

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



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 over fifteen years (2015-2030). 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 a 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.

IGCP's Contribution to SDG 15



UNESCO supports the preservation of life on land through an extensive network of **UNESCO Global Geoparks**. These Geoparks work to enhance awareness and understanding of key issues facing society in the context of the dynamic planet we live on, mitigating the effects of climate change and reducing the impact of natural disasters. These are natural laboratories for sustainable development that promote the recognition and management of the Earth's heritage, and the sustainability of local communities.

As of July 2020, there are 161 UNESCO Global Geoparks within 44 Member States, covering a total area of 325,179 km². An example is the Danxiashan National Park and nature reserve, which became a UNESCO Global Geopark in 2004 and a World Heritage Site in 2010.

Human life depends on the land as much as it does on the ocean. Land flora provides 80% of the human diet, with forests - habitat of millions of species and vital sources of clean air and water - covering over 30% of the Earth's surface. Despite this, every year 13 million hectares of forest are lost, while the persistent degradation of drylands has led to the desertification of 3.6 billion hectares. Urgent action must be taken to support global food and water security, climate change mitigation and adaptation, and peace and security.

Biodiversity is a function of the ecosystem, the assemblage of living organisms, the physical environment and the links established between them. This physical environment, or the geosphere, is defined by the movement of the tectonic plates, and by processes that occur at the Earth's surface changing it over geological time. Mountains are eroded to mounds, and rivers carve deep canyons and carry sediments to the sea where they are deposited. In that sense, the geology - expressed in the many landscapes that exist around the globe - defines the conditions for the development of life and how biodiversity is expressed. As a result, a deep understanding of the geosphere is vital to preserve the diversity of life and sustain the future of humanity. UNESCO's geoscience projects are a fundamental part of that knowledge.



Right: Danxiashan UNESCO Global Geopark in China. . Credit:

LEARN MORE ABOUT UNESCO'S WORK IN GEOSCIENCE
ON OUR WEBSITE AND FOLLOW US ON SOCIAL MEDIA.

