

Long term effects of CO₂ capture and storage

Will it help or hinder the sustainability transition?

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