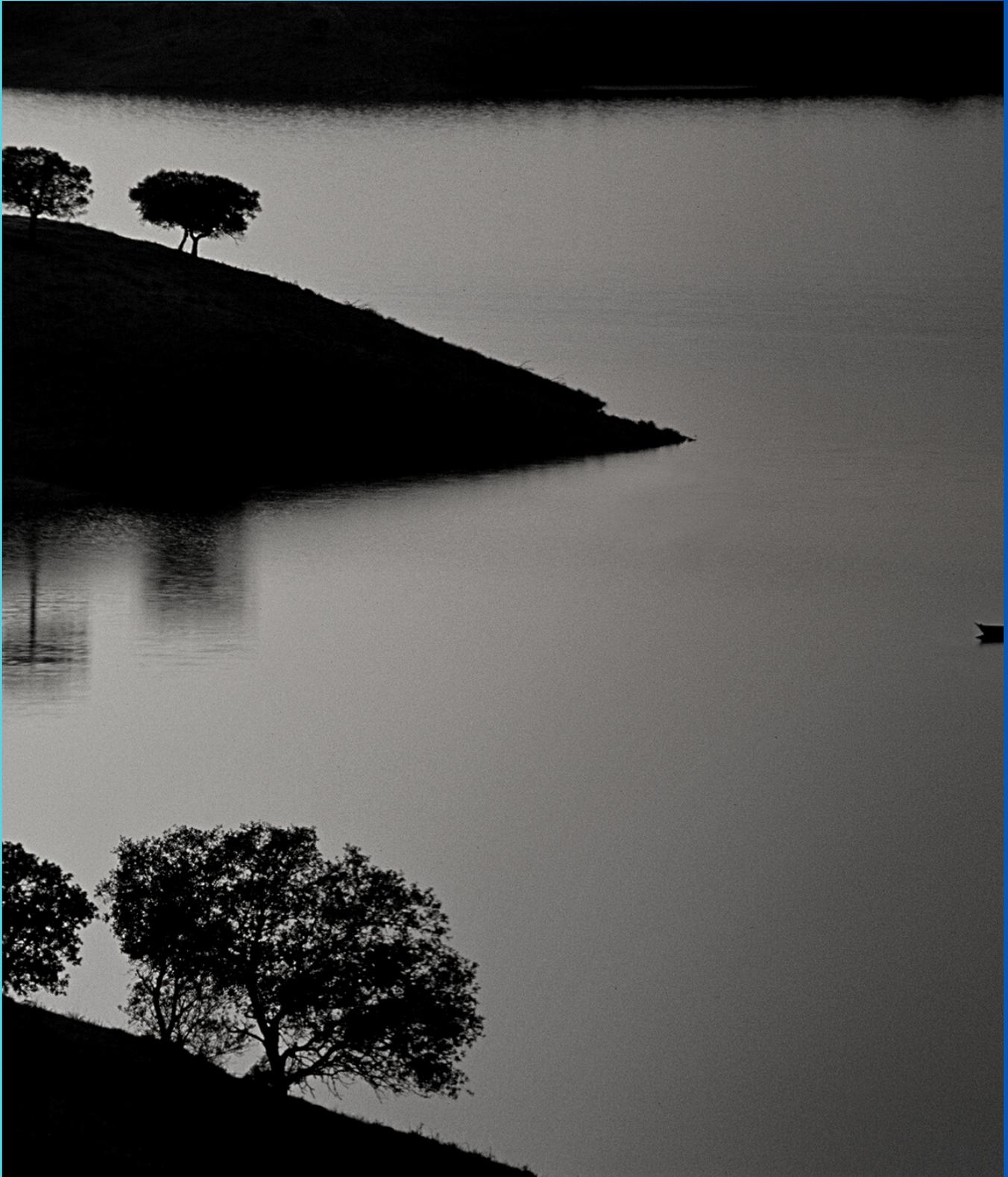




# CHANGE

Global Change and Sustainability Institute



## About CHANGE

MISSION, VISION & GENERAL  
OBJECTIVES  
THEMATIC LINES



# Mission

**CHANGE's mission** is to identify scientifically supported solutions for public policy and governance targeting an environmentally friendly, resource-efficient, and competitive economy, in the context of ongoing global changes.

