



NEWSLETTER # 2

July 2025

Welcome to the ST4TE project!

We live in a world of transitions, with a shift to green forms of production and consumption and to more digital ways of working and living. Both processes are expected to generate long-term environmental benefits and draw new opportunities for economic growth. A green and digital divide is however emerging, not only slowing down overall progress, but also widening the gap between individuals, regions, and social groups, leading to increased inequality in both the short and long run.

ST4TE news

Research results – a snapshot

- Green and digital transitions in Europe are often seen as mutually beneficial, but policy coherence is limited. Green policies have a stronger territorial focus, addressing regional employment and growth. Digital policies cover broader sectoral changes and look more closely at individual inequalities.
- Green and digital occupations remain largely distinct. Twin occupations represent a small share of total jobs. Most roles with high win potential are already labelled as green or twin.
- Knowledge circulation across regions is limited, and innovation capabilities remain concentrated. Some regions show low translation from scientific research to patents. Early adopters of green and digital automation are more likely to develop twin technologies.

ST4TE (Strategies for just and equitable transitions in Europe) is an EU-funded project that aims to provide a comprehensive view of the drivers of the twin transition (TT), the inequalities that emerge or are widened by it, and a set of policies to build greener, more equal, and more productive societies.

Over a three-year period ending in January 2027, the ST4TE project will perform research and outreach activities across Europe, targeting researchers, stakeholders, and policymakers.

In our second newsletter we share news related to initial research results, recent project outputs, and upcoming events.



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101132559.

An uneven structure of regional innovation weakens potential for diversification

ST4TE has systematically assessed the regional convergence of green and digital technologies, demonstrating how regional innovation portfolios influence the emergence of twin technologies across Europe. The findings indicate that regions with early strengths in both digital and green technologies tend to consolidate their advantages over time, while many regions in Southern and Eastern Europe remain caught in a cycle of low innovation. Although these "trapped" regions contribute significantly to scientific knowledge production, they face persistent challenges in translating this knowledge into technological inventions. This innovation bottleneck reflects deeper structural barriers that hinder their ability to diversify into emerging green and digital technologies.

The analysis also reveals that the European innovation landscape is highly fragmented. Smaller cities are primarily connected to larger national hubs, with limited cross-border collaboration. At the same time, leading innovation centres across Europe often operate in isolation from one another. This fragmented structure restricts knowledge flows between regions, impedes the integration of complementary expertise, and slows the development of new innovation trajectories.

Finally, the findings suggest that this uneven regional structure may reinforce existing technological path dependencies and limit opportunities for diversification - particularly in the context of twin technologies, which require the convergence of digital and green capabilities. To foster a more balanced and d

dynamic innovation landscape, the results highlight the need for enhanced interregional collaboration, stronger mechanisms for translating scientific research into technological applications, and targeted efforts to overcome the structural barriers that prevent some regions from realizing their full potential.

[Read the report here.](#)

Drivers of the Twin Transition in relation to inequality

ST4TE contributes to the broader objective of identifying regional disparities in the provision of higher education skills and their connection to innovation dynamics associated with the green and digital transitions. In this task, we integrate data on educational programmes (ETER), research projects (EUPRO), scientific publications (Scopus/OpenAlex), and academic patents (Patstat) to analyse how universities support the development of green, digital, and twin-transition skills - both directly and through interregional knowledge flows.

This milestone presents an initial mapping of the supply of higher education and research across European NUTS 2 regions, with a focus on student enrolment and graduation patterns, EU-funded research activities, and the geographic distribution of scientific output. Using harmonised data from ETER, OpenAlex, and EUPRO, we examined the spatial distribution of undergraduate, postgraduate, and doctoral training alongside project- and publication-based research activity.

The analysis reveals significant - though somewhat expected - regional asymmetries. While undergraduate education is widely distributed, advanced training and research activities are concentrated in a relatively



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small number of research-intensive regions. STEM disciplines -particularly engineering, ICT, and the natural sciences - are increasingly dominant. These findings provide an initial descriptive foundation for the next phases of the task, which will explore the relationship between higher education systems and regional employment and innovation in green, digital, and twin-transition technologies.

