MOBI-TWIN

Policy Brief #1

Spatial mobility and the twin transition:

Understanding the drivers of change in Europe's regions

Authors & Contribution:

Aristotle University of Thessaloniki
Anastasia Panori

University of Barcelona
Vicente Royuela, Jordi Lopez-Tamayo

University of Helsinki
Olle Järv, Tuomas Väisänen, Milad Malekzadeh

Introduction

The twin transition — Europe's simultaneous shift toward a digital and green economy — is a European mandate that is affecting many of the political decisions taken at the European and national levels, and the conditions under which individuals and firms operate. Therefore, it is transforming how people live, work, and move. These processes are reshaping regional attractiveness, altering the geography of opportunity, and redefining what it means for a region to thrive in an interconnected Europe. The MOBI-TWIN project investigates how these transitions influence spatial mobility — the movements of people across regions for work, study, or lifestyle reasons — and how these dynamics affect regional resilience and cohesion.

The project's first stages established the conceptual and analytical foundation for this effort by:

- Mapping the main forms and drivers of spatial mobility in the EU and situating them within current transitions.

- Empirically assessing how green and digital factors affect individuals' mobility intentions and regional (im)mobility patterns.

- Combining these insights with mapping of actual mobility flows and regional characteristics, linking them to attractiveness, left-behindness, and twin-transition capacities.

Together, these findings form the knowledge base for understanding how the green and digital transitions interacts with mobility and regional development— a vital input for the European Commission (affecting units such as DG REGIO and DG EMPL, among others), as well as national and regional authorities, in (re-)designing evidence-based, place-sensitive policies for the coming decade.

Evidence and analysis

1. Defining spatial mobility and its multiple forms

MOBI-TWIN conceptualised spatial mobility as any change in region of residence across various time scales and purposes.

The project distinguishes three main categories:

Long-term mobility:

Permanent or semi-permanent relocation (e.g., migration for work, education, or family).

Short-term mobility:

Temporary stays of 3–12 months, including seasonal employment, student exchanges, or digital-nomad stays.

Circular mobility:

Repeated movements such as weekly commuting or multilocal living, increasingly relevant in hybrid-work contexts.

Mobility intentions are shaped by a combination of socio-economic, digital and green factors, including:

- Quality of life and social infrastructure (housing, education, amenities).
- Economic structure and labour-market opportunities.
- Digitalisation and green transitions emerging as new critical dimensions.
- Social networks and connectivity.

MOBI-TWIN links these factors to interregional mobility flows, showing how systemic transformations accelerate new mobility patterns and intensify disparities between "sending" and "receiving" regions.

2. Identifying factors affecting (im)mobility

Using econometric analysis based on individual survey data, we explored how digital and green factors shape mobility intentions for interregional (im)mobility

Main findings

Digital factors enable but do not yet dominate

Fast broadband, digital jobs, and telework readiness positively affect mobility intentions, though economic motivations remain stronger overall.

Green factors affect mobility intentions

People are significantly more likely to show increased intention to move to regions with cleaner air, better green infrastructure, and visible green-transition progress. Regions with high greenhouse-gas emissions or poor environmental quality show lower in-migration intentions.

Green regional context matters

Regions with active circular-economy employment and low emissions seem to be able to potentially attract new residents, while those with fossil-fuel dependence or limited innovation capacity risk depopulation.

Mobility decisions are heterogeneous across groups

- Women are more responsive to green and lifestyle factors.
- Men react more to digital infrastructure and job opportunities.
- Younger cohorts prioritise education, innovation, and culture; older groups emphasise green factors and social stability.
- Minorities (ethnic, religious, LGBTQ+) prefer open, inclusive, and environmentally responsible regions.

Barriers to mobility persist

Legal and administrative factors (language policies, recognition of qualifications, housing access) can hinder movement intentions.

3. Mapping mobility flows and regional attractiveness

Building on the theoretical and empirical findings of the previous steps, we presented a Europe-wide mapping of nine types of mobility flows, using the MOBI-TWIN integrated dataset at the NUTS2 geographical level.

Key results

1. Persistent core-periphery imbalances: Major urban and innovation hubs (e.g., Northern and Western Europe) continue to attract most inflows, while peripheral and rural areas remain net senders.

2. Diversification of mobility forms: Post-COVID-19 patterns show increases in hybrid and temporary mobility, such as multilocal living, long-distance commuting, and seasonal work.

3. Evidence of circular feedbacks: Mobility both reflects and reinforces regional trajectories; therefore, attractive regions gain population and talent, further boosting innovation capacity; less attractive regions experience cumulative decline.

4. Interlinkages between attractiveness and left-behindness: Mobility flows increasingly reflect differences in regional transition readiness, green lagging and digitally weak regions face both out-flows and demographic ageing.

5. Emerging "new attractors": Regions with high green readiness and strong digital infrastructure, not necessarily the largest economies, are beginning to attract skilled populations.

By combining mobility data, attractiveness indicators and green and digital transition dimensions, these first steps established the empirical groundwork for MOBI-TWIN's later modelling work and for policy applications of the Regional Attractiveness Index (to be elaborated in Policy Brief #2).

Policy implications and recommendations

Reframe mobility as a transition governance challenge

Mobility is not a side effect of economic change; it is a core mechanism shaping the geography of Europe. Thus, policymakers should integrate spatial mobility indicators into core EU policy frameworks, such as Cohesion Policy, Smart Specialisation, and Just Transition Mechanism, as well as other national/regional policies such as language policies.

Explore the green and digital roots of interregional (im)mobility

Regions experiencing green vulnerability and low digital infrastructures face dual disadvantages: they lose population and lag in transition readiness. Therefore, it is essential to minimise vulnerabilities and support opportunities related to the green transition: prioritise green infrastructure, renewable energy, and digital connectivity investments in regions with persistent out- migration under the European Regional Development Fund (ERDF) and Recovery and Resilience Facility (RRF). Moreover, there is a need to support local circular-economy initiatives that can create place-based employment and improve green attitudes.

Tailor policies to the distinct drivers of different mobility types

Regional policies should recognise that different forms of mobility, such as short-term, long-term and circular, are influenced by different factors and therefore require differentiated interventions. Designing policies that strategically target the specific drivers of each mobility type can unlock positive circular feedback effects: initial inflows driven by short-term opportunities can gradually evolve into longer-term settlement, increasing labour market participation and strengthening the economic vitality of the region. Tailoring mobility strategies in this way enables policymakers to make more effective, opportunity-sensitive decisions with tangible long-term impact.

Integrate foresight and modelling into regional planning

MOBI-TWIN's scenario-building and agent-based modelling tools provide methods to anticipate the effects of green and digital transitions on interregional mobility. In this regard, we highlight the importance of encouraging regional authorities to adopt foresight methods in strategy design, particularly within Smart Specialisation (S3) and Mission-oriented programmes, and for creating spaces for exchanging foresight practices between regions and Commission services.

Build a European evidence infrastructure for attractiveness and mobility

To ensure coherent and data-driven policymaking, it is essential to strengthen the analytical basis for monitoring how regions evolve across mobility, green, and digital dimensions. This requires extended data availability covering all different types of mobility flows. In this regard, we highlight the need to establish a European Observatory on Regional Mobility and Attractiveness, serving as a shared evidence platform for continuous assessment and benchmarking. Such an infrastructure should enable the integration of datasets across Eurostat and European Commission offices (DG REGIO, DG EMPL, DG CLIMA, and DG CONNECT), supporting more coordinated monitoring, evaluation, and impact assessment of the different forms of regional mobility and the green and digital transitions.

Strengthen participatory governance through RRI

MOBI-TWIN underlines the importance of Responsible Research and Innovation (RRI) as a guiding principle for inclusive and anticipatory regional policymaking. In this regard, we emphasise the need to institutionalise participatory foresight processes that actively engage citizens, local authorities, and experts in co-designing transition strategies. Embedding RRI within regional policy frameworks can enhance societal legitimacy, improve evidence uptake, and ensure that mobility and green and digital transition policies reflect local needs and collective aspirations.

Conclusion

Europe's territorial future depends on how well regions can adapt to and benefit from the green and digital transitions. The first phases of MOBI-TWIN project showed that spatial mobility both reflects and shapes these transitions. Regions with the foresight to align traditional drivers with digital and green transitions will be those that retain and attract people, ensuring resilience in the face of demographic and technological change. For the European Commission, the challenge is to translate this understanding into integrated policies that connect interregional mobility management, transition funding, and regional foresight — ensuring that no region is left behind in the age of the twin transition.

Acknowledgment of funding

Funded by the European Union

The MOBI-TWIN project has received funding from the European Union's Horizon 2022 Framework Programme for Research and Innovation under grant agreement no. 101094402

Disclaimer

Project Consortium

WHITE RESEARCH SRL (WR)

ARISTOTELIO PANEPISTIMIO THESSALONIKIS (AUTH)

RIJKSUNIVERSITEIT GRONINGEN (RUG)

UNIVERSITAT DE BARCELONA (UB)

HELSINGIN YLIOPISTO (UH)

FONDATION EUROPEENNE DE LA SCIENCE (ESF)

POLITECNICO DI MILANO (POLIMI)

EREVNITIKO PANEPISTIMIAKO INSTITOUTO PERIFERIAKIS ANAPTIXIS (RDI)

ACCELIGENCE LTD (ACCELI)