# Vision

**CHANGE's vision** is to become the go-to R&I Hub for the development, evaluation and operationalisation of innovative and improved public policies with relevance and impact on Global Change and Sustainability.

# Aims

**CHANGE aims** at the production of new knowledge and the promotion of scientific research and innovation activities that support the adaptation of public policies and the definition of new governance strategies that contribute to a resilient economy, reconciled with the environment, and efficient in terms of resources' use.



## The objectives of CHANGE are:

a) promote scientific research that contributes to inform a **science-based design of public policies**;

b) contribute to the science-based evaluation of the implementation of national science policy in environmental, agricultural, economic, and social sciences with an integrative perspective of **Sustainability**;

c) foster and develop **collaboration** with other research and technological development institutions, namely through scientific exchange, positioning itself in relevant national and international networks and consortia;

d) collaborate with partners from the private, public, and cooperative sectors, in order to better **tailor research results** to issues identified in practice enhancing the societal impact of the knowledge produced.

e) promote the **dissemination, interest, and recognition of scientific and technological knowledge** among students and the general society.

# CHANGE's Thematic Lines

CHANGE's activities are organised in five independent yet interconnected Thematic Lines (TL) that correspond to the Strategic Research Objectives of CHANGE:

TL1 - Safeguarding and promoting biodiversity and ecosystem services

TL2 - Ensure sustainable food and biomass systems

TL3 - Ensure the preservation and regeneration of natural resources

TL4 - Promote a circular and carbon-neutral economy

TL5 - Strengthen territorial cohesion to reduce disparities





## TL1 Safeguarding and promoting biodiversity and ecosystem services

*TL1 focuses on detecting and projecting biological responses to major environmental and socio-economic pressures such as habitat loss, overexploitation of resources, climate change, pollution, invasive species and other socioeconomic dynamics including demographic fluxes and urbanisation.*

### **Keywords:**

- Biodiversity indicators
- Ecosystem services
- Climate change impact evaluation and adaptation
- Adaptive strategy for a network of nature protected areas
- Restoration and rewilding
- Sustainable agriculture and agro-ecology

Areas of intervention of relevance for TL1 for both mainland Portugal and islands (Madeira and Azores) include: the implementation of mechanisms and evaluation of the impact of climate adaptation strategies (at local, regional and national level); the restoration of natural, forest and farmland ecosystems; the identification of key ecosystem services, assessment of present threats and change factors and scanning for future ones; development of approaches and integration of nature-based solutions to protect areas sustaining key ecosystems; identification of knowledge gaps under TL1 and preparation of a strategy to promote a knowledge based informed policies; to provide guidelines for policy makers including standard indicators for measuring policies results and impacts.

In this sense TL1 will support current and enable the development of further policies and policy instruments, in alignment with the **EU Nature Restoration Law**, the **National Strategy for Nature Conservation and Biodiversity 2030** (ENCNB 2030), the **National Strategy for Adaptation to Climate Change** (ENAAC 2020) and the **National Action Program for Adaptation to Climate Change** (P-3AC).

Examples of key initiatives and areas of focus for TL1 include the identification of adaptive and intelligent priority areas to be considered in a future expansion of the network of protected areas (accounting for resilience to change, representativeness of biodiversity and connectivity), the development and the proposal of specific management mechanisms and financing tools for implementation of the goals outlined within the **EU Biodiversity strategy 2030** (including ecosystem restoration, rewilding strategies, developing indicators of biodiversity and ecosystem services, integration of biodiversity conservation actions in forest and agricultural policies and funding).

