

Invest in Earth Science to Deliver the Paris Agreement

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Earth scientists - those with knowledge of Earth systems and dynamics, and of natural resources - have a key role to play in the strengthening and implementation of nationally determined contributions (NDCs), collectively achieving the ambitions of the Paris Agreement [1].

Minerals, water, and characterisation of the subsurface are required for a just transition from fossil fuels to low-carbon alternatives, the decarbonisation of our transport networks, and to reduce the environmental impact of heating and cooling our built environments [2]. Understanding of Earth processes and resources, and how they are affected by climate change, is needed to build resilience to the impacts of increasing temperatures.

Earth scientists across industry, research, and the public sector are well placed to help develop and implement NDCs, and related strategies. The East African Community (EAC) Vision 2050, for example, includes an ambition for energy production to increase to 31 times the megawatt output generated in 2014, with an 8-fold increase in geothermal energy production [3]. Realising Vision 2050 therefore needs a thriving Earth science community, with specialised skills in geothermal energy development.

Case Study: Earth Science Education in Kenya

Kenya's Updated NDC, published in 2020 [4], highlights a desire for increased clean energy production (including through geothermal, solar, wind, and hydropower). This complements their Vision 2030 – a national strategy for sustainable development, with priorities of increased energy production, resilient urbanisation, disaster preparedness, better waste management, and improved use of groundwater.

An analysis of current Earth science education courses in Kenya demonstrated that there is one MSc course in each of Energy Studies, Geothermal Energy Technology, and Renewable Energy Technology. Collectively, the courses produced just 11 graduates in 2020. There are no dedicated MSc courses in hazards, disasters, or climate change. While Engineering Geology capability is critical to develop resilient and clean energy infrastructure and storage, only one MSc course was identified that allowed specialisation in this topic.

The current postgraduate course offerings and number of graduates in Kenya does not provide the specialised skills required to deliver the renewable energy ambitions of Vision 2030, nor their NDC.

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References: [1] <https://www.annalsofgeophysics.eu/index.php/annals/article/view/7460/6807>; [2] <https://www.geolsoc.org.uk/~media/6351D58EFDB444BDA6BC886A4702C634.pdf>; [3] <http://repository.eac.int/handle/11671/567>; [4] [www.unfccc.int/sites/ndcstaging/PublishedDocuments/Kenya%20First/Kenya%275%20First%20%20NDC%20\(updated%20version\).pdf](http://www.unfccc.int/sites/ndcstaging/PublishedDocuments/Kenya%20First/Kenya%275%20First%20%20NDC%20(updated%20version).pdf)