



European
Federation of
Geologists

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GEOSCIENCE EDUCATION MANIFESTO

A Vision for a Competitive Europe

Prepared by:

EFG Panel of Experts on Education



In an era of rapid technological advancements and environmental challenges, geoscience education is at the forefront of shaping a sustainable and competitive Europe. Geosciences provide the knowledge and skills necessary to address climate change, resource management, and natural hazards, while also fostering economic growth and innovation. This is particularly critical in the context of Europe's strategic autonomy, including the implementation of the Critical Raw Materials Act, the Net-Zero Industry Act, as well as key EU frameworks such as the Renewable Energy Directive, the Water Framework Directive, the Industrial Emissions Directive, and the EU Taxonomy for Sustainable Activities. This manifesto sets out a vision for strengthening geoscience education to ensure Europe remains a global leader in scientific research, sustainability, and industrial competitiveness.

Strengthening Geoscience Education at All Levels: Integrate geoscience education into primary and secondary school curricula to enhance understanding of Earth systems and sustainability. Scientific knowledge should be linked to its practical applications in areas such as land use planning, territorial assessment, and the sustainable use of raw materials, including environmentally responsible extraction practices. This will help students understand from an early stage that geosciences play a key role in enabling sustainable development, environmental protection, and responsible resource management.

Advancing Innovation and Research: Increase investment in geoscience research to drive innovation in renewable energy, resource management, and climate solutions. Foster collaboration between universities, research institutes, industry and policy makers to strengthen applied geoscience research. Support open-access geospatial data and digital tools for education and research.

Bridging the Skills Gap for a Competitive Workforce: Develop targeted training programs to equip students and professionals with digital, analytical and communicational skills. Strengthen partnerships with industries and politicians/ policy makers to align education with labor market needs.

Enhancing Public Awareness and Policy Engagement: Improve science communication to enhance public understanding of the role of geoscience in daily life. Encourage policymakers to integrate geoscience knowledge into decision-making for sustainability and economic growth. Support citizen science initiatives that involve communities in data collection and environmental monitoring.

These actions can be implemented through legislation, program funding, and cross-sector collaboration to ensure the effective implementation of the manifesto's goals.

Integrating Geoscience into European Education Policies

- **European Directive on Geoscience Education:** Propose a directive requiring Member States to include basic geoscience knowledge in school curricula.
- **Erasmus+ Geoscience Program:** Create a dedicated stream within Erasmus+ to promote exchanges and training in geosciences.
- **European Geoscience Competency Framework:** Develop an EU-wide standard to define key geoscience competencies, integrating them into the European Skills, Competences, Qualifications and Occupations (ESCO) classification.

Investment in Research and Innovation

- **Horizon Europe Fund for Geosciences:** Establish priority funding under Horizon Europe for research in renewable energy, sustainable resources, and climate resilience.
- **European Network of Geoscience Innovation Centers:** Create centers of excellence connecting universities, businesses, and governments to foster applied geoscience innovation.
- **Open Geospatial Data Platform:** Promote a European digital infrastructure providing free access to geological, geospatial, and climate data.

Training and Workforce Adaptation

- **European Geoscience Skills Pact:** Develop a programme connecting universities, industry, and governments to design training initiatives aligned with labor market and local/regional policy needs.
- **European Geoscience Certification:** Promote the title of European Geologists as a recognized EU-wide certification for geoscience professionals to ensure quality standards and job mobility.
- **Vocational Training in Geosciences:** Integrate geoscience modules into vocational training programs to enhance employability in key industries.

Public Awareness and Policy Engagement

- **“Geoscience for All” European Campaign:** Launch a European awareness campaign in social media, museums, and media outlets to highlight geoscience’s importance in daily life and the economy.
- **Annual Geoscience & Policy Forum:** Establish an annual event in the European Parliament where scientists and policymakers discuss geoscience-based sustainability strategies.
- **Citizen Science Program in Geosciences:** Fund initiatives that involve the public in data collection for environmental monitoring and resource management.

Proposed Targets for 2030

- Integration of geoscience modules in at least 75% of primary and secondary school curricula across EU Member States.
- Inclusion of geoscience skills in ESCO and national qualification frameworks in all Member States.
- Doubling the number of students enrolled in geoscience-related programs across Europe.

A United Commitment for a Stronger Europe

A strong geoscience education framework is essential for Europe's leadership in sustainability, technology, and industry. By investing in education, research, and skills development, we can equip future generations with the knowledge and tools needed to address global challenges and drive economic prosperity. We call on governments, academic institutions, industry, local/regional policy makers and citizens to collaborate in shaping a geoscience education system that secures a competitive and sustainable future for Europe.

Investing in geoscience education today means securing a resilient, competitive, and sustainable Europe for the future. We urge EU policymakers to prioritize geoscience education as a strategic asset in shaping policies for economic growth, environmental stewardship, and technological leadership.

Now is the time to act. Europe must equip itself with the knowledge and expertise needed to lead in the 21st century.



About EFG

The European Federation of Geologists (EFG) is the largest and most influential network of geoscience professionals across the Council of Europe countries, with 28 national associations representing a direct membership of approximately 50,000 individuals. EFG collaborates extensively with leading geoscience organisations worldwide, including in Australia, the USA, Canada and South Africa, indirectly reaching over 150,000 experts. EFG is listed in the EU Transparency Register No. 97706556032-41.

About the Panel of Experts on Education

The Panel of Experts on Education was established in 2011. It intends to deal with educational questions in geology (earth sciences) at all education levels, from primary school to postgraduate courses.

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