TL1 in addition aims to contribute to the development of innovative nature-based solutions (NBs) to tackle the environmental challenges central in the **European Green Deal, EU Biodiversity Strategy** and **EU Adaptation Strategy**, as ways to foster biodiversity and make Europe more climate-resilient. Such solutions may range, for example, from simple innovations to novel governance models to optimise biodiversity, soil and water resources use.



## TL2 Ensure sustainable food and biomass systems

*TL2 tackles the challenges of increasing yields in agricultural and forestry production systems while increasing the sustainability of the whole system, thus contributing to food security, safety and quality.*

### **Keywords:**

- Sustainable food
- Food safety and security
- Digital transformation
- Precision Agriculture
- Conservation Agriculture
- High Nature Value Farmlands
- Sustainable agriculture practices
- Carbon Farming

Intervention areas to be covered within the scope of TL2 include the development of solutions promoting resilient production systems ensuring sustainability and economical balance within both farm and forestry sectors, the application of current technologies and further development of solutions promoting **food safety, quality and traceability** and the identification of challenges as well as definition and implementation of mechanisms ensuring the sustainability of high-nature-value-farmlands (e.g. Montado, Olive Orchards, Vineyards, etc).

TL2 aims to contribute to the development and application of new technologies targeting water, nutrients and energy management, considering ecosystem preservation and services, and a circular economy approach. **Digital transformation** in agriculture and rural areas will in addition be a topic of focus, which will support farmers working towards **neutral carbon** and **zero waste farming systems** more resilient to climate change. Optimisation of water and nutrient usage, and the development of a more streamlined value chain, enabling improved knowledge exchange and communication between all relevant stakeholders from **farm to**

**fork** (producers, distributors, consumers) will be focus topics of intervention.

Research areas and expertise useful in such context include **agro-ecology, conservation agriculture, precision agriculture, agro-forestry**, and **carbon farming**.

Based in the previously outlined focus areas, TL2 will mainly contribute to the refinement and further development of public policies and instruments aligned with the principles outlined within the **EU Farm to Fork Strategy**, the **National Strategy for Food Safety and Nutrition 2021** (ENSANP), the **National Common Agricultural Policy 2023-2027** (PAC) and the **National Innovation for the Agriculture 2020-2030**.



## TL3

# Ensure the preservation and regeneration of natural resources

*TL3 addresses challenges for diagnosing, monitoring and proposing solutions to deal with the effects of global change on the availability and quality of key natural resources (i.e., soil, water, air and genetic resources) for ecosystems structure and function, people's health or food production.*

### **Keywords:**

- Sustainable water management
- Sustainable water services
- Water scarcity
- Air quality monitoring
- Soil health and productivity
- Nutrient usage efficiency
- Sustainable agriculture

