Geoscience for the next decade: how can geoscientists engage with communities in creating the next industrial revolution?

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The International Union of Geological Sciences (IUGS) www.iugs60.org is the global champion for what is variously referred to as Earth sciences, Solid Earth Science or Geological Sciences. It is part of the International Science Council (ISC) https://council.science/ and works with several related ISC Unions and UNESCO. Our Earth is faced with mounting challenges related to the climate crisis, which are largely due to the extraction and burning of fossil fuels. The geological sciences have in past decades paved the way in understanding how to locate these fuels for industry to extract and society to use. The geological sciences also underpin mineral extraction, provision of building materials, groundwater, quality of soils and many other issues all of which are essential for human life on Earth.

The transition is underway and geoscientists will lead on several issues, most of which will raise ethical issues: subsurface energy systems in terms of ground stability, seismicity, extent of the resource the safety of the process; mining and the need for critical metals to satisfy new energy technologies – this includes more mining locally and ethically, thus affecting global mining regions and ethically, but also mining in extreme conditions e.g., on the seafloor or the moon; intensive farming and food production and the impacts on water supply and soil quality; the continued need for gold to underpin cryptocurrency; the need for sustainable investment and the move away from oil and gas investments.

There are many more examples and all require a reasoned approach involving a delicate interplay of engineering, business, scientists including social and economic experts, and the public. The geological sciences will continue to be the part of the Earth systems science domains that drive economic growth. International Unions and meetings such as EGU are fora in which these debates can happen, however all too often they fail to bring together all the stakeholder in the debate.

We as geoscientists need to create the space to engage with the wider communities in the next industrial revolution.