HOW UNESCO'S MANDATE IN EARTH SCIENCES CONTRIBUTES TO THE IMPLEMENTATION OF THE UNITED NATIONS 2030 AGENDA



United Nations

Educational, Scientific and Cultural Organization International Geoscience Programme

UNESCO Global Geoparks



What are the Sustainable Development Goals?

As a universal call to action, in 2015 the United Nations adopted Sustainable Development Goals (SDGs) as part of the 2030 Agenda for Sustainable Development to be implemented fifteen years (2015-2030). over With 17 objectives and 169 targets, the SDGs have the overall aim to eradicate poverty and other deprivations, introduce strategies that improve health and education, reduce inequality and spur economic growth, while at the same time ensuring environmental protection. To achieve this, a great transformation of the financial, economic and political systems that govern our societies is needed and political commitment and decisive action by all stakeholders is vital.

Fully interconnected, the SDGs cover areas as diverse as education, gender equality, responsible consumption and production, and peace, justice and strong institutions.

Each SDG has targets that need to be accomplished. Progress on the implementation of these targets is monitored by the Member States through the Voluntary National Reviews and presented at the UN High-level Political Forum on Sustainable Development, the main global forum for reviewing successes, challenges and lessons learned on achieving the 2030 Agenda for Sustainable Development.

How does Earth Sciences contribute to the implementation of the SDG's?

Geoscience, or Earth Science, is the study of the Earth. This includes its surface and the processes that shape it but also its interior and the dynamics that occur beneath the crust. Through the study of the oceans, the atmosphere, rivers and lakes, ice sheets and glaciers, volcanoes and earthquakes, earth science aims to understand how these systems work today, how they operated in the past and to predict how they may behave in the future. The study of geoscience also covers how living things, including humans, interact with the Earth, for example, through the resources we use or how water and ecosystems are interconnected.

The overall aim of the SDGs is to pave the way for a sustainable world and, as it is demonstrated in this booklet, geoscience is at the core of this mission. This discipline has the ability to grasp the complex interconnections between the atmosphere,

hydrosphere, cryosphere, biosphere, and lithosphere giving а unique whole-planet perspective of the Earth system. However, it suffers from inherent limitations - incomplete data, lack of experimental control or the inability to make direct measurements - that are related to the fact that geoscience studies a 4.6 billion year old planet where most events occur at temporal scales much larger than the human lifetime. These challenges are very similar to those faced by sustainability science.

It therefore becomes evident that geoscience is paramount for the successful implementation of the Sustainable Development Goals.

The International Geoscience Programme (IGCP)

Since 1972, UNESCO, through the International Geoscience Programme (IGCP) and in partnership with the International Union of Geological Sciences (IUGS), has harnessed the intellectual capacity of a worldwide network of geoscientists to lay the foundation for our planet's future, focusing on responsible and environmental resource extraction, natural hazard resilience and preparedness, and adaptability in an era of changing climate. UNESCO, the only United Nations organization with a mandate to support research and capacity building in geology and geophysics, and its flagship programme, the International Geoscience Programme, actively contribute to society and to the implementation of the Sustainable Development Goals.



A UNESCO project in Chile is working to reconstruct phytoplankton (microalgae) distributions and composition over 1000 years the past using sediments from western Patagonia. Phytoplankton form the base of the food web in the ocean and are responsible for converting carbon dioxide to oxygen via photosynthesis. Phytoplankton can also have detrimental effects and a group known as harmful algae can cause damage to human health, wildlife, fisheries and aquaculture production. A dramatic example of such damage was the 2016 mass mortality event that killed nearly 12% of Chile's salmon production. It was the worst fish and shellfish mass mortality ever recorded. The results of this project contribute to the preservation and protection of biodiversity in Patagonia, and the prediction of harmful algal blooms to assess the feasibility of future aquaculture projects in the region.

IGCP's Contribution to SDG 14

The world's oceans – their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humanity. Over three billion people rely on marine and coastal biodiversity for their livelihood. These habitats are also essential as a climate regulation system, absorbing around 30% of the carbon dioxide in the atmosphere. Despite that, currently 30% of the world's fish stocks are overexploited and below the level at which they can produce sustainable yields; ocean acidification has risen by 26% since the beginning of the industrial revolution; and marine pollution is reaching alarming levels, with an average of 13,000 parts of plastic waste found for every square kilometre of ocean. **SDG 14 aims to enhance marine conservation and promote the sustainable use of marine resources through international agreements and law**.



Above: recovering a gravity coring instrument full of sediment from the Gualas River Delta, Patagonia, Chile; and measuring the sediment content of a previously collected core. Credit: Claudia Aracena Pérez.

LEARN MORE ABOUT UNESCO'S WORK IN GEOSCIENCE on our website and follow us on social media.