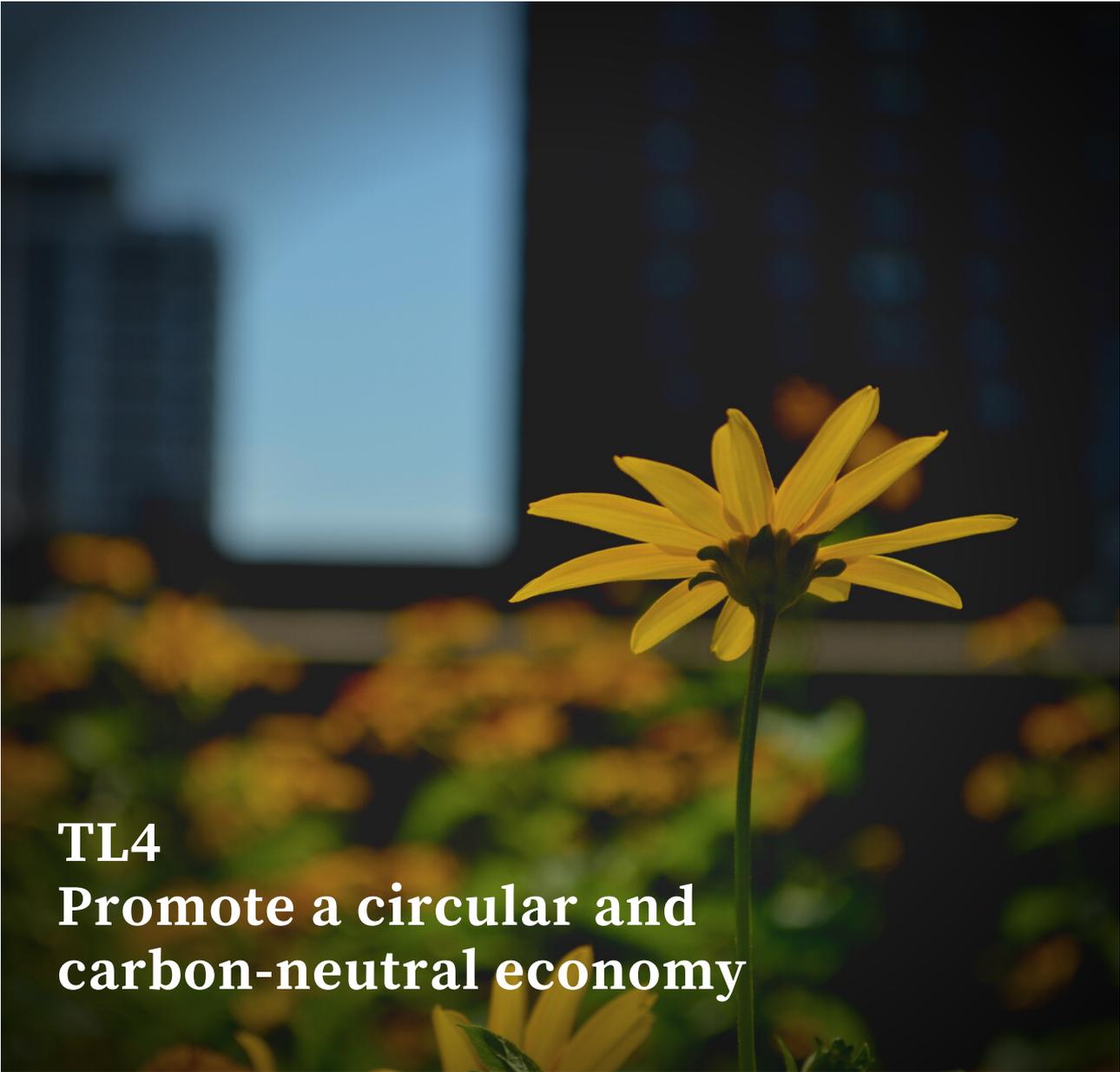
Key relevant areas covered within TL3 include the promotion of diversified water sourcing and water recovery systems, increase of sustainability and efficiency of water management, development of mechanisms to address water scarcity, protection and restoration of water related ecosystems and improvement of sustainability of water services, evaluation of air pollution effects on ecosystems and human health and mitigation of soil degradation and loss of productivity under a climate change.

Relevant policies to be tackled within TL3 include, for example, the **Portuguese National Water Plan 2016-2026**, the **National Plan for Air Quality 2020**, the **River Basin Management Plans**, the **EU directive on the reduction of national emissions of certain atmospheric pollutants** (NECD, 2016/2284/EU) and the **National Common Agricultural Policy 2023-2027** (PAC). TL3 research and activities will also support and serve as the basis for concrete policies addressing **Soil Conservation, Recovery and Management**.

Research activities supporting the above referred policies covered within TL3 include for example the development of innovative technologies enabling wastewater

treatment and reuse (for example, for irrigation purposes) and the development of sustainable products for water treatment; assessment and further development of technologies for nutrient and valuable compounds recovery from wastewaters. Other activities might include the removal of emergent compounds and particles from wastewater and the development of testing methods capable of monitoring given substances and thus enabling risks assessment of “treated” wastewater discharge to surface waters. In addition, TL3 shall contribute to design strategies to protect soil biodiversity, health, and productivity by conducting research on soil health in the context of agriculture, including nutrient use efficiency and improvements in sustained crop and pasture production.