[Read the report here.](#)

Publications and presentations

Ascanelli, A., Barbieri, N., Basilico, S., Gilli, M., Marzocchi, A., & Rizzo, U. (2025). *Mapping of regional supply of education and science programmes*. ST4TE MS8. Zenodo. <https://doi.org/10.5281/zenodo.15304983>

Kakderi, C., Kalantzi, E., Panori, A., & Latinopoulos, D. (2025). *A review of green, digital and twin transition policies*. ST4TE Deliverable D1.1. Zenodo. <https://doi.org/10.5281/zenodo.15305058>

Romero Goyeneche, O. Y., Boschma, R., & Li, D. (2025). *The geography of the green, digital and twin technological and scientific specialisation in Europe*. ST4TE Deliverable D1.2. Zenodo. <https://doi.org/10.5281/zenodo.15552559>

Meet the partners

Aristotle University

[Aristotle University of Thessaloniki](#) and its Urban and Regional Innovation Research Unit in Greece is the Project Coordinator. AUTH is responsible for tasks linking the project results to policymaking, e.g. the development of a twin transition index and the analysis of the territorial impact of the transitions.

EFIS Centre |

The [European Future Innovation System \(EFIS\) Centre](#) leads on the policy implications of the project, along with the sustainability, impact, and exploitation dimensions.

University of Ferrara

[The University of Ferrara](#) in Italy leads clarifying how European regions are affected by the green and digital transition and determining the influence of these factors on regional disparities.

Uni MERIT |

[UNU-MERIT](#) leads on estimating industry and occupation exposure to twin technologies, estimating the impact of inequality on the twin transition, and building a theoretical model to study the impacts on inequality of different energy and digital technology transitions scenarios.

University of Gothenburg |

[UGOT's Department of Sociology and Work Science](#) in Sweden leads the task of narrative interviews in different European regions, the stakeholder engagement and validation of research results, and the research communication.

Gran Sasso Science Institute

[GSSI](#) in Italy will disentangle a series of effects that the green and digital transformations have on the work content, the health of individuals and the interconnectedness of territories in today's global markets.

CLIMAFIN |

[CLIMAFIN](#) in France contributes to mapping and measuring financial risks and opportunities associated with the twin transitions.



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[Utrecht University](#)'s Economic Geography Team in the Netherlands is mapping the pathways toward Europe's green and digital transformation to investigate the strengths and challenges encountered by European regions in developing green, digital, and twin technologies.

Sister projects

MOBI-TWIN: Twin Transition and changing patterns of spatial mobility: a regional approach.

MOBI-TWIN aims to comprehend the intricate patterns of mobility and leverage this knowledge to foster regional prosperity. Website: <https://mobi-twin-project.eu/>

FITTER-EU: Fair and Inclusive Twin Transitions for a Stronger Social Europe. FITTER-EU is aimed at contributing to existing research on the origins, dynamics and determinants of inequalities and enable anticipatory governance to support a fair and inclusive twin transition in Europe. Website:

<https://www.linkedin.com/company/fitter-eu>

READJUST: Just Transition to a Green and Digital Future for all. READJUST strives to address the inequalities created or exacerbated by the twin transitions policies and it aims to suggest policy options for overcoming the potential trade-offs between efficiency and equality in twin transitions in the key sectors of mobility and agri-food.

Website: <https://readjust.eu/>

About the ST4TE project

The importance of the green and digital transitions is evident in addressing the impacts of climate change. As a result, there is a growing need for more data to assess the potential perpetuation or exacerbation of inequalities. Various sectors undergoing the twin transitions (TT) are currently experiencing disparities that could persist, or worsen, during this transformative period.

Therefore, the EU-funded ST4TE project has been designed to comprehend the impact of the twin transitions on green goals and vulnerable European regions. The project will also study the forces behind these transitions, understand potential inequalities and their causes, and collaborate with policymakers. The final objective is to ensure that the green and digital transitions contribute to a more equitable and sustainable future.

The ST4TE consortium has extensive knowledge in the fields of twin transitions, inequalities, and research and innovation (R&I). This expertise, along with experience in participative methodologies, green and digital mapping and various other methodological tools will guarantee sound scientific evidence on TT in Europe towards a just and equitable transition.

Find out more

- Further information about Click ST4TE
- Explore our research results to Zenodo
- Find out more and register LinkedIn

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