Exercise CCS as a solution

(No) solution to the climate crisis

Group work on technical solutions to the climate crisis

GROWTH

Carbon capture and storage as a solution?

Human-made climate change is caused by greenhouse gas emissions. These are released, for example, by burning coal, oil and natural gas or by deforestation. Their concentration in the atmosphere has been increasing since industrialization. Greenhouse gases absorb some of the earth's heat radiation, warm themselves up and then emit some of the heat radiation again. The emitted part of the heat radiation towards the earth then heats the earth's surface again, creating the so-called greenhouse effect. There are different greenhouse gases, such as carbon dioxide, methane, nitrous oxide and ozone. Carbon dioxide accounts for the largest proportion of human-made emissions, remains in the atmosphere the longest and therefore has the greatest overall effect on the climate.

What actually is carbon?
Carbon is a chemical element that is present everywhere. For example, it is the basic element of sugar, fats, wood and proteins. Carbon is constantly being converted and goes through the carbon cycle. It looks like this: Carbon dioxide is released when it is exhaled by humans, for example. It is then absorbed by plants and converted into sugar, for example in an apple. This produces oxygen. This sugar is then either absorbed directly by living organisms that eat the apple or is processed further. The living organisms then release the carbon again in the form of CO2 or it is released when the apple rots.
However, a large amount of carbon remains bound for much longer than in an apple. For example in the soil, in trees, in oceans or in bogs. Sometimes it remains bound for thousands or millions of years, such as fossil carbons. However, these are released faster than they can be bound again because they are burned to generate energy. Also, through climate change itself CO2 is released, as permafrost, which also stores CO2, melts because of global warming.

This is why discussions about combating the climate crisis repeatedly focus on the need to reduce CO2 emissions or prevent them altogether. Another idea that is repeatedly discussed is the capture and storage of carbon. This is called *Carbon Capture and Storage*. It is a form of geoengineering, i.e. the idea of changing the earth system in a large-scale technical way in order to stop the climate crisis.

A techno-fix for the climate?

Scan the QR code or click on the link to learn what carbon storage should look like and what the consequences could be.

https://www.youtube.com/watch?v=qLsH84dlV1Y

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After you have watched the video, you can share and reflect on what you have seen. Here are a few key questions to guide you:

- To what extent does carbon capture and storage contribute to combating the climate crisis?
- How do you assess the risks? How does the idea of using this technology make you feel?
- In your opinion, are there more sensible ways to deal with the climate crisis?
- Do you think geoengineering can make a valuable contribution to a more sustainable society?

Sources:

- Ursachen und Folgen des Klimawandels. Diana Rechid, 2021. In: Informationen zur politischen Bildung Nr. 347/2021 https://www.bpb.de/system/files/dokument_pdf/IzPB_347_Klima_barrierefrei.pdf
- Ein technofix für das Klima? Land-basiertes Geoengineering (BECCS) – Heinrich-Böll-Stiftung https://www.youtube.com/watch?v=qLsH84dlV1Y
- Die wichtigsten Kohlenstoffspeicher: Hier wird CO2 gebunden. Sara Brockhaus, 2020 https://utopia.de/ratgeber/die-wichtigsten-kohlenstoffspeicher-hier-wird-co2-gebunden/