Research and knowledge driven within TL3 shall serve as the basis to advise Local and national authorities such as the **Portuguese Environment Agency APA**, the **Regional River-Basin Authorities ARHs**, and other relevant stakeholders to apply relevant measures ensuring proper policies and policy instruments to promote and ensure sustainable management of water, air and soil.



## TL4 Promote a circular and carbon-neutral economy

*TL4 focus on promoting the development of policy mechanisms that support a circular economy and energy transition toward achieving a carbon-neutral economy.*

### **Keywords:**

- Carbon neutrality
- Circular Economy
- Energetic transition
- Low carbon chains
- Biomass Management
- Bioenergy
- Urban Sustainability
- Green Infrastructures
- Blue Infrastructures

Key public policy areas linked with TL4 include the **National Plan for Carbon Neutrality 2050** (RNC 2050) and the **National Plan for Energy and Climate 2030** (PNEC 2030). TL4 will also contribute to answering the challenges of the **EU Farm to Fork Strategy** with research that addresses transforming agricultural practices and agri-food and biomass chains towards low-carbon, short-chain, and circular supply systems.

The activities related with TL4 support the development of measures enabling the development of policies and instruments to promote technically feasible, economically viable, and socially accepted alternative trajectories allowing to reach the objective of **carbon neutrality** by 2050 while preventing social inequalities. TL4 aims to contribute to the development of analytical tools to achieve low-carbon trajectories for the economy and the **development of green and blue infrastructures for urban sustainability**.

TL4 also aims to contribute to the development of **decision-making** support tools to enhance policy-making and strategic planning competencies of local and regional public authorities in the energy management of public buildings in European countries.

Also it intends to answer the challenges of EU Farm to Fork strategy with research that addresses transforming agricultural practices and agri-food and biomass chains towards low-carbon, short-chain, and circular supply systems that are **environmentally friendly** and protect **rural development**. In this sense TL4 aims to support policies that lead to the improvement of agro-food systems towards neutral or positive environmental impacts.





## **TL5** **Strengthen territorial cohesion to reduce disparities**

*TL5 aims to contribute in supporting policies that strengthen territorial cohesion towards a more balanced and sustainable development while enabling people to make the most of the inherent features of the areas in which they live.*

### **Keywords:**

- Territorial cohesion
- Local and Regional cooperation
- Governance Mechanisms
- Local and Regional Tourism
- Geographic diversity
- Rural depopulation
- Sustainable Development

Areas of relevance covered within TL5 include the **empowerment of local and regional authorities** to drive a balanced territorial development, the improvement of governance mechanisms for sustainable agriculture and the support of environmentally aware and sustainable tourism in vulnerable and protected areas.

Some of the key programs of relevance for TL5 are the **National Program for Territorial Cohesion** and the **EU Cohesion Policy 2020-2027**, which promote that promote sustainable practices in tourism activities in protected areas, which ultimately, contribute to mitigating rural depopulation and ageing and promote territorial cohesion.

TL5 Activities contribute to influencing policies and train policy makers in different forms of innovation, **strengthening territorial resources**, promoting cooperation and improving positive linkages between local and regional levels.

Activities from TL5 enable the development of tailored policy instruments targeting **economically and environmentally vulnerable regions** by empowering local and regional authorities to be more involved in the management and establishing context-specific priorities for the use of EU funds.

TL5 empower local, regional and national stakeholders to develop adequate **governance mechanisms** promoting a more sustainable agriculture and the socio-economic development and the improvement of overall sustainability within the food value chains in Portugal and Europe.

The contribution to local and regional **tourism programs in peripheric territories** will be done by using environmental (and citizen) science to promote **geographic diversity** and the integration of landscape, natural and cultural patrimony dimensions.



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