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Paleoscience and the UN Sustainable Development Goals

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Figure 1: The 17 Sustainable Development Goals as defined by the United Nations.

The Sustainable what ...?

In 2015 the United Nations called for governments and people across the world to work together to "end poverty, protect the planet and improve the lives of all". They set 17 goals – the Sustainable Development Goals (SDGs) – which have 169 targets! We need to hit all of those targets by 2030!

A global challenge

The 17 SDGs can only be reached if everyone – from you and your nextdoor neighbor, to scientists (including PAGES scientists) and government organizations – works together. We also need to bring together different types of research, such as environmental science and social science to really make a lasting change.

Figure 2: The creation of sustainable partnerships in geoscience (and beyond) are critical to the delivery of the Sustainable Development Goals. Photo credit: British Geological Survey.

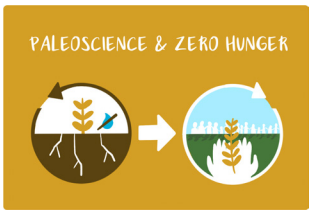
Can studying the past really help achieve the SDGs?

Geoscientists have many skills that can be used to address these global goals. We take lots of measurements that allow us to understand our planet and how people interact with their environment. We work with scientists and communities all over the world, and we often join the dots between many different science subjects (such as biology, chemistry, and physics) to solve difficult problems.

The research we do looks at the Earth and the environment today and in the past. This is important as we can use this information to work out what will happen to the Earth and the environment in the future. This includes everything from understanding past climate change and modeling future climate, to understanding and predicting changes in water resources, and predicting the impact of environmental hazards like volcanic eruptions and earthquakes.

GOAL 2: ZERO HUNGER

End hunger, achieve food security and improved nutrition, and promote sustainable agriculture



Agriculture was first developed over 10,000 years ago and has been supporting human populations ever since. The archaeological and geological records provide examples of how past societies, and their agricultural practices, have been able to cope with changes in the environment and climate. Paleoscience can also measure how agriculture in the past may have caused problems, such as desertification or changes in water availability and quality. We can learn from these examples to ensure that agriculture in the future does not cause additional stress to the environment while still being able to feed a growing human population.

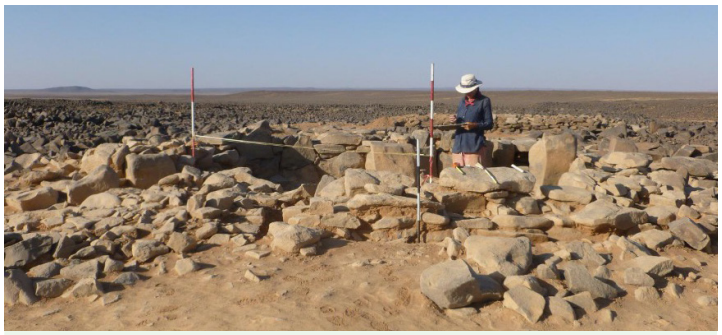
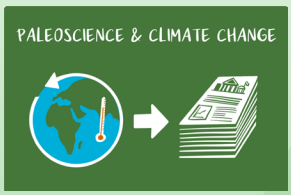


Figure 3: Excavation at the Neolothic site of Wisad Pools, Jordan, as part of the Eastern Badia Archaeological Project. Evidence suggests the region was a lot wetter and greener in the past. Photo credit: Matt Jones.

GOAL 13: CLIMATE ACTION

Take urgent action to combat climate change and its impacts



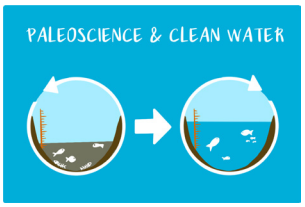
Paleoscientists have and will continue to contribute to the Intergovernmental Panel on Climate Change Assessment Reports. These reports bring together scientific knowledge on the impacts of climate change and provide information for governments in over 120 countries. Paleoscientists contribute by providing data on how the climate has changed going back in time for hundreds and thousands of years. The data covers all parts of the Earth, including the atmosphere, oceans, and polar regions.

Find out more:

UN SDGs: https://sdgs.un.org/goals
Intergovernmental Panel on Climate Change Assessment Reports: www.ipcc.ch/reports

GOAL 6: CLEAN WATER

Protect water-related ecosystems including wetlands and lakes



Tropical regions are home to some of the fastest growing populations and some of the world's poorest people. These regions are also impacted by climate changes, which can influence how much rain falls, for example. This can cause problems with how much water there is in lakes, and how clean that water is. If there is not enough water, or if it is very dirty, it can make people sick, and it can also make the creatures and fish that live in the lakes die. Paleoscientists can study how the amount of lake water has changed through time and how clean it has been, and work with lake managers to develop guidelines to help look after the lakes into the future.

GOAL 17: PARTNERSHIPS

Enhance global partnerships to share knowledge to support the achievement of SDGs in all countries

Perhaps the key to achieving all the SDGs is tied up in Goal 17. Paleoscientists are very good at working as a team to help understand some of the problems that our Earth faces; paleoscience relies on experts from many different subjects. It is important that we continue to work together, at home or overseas, with scientists, government bodies, and our nextdoor neighbors! We must work hard to create new ideas that will have a positive impact on the environment and fellow humans. PAGES engages with groups of people from all over the world, who work together to ensure that we understand Earth's changes in the past, present, and future.

Figure 4: Lake Parishan, Fars, Iran. Photo taken during fieldwork associated with the Mamasani Archaeological Project. Research indicates that lake levels have been sensitive to human activities for thousands of years. Photo credit: Matt Jones.