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.



UNESCO supports scientific projects that promote the use of geothermal resources as a clean, base-load, and low-carbon, renewable energy in South America. By collecting data and numerical modelling, through scientists from Colombia develop techniques to support geothermal resources management at the Nevada del Ruiz volcano, and evaluate public awareness and acceptance of geothermal energy. I Ultimately this will produce a framework that can be used by developing countries to best harness their geothermal resources to provide essential power services.

Right: researchers study a rock formation thought to have geothermal potential in Nevada del Ruiz, Colombia Credit: Daniela Blessent.

IGCP's Contribution to SDG 7

Between 2000 and 2016, the number of people with access to electricity increased from 78% to 87%, with just less than one billion people not connected to the grid. However, with continued population growth, the demand for affordable energy will also continue to increase, and the energy provided must now also be as low-carbon as possible. **SDG 7 aims to expand infrastructure and upgrade technology to provide low-carbon and more efficient energy in all countries, encouraging economic growth and environmental protection**.

With this in mind, all possible low-carbon energy sources must be considered. One of those is geothermal energy, the heat generated by the Earth's hot interior that is stored in solid rocks and fluids beneath the surface. The use of geothermal energy is not new — humans have used hot springs and thermal pools for all purposes from cooking to therapy since pre-historic times. More recently, and particularly in volcanically-active regions such as Iceland and the Azores, the heat generated by the Earth's interior has been used to produce electricity and heat buildings. Deep-geothermal projects are also underway around the world to capture the warm fluids circulating at great depths within the Earth's crust.



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

