

Climate change: Ade on the frontline

Melting glaciers in Bhutan

Video summary	Before watching	While watching
Ade Adepitan visits Bhutan to witness the effects of rising temperatures on the glaciers there, and the danger this poses to the communities further down the valleys. Bhutan is the highest country in the world. It has around 2000 glacial lakes, the result of melting glaciers. Rising temperatures have melted around a quarter of Himalayan ice in just the last few decades and the vast volume of meltwater could cause major damage. The melting ice in the Himalayas doesn't only affect local communities: the meltwater ends up in rivers and eventually in the sea. Meltwater from mountain glaciers around the world has caused as much as a third of global sea level rise. Download/print a transcript of the video.	This film builds on students' understanding of climate change and its impact on different environments around the world. Students will ideally have a basic understanding of what a glacier is and does. However, this film could also be used to trigger an enquiry to find out more about glacial processes and how climate change is affecting them so dramatically. It is useful to have first seen this film clip about climate refugees journeying to the crowded city of Dhaka, Bangladesh. You could explain that this film will reveal another part of the climate change puzzle. You might explain to students before the film that it is filmed in Bhutan and ask them to say where this is and what kind of a place, they think it is. It could be helpful to then locate the country of Bhutan on a map before the film and show the high topography of the area, establishing that it is in the Himalayas and briefly discussing the topography and characteristics. Introduce key terms such as: Terrain: the characteristics of a particular piece of land, for example it could be mountainous or flat. Glaciers: a slow moving river of ice. Meltwater: the water produced from the melting of snow and ice, including glaciers, icebergs, and ice shelves.	You may wish to stop at relevant points during this short film to pose questions and check understanding, or wait until the end. Useful questions might include: • What kind of terrain is this? • How high are the mountains here? (an average elevation over 10,000 feet) • What kind of settlements are found here and whereabouts in the landscape are they located? • What is a glacier? • What is a glacial lake? • Why is this region referred to as the 'Third Pole'? • How many glacial lakes are there in Bhutan? (more than 2000) • What proportion of Himalayan ice has been lost in the last few decades? (a quarter) • What is holding the water back in glacial lakes? And what will happen when this dam of loose material gives way? • How does this contribute to sea level rise? After watching the film, initially, you might want to watch it through again and perhaps ask students to actively take notes to some of the key questions. You could then ask students what the effects of melting glacial ice will be and who it impacts on. You might discuss how the small settlements high up in Bhutan are at immediate risk from the large volumes of water released when the glacial dams give way; how agricultural communities downstream near the coast are affected as increased flooding destroys their homes and farms, and how the global community is affected because of sea level rise.

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After watching

You could ask students to use maps, writing and/or diagrams to explain the connection between climate refugees in Dhaka, flooded land in low-lying Bangladesh and glacial melt in the Himalayas.

'Meltwater from mountain glaciers around the world has caused about a third of sea level rise'. You could discuss this line from the film and some of the implications. Students could identify other areas in the world where glaciers are melting and consider feedback loops such as albedo loss. Students could research areas where ice melt is happening the fastest and explain why.

You might ask students to explain these problems and suggest feasible mitigation and adaptation strategies for the global population, and for people living with these problems at a local scale.

This short film is suitable for teaching KS3 and KS4 students. It can be used alongside the other Ade Adepitan films about climate change or watched on its own, but it particularly links with other clips about [climate refugees in Dhaka, Bangladesh](#), [tree planting in Bhutan](#), and [land loss in rural Bangladesh](#). All the films build on students' understanding of climate change issues and enable them to make global connections.

This film supports the KS3 geography curriculum by investigating our changing climate, environmental and human impacts and interactions, how humans seek to manage environments sustainably, and how places connect. It also supports a regional study within Asia.

At KS4 this supports work on climate change and natural hazards, glaciation, work on changing coastlines and sea-level rise, and environmental management. This clip could be used to support the delivery of geography to KS3 and KS4 students. Specifically, this topic appears in OCR, Edexcel, AQA, WJEC KS4/GCSE in England, Progression Step 5/GCSE in Wales, CCEA GCSE in Northern Ireland and SQA National 4/5 in Scotland.

Students and teachers over the age of 16 can create a [free Financial Times account](#). For a Financial Times article about glaciers melting in the Himalayas from 2019, [click here](#).

Where next?

Glaciers are melting all over the world and causing a wide range of problems including rising sea levels and flooding.

A region which has experienced flooding due to melting glaciers is the Gilgit-Baltistan region which is administered by Pakistan. Glacial lakes have burst sending large torrents of water into the Hunza Valley. In 2022 there was widespread flooding across Pakistan.

Research the impact of melting glaciers on regions such as Gilgit-Baltistan. What are the social, economic and environmental impacts?

Links

Glacial melt water:
<https://www.bbc.co.uk/bitesize/guides/zxn87hv/revision/5>

Glacial process guide:
<https://www.bbc.co.uk/bitesize/articles/zdw8dp3>

Impacts of climate change:
<https://www.bbc.co.uk/bitesize/guides/zx234j6/revision/3>