How to tackle the risks of climate change

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Winner of the 2023 RGS-IBG student essay competition

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This article was the winning entry in the 2023 free FT Schools programme student essay competition with Royal Geographical Society on the risks and responses to climate change.

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British Prime Minister Rishi Sunak's announcement to support the new Rosebank oil project in July 2023 came at a crucial point in the global fight against climate change. One of the largest untapped oil reserves in UK waters, it could account for 8 per cent of the UK's oil production by 2026 (BBC News, 2023).

The approval raises a problematic, multi-faceted question: should economic stability come at the cost of mitigating climate change?

The UN defines climate change as "the long-term changes in the Earth's climate that are warming the atmosphere, ocean and land" (UNDP, 2023). Its leading

cause is the combustion of fossil fuels, and the subsequent release of greenhouse gases, predominantly carbon dioxide and methane.

The evidence for climate change is visible in the rise in average global temperatures (an estimated increase of 1.1C since the pre-industrial period (Hodgson and Campbell, 2023)), the melting of glaciers and ice sheets and rising sea levels. These effects have caused positive feedback loops which are having an increasingly severe impact on our global carbon and water cycles.

Throughout the last century, the frequency, severity and distribution of risks associated with climate change have increased significantly and are projected to worsen in the coming years if no action is taken. Flooding, droughts, severe weather events and loss of species are all physical impacts intensified by climate change, which will continue to have harmful knock-on effects on the natural environment and peoples' lives.

The risks of climate change on the natural environment are significant. It is becoming one of the leading causes in the loss of biodiversity of all types of ecosystems around the world by accelerating the extinction of species through the destruction of habitats (UN, 2022a).

Marine ecosystems in particular are greatly affected by rising temperatures, with the UN predicting 70-80 per cent of coral reefs will be destroyed if global temperatures increase by the 1.5C target established in the Paris agreement (UN, 2022b).

Not only is this a loss for wildlife conservation but also for economic stability, because approximately 500mn people rely on fish from coral reefs as their primary source of protein (WWF, 2016).

Moreover, areas along coastlines that act as carbon sinks, such as mangroves and salt marshes, can be at risk from climate change, further supporting feedback loops which will be detrimental to the Earth's ecosystems.

Areas that act as carbon sinks, such as mangroves, can be at risk from climate change © Alexis Huguet/AFP via Getty Images.

Climate change also poses risks for humans. Spatial variation in gross domestic product, life expectancy, access to human rights, population density, conflicts and water availability are all factors that can determine the severity of the effects of climate change felt by nations and individuals.

This can also be seen on a smaller scale in the Occupied Palestinian Territory, located in the semi-arid area of the Middle East. Severe droughts intensified by climate change have not only worsened water availability and agricultural yields. They have also exacerbated the conflict between the Israeli and Palestinian communities, since climate change impacts Palestinians disproportionately.

A study by Oxford Economics predicts that increasing global temperatures by 2.2C by 2050 has the potential to reduce global GDP by up to 20 per cent. Warming of up to 5C by 2100 would lead to economic annihilation, consistent with scientific research on mass extinction thresholds (Ghazi, 2022).

It is clear that in the long term, mitigating climate change will not only protect communities but also protect the global economy. However, with political, economic and scientific goals of different countries and individuals not always aligned, economic growth is often achieved at the expense of the environment.

On a global scale, the conservation of carbon sinks is an effective and essential mitigation strategy to reduce the greenhouse effect while simultaneously preserving ecosystems.

These strategies can be reinforced by global climate agreements such as the legally binding Kyoto protocol in 1997 and the Paris agreement in 2015 which set a global net zero target (Maizland, 2022).

From preventing the destruction of the Congo Basin, a tropical peat swamp forest which absorbs 1.5bn tons of carbon annually (Kopansky and UNEP, 2023), to the protection of the permafrost on the Qinghai-Tibet Plateau in areas of China (Zhang et al., 2022), climate agreements on international or national scales could be effective approaches to mitigating climate change.

The protection of permafrost on the Qinghai-Tibet Plateau can help mitigate climate change © Johannes Eisele/AFP/Getty Images.

Technological solutions offer another avenue. Innovations include carbon capture and storage, renewable energy solutions (wind, solar and hydropower currently the largest producers) and energy-efficient buildings.

These approaches should be adopted globally and financially supported by developed countries to protect climate-vulnerable, developing countries as outlined at COP27 (UNEP, 2022).

Furthermore, organisations such as the OECD have introduced "systems thinking" into their strategies to help combine economic and environmental aims to transnational problems such as climate change. These will not only help collaboration between different countries but also support economic growth.

More locally, one of the most effective changes is to our own lifestyles. Notably, reducing meat consumption could have significant benefits for mitigating climate change. Forty per cent of all emissions are from the agricultural sector, in areas such as the Amazon rainforest. Brazil has been predominantly deforested for the rearing of cattle to satisfy global demand.

However, it has been argued that focusing on individuals' efforts to mitigate climate change removes the focus from large organisations that produce the vast majority of greenhouse gases released into the atmosphere.

Climate change poses significant risks to the environment and humanity and will increasingly affect almost every aspect of our lives. The conservation and protection of wildlife and ecosystems on its own is no longer enough to mitigate climate change, especially when those strategies rely on political leaders with agendas focused on short-term economic gain.

We must combine conservation practices, technological innovations, international agreements and individual accountability.

Editors' Note

Routes is delighted to publish the winning essay of the 2023 RGS-IBG School Essay Competition, organised in partnership with the Financial Times' in free FT School programme. This year's competition asked students to outline the risks associated with climate change in their submissions, and to tell us what they think humanity should be doing about it. The competition was open to all A Level geography students (or equivalent) aged 16-18, and the judges were looking for clear essays or ArcGIS StoryMaps which were well-evidenced and reached a clear conclusion.

We were delighted with the high standard of the entries received and we congratulate everyone who entered. In addition to Emily's winning essay, given the range and depth of entries received, the RGS and the Financial Times have recognised nine of the essays submitted with highly commended awards. These are by: Cyrus Chang, Harrow School; Jemima Davey, Tormead School, Guildford; Ben Musk, Hills Road Sixth Form College, Cambridge; Niamh O'Connell, The Holy Cross School, New Malden; Adam Patrick Osborne, Watford Grammar School for Boys; Parnika Parulkar, The Tiffin Girls' School, Kingston upon Thames; Amar

Singh Mashiana, Royal Wootton Bassett Academy; Johannes Timm, Gordonstoun, Elgin; and India Worthington, Manchester High School for Girls.

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