resources. It offers interdisciplinary training through research and experimental development to promote environmental, economic, and social sustainability. By integrating diverse methodologies from fields such as management, engineering, economics, urban architecture, medicine, biology, and medicine, the program equips candidates to analyze ecological issues holistically. This prepares them to develop, implement, and evaluate solutions that advance sustainability and contribute to global environmental protection and human well-being.

The Ph.D. Program includes various research areas, among which System Dynamics has an important role. This entails enhancing Collaborative Platforms for SDG localization.

It underscores the importance of localizing the SDGs and fostering resilience through collaboration and empirical engagement. By adopting the System Dynamics methodology, the research promotes an interdisciplinary approach to designing holistic framing for “wicked” problems, enhancing active citizenship to trigger sustainable community outcomes, so to create public value. This leads to the development of System Dynamics-driven collaborative platforms with a focus on localizing the SDGs. The adopted research approach will empirically involve the candidates in applied projects with stakeholders on collaborative platform development through the Center for Sustainability and Ecological Transition (CSTE) of the University of Palermo. These platforms are used to foster sustainable “place-based” value creation through stakeholder engagement, knowledge sharing, and joint decision-making. Their design and implementation adopts a modular approach that aims to build a “place-based” ecosystem platform by leveraging a set of nested “theme-focused” ecosystem platforms.



This requires involving diverse stakeholders to enhance policy effectiveness towards holistic sustainability, by fostering transition processes leading to community resilience. The research focuses on building collaborative platforms as a foundation for policy analysis, strategic planning, and performance governance, for sustainable “place-based” value creation. By adopting a holistic sustainability perspective, this approach models societal transition as a continuous process that enhances a place's aptitude to pursue its survival and longevity through enduring resilience. This supports stakeholders in navigating trade-offs over time and across socio-economic, cultural, and ecological dimensions of sustainability.

Candidates will learn to model societal transition as a dynamic and ongoing process that fosters a place's ability to adapt and thrive. This process incorporates change through resilience, which is crucial for stakeholders as they frame and address complex trade-offs inherent in sustainability. By focusing on the integration of social, economic, cultural, and ecological factors, this research area emphasizes the importance of a comprehensive and balanced approach to sustainable development.

A “place-based” view of transition embeds the SDGs within a local context, by outlining policies through a feedback analysis of community value creation processes, driven by the deployment of the often intangible strategic resources featuring a place. This further enhances a multi-level governance of global wicked problems.

Outcomes of the program

The PhD in Ecological Transition aims to develop knowledge and skills necessary to address contemporary societal challenges such as mitigating climate change, promoting sustainable development, and advancing ecological transition. Key objectives include implementing participatory and collaborative solutions for environmental, economic, and social sustainability, establishing pathways for ecological transition, and identifying actions contributing to the Sustainable Development Goals of Agenda 2030. The program also seeks to integrate equitable and sustainable approaches into teaching and research. Aligned with the UNESCO's four pillars since the 1990s, the goals of the PhD program relate to:

- Learning to know: developing critical thinking, problem-solving, and decision-making skills based on understanding and using knowledge.
- Learning to do: applying acquired knowledge to real-life needs.
- Learning to be: fostering self-awareness, self-esteem, and self-confidence to define personal goals and identity.
- Learning to live together: enhancing personal skills in communication and negotiation, essential for functioning as a social being.
- Learning to transform oneself and society: understanding global complexity within local contexts, emphasizing one's relationship with the environment and global citizenship. This education encourages environmental awareness and action while valuing diversity.

The planned activities include:

- third-level courses within Doctoral Programs (figure below);
- language proficiency courses;
- specialized seminars and courses;
- summer/winter schools;
- conferences and workshops;
- training and research periods in Italy and abroad at universities, research institutions (public or private), and qualified companies;
- tutoring activities and integrative teaching within undergraduate and graduate degree programs;
- research activities and thesis writing;
- third mission activities;
- seminars conducted by the doctoral candidate related to the research project theme;
- publications and patents;
- seminars on:

- System Dynamics for Outcome-based Performance Management & Governance
- Dynamic Performance Management & Governance
- Service Ecosystems and Collaborative Platforms

Courses	
Year 1	<ul style="list-style-type: none"> - Sustainable cities and communities for Ecological Transition - Management Systems for ecological transition of organizations - Health and Nutrition - Environmental Public Law - Agri-food production and environment
Year 2	<ul style="list-style-type: none"> - Education for Ecological Transition - The legal discipline of sustainable development between international law and domestic law - Space Research and Climate changes - Climate change mitigation and nature-based solutions - Food law and environment - Development scenarios of the European and global energy system
Year 3	<ul style="list-style-type: none"> - The role of Positive Energy Districts in the energy transition - Business models of the circular economy for Ecological Transition - Multi-criteria methodologies for sustainability analysis of energy technologies to support the transition - Improving healthcare quality: methodologies and automatic tools

How to apply

More information on the application procedure are available at the following link: <https://www.unipa.it/didattica/dottorati/dottorato-xl/>

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More information on System Dynamics applied to Collaborative Platforms research area

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