

We, the undersigned, representing the partner associations and institutions of the Education Committee of the European Geosciences Union (EGU), met in Barcelona on 13th and 14th May, 2023

Noting the alarming decrease in the uptake of geoscience options at all levels of education in most countries, we have agreed to write and publish the following document entitled:

BARCELONA MANIFESTO FOR THE TEACHING OF GEOSCIENCES

The Geosciences provide relevance for many studying basic science. Geoscience fundamentals underpin teaching in key aspects of school curricula but it is rarely taught as a stand-alone subject. Apart from university degrees where most future professionals are trained, the importance of the role of geosciences in building citizenship is currently insufficiently recognised by policy makers and educational authorities.

Geosciences:

- Make it possible to describe, analyse and interpret the scientific evidence for an integrated vision of Planet Earth's systems' past, present and future and extend this to other planets.
- Offer a unique perspective of the deep interactions and interdependencies among the different terrestrial subsystems: rocks, water, air and life.
- Provide an objective interpretation of materials and processes and their evolution throughout geological time.
- Provide a methodological and practical approach that enhances critical scientific skills such as observation, description, critical thinking, the formulation of questions and hypotheses and argumentation.
- Play a primary role in many aspects of social, economic or environmental relevance for all citizens:
 - o Geological resources (e.g., minerals, rocks, water, soils, hydrocarbons) and the impact of human activity on their efficient and sustainable exploitation,
 - o Climate change and global warming,
 - o Natural hazards (e.g., earthquakes, volcanic eruptions, tsunamis, landslides, floods),
 - o The need to know, value and preserve our geological heritage as a witness to the past processes that have shaped the planet and the evolution of life,
 - o The 17 Sustainable Development Goals (SDG) promoted by the United Nations, of relevance such as sustainable agriculture, water, energy, oceans, ecology, climate change, heritage preservation and disaster reduction.

It is therefore essential to:

- Ensure that in every country an appropriate level of the geoscience education is included from early childhood to upper secondary level (approximately 6 to 18 years old).
- Define, based on international proposals, some key principles and ideas for geoscience literacy that can work as a reference for the inclusion and sequencing of content in curriculum design.
- Recognise the opportunities afforded by the practical aspects and uniqueness of field and laboratory work that characterises the geosciences.
- Encourage, through the geoscience content in secondary education, the uptake of a range of geoscientific careers that will be necessary to fulfil society's present and future demands.
- Set strategies to ensure the scientific and didactic competences of teachers dealing with geoscientific concepts in pre-university level education.
- Envisage that students accessing university geoscience degrees have sufficient background to enable them to carry out their studies and that those university courses leading to geoscience careers offer an appropriate level of training.

Consequently, we invite institutions, associations, organisations, and individuals who share these values to join this manifesto. We also encourage them to disseminate it among their citizens, and to share it especially with the policy makers and educational authorities in their countries.

Barcelona, 14th May, 2023