European Commission

Research and Innovation

EXPLORING DEMOGRAPHIC CHANGE FOR A FUTURE-ORIENTED R&I SYSTEM

Key takeaways from a foresight study

Europe at a crossroads

Europe's research and innovation (R&I) system is under mounting pressure as demographic decline, rapid technological shifts, and constrained funding begin to alter student intake, the graduate pipeline, and research career prospects.

Strategic foresight analysis can help identify the major demographic trends, challenges, and opportunities for securing a future-oriented R&I system.

1.5 M

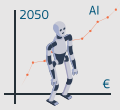
fewer higher education students by 2050

Europe's shrinking youth population in higher education and PhDs reduces the pool of skilled researchers.

12%

projected decline of overall labour force

A smaller active workforce leads to slower economic growth and R&I funding pressures.



Technological change increases demand for new skills and updated training.

Europe's future hinges on agile R&I public sector institutions and mitigation measures.

Why foresight?

*Develop **plausible yet challenging future scenarios** for the European R&I system under the influence of demographic changes*

*Assess the **implications for R&I**, including productivity challenges, funding models, and socio-spatial transformations*

*Provide strategic and timely **policy recommendations***

PACT FOR A FUTURE-PROOF R&I SYSTEM

Protection

Protect the base: Guarantee fundamental research

A stable funding floor guards long-term, curiosity-driven fundamental research from changing markets and political cycles.

Adaptation

Renew skills cyclically, not linearly

Systemic infrastructure for lifelong learning and funded re-training sabbaticals keeps skills relevant across fields and long careers.

Cohesion

Regional distribution of innovation

A place-based approach for high-tech infrastructure, promoting synergies with regional smart specialisations and geographical balance, anchors talent and builds capacity.

Trust

Earn the social licence to innovate & automate

Citizen involvement, knowledge and trust in institutions ensure societal acceptance of rapid tech innovation.

A 6-STEP APPROACH

The study utilised a hybrid and multi-stage strategic foresight methodology to systematically assess the impact of demographic change on research and innovation in Europe.

1. *Scoping and horizon scanning*
2. *Stakeholder mobilisation*
3. *Scenario-building workshops*
4. *Implications workshops*
5. *Recommendations surveys*
6. *Windtunneling (future-proofing)*

SCENARIOS 2050: IMPLICATIONS FOR EUROPE'S R&I SYSTEM

Four scenarios can help policymakers understand the cross-cutting implications of demographic change.

Scenario 1

Corporate ascendancy

Large corporations dominate R&I as demographic pressures weaken state capacity.

- *Private investment and commercial priorities drive research agendas*
- *Private higher education becomes key talent hub*
- *Public oversight weakens, reducing ethical accountability*
- *Cautious AI use amid public mistrust, despite rapid corporate growth*

Scenario 2

Inclusion & purpose

Research aligns with societal priorities such as ageing, digital health, and care systems.

- *Health, ageing, digital inclusion guide R&I efforts*
- *Public funding supports participatory, community-driven methods*
- *Universities rebuild trust*
- *Lifelong learning flourishes*

Scenario 3

Splinters & stratification

Global fragmentation creates isolated digital ecosystems ('Splinternets'), research is constricted by short-term commercial interests and security concerns.

- *Digital and physical barriers persist*
- *Tenders favour short-term, security-focused research*
- *Research agendas are influenced by stricter migration and declining cross-border collaboration*

Scenario 4

Hybrid hubs

The EU builds digital sovereignty and a resilient, regionalised R&I system.

- *Strengthened regional specialisation*
- *Advanced digital infrastructure connects research and researchers*
- *Strong academia-industry cooperation*
- *Diverse talent and human-AI collaboration*

READ THE FINAL REPORT

In 2024, DG Research & Innovation tasked the Foresight on Demand team with anticipating how demographic change and emerging opportunities will shape Europe's R&I systems.

In collaboration with

Foresight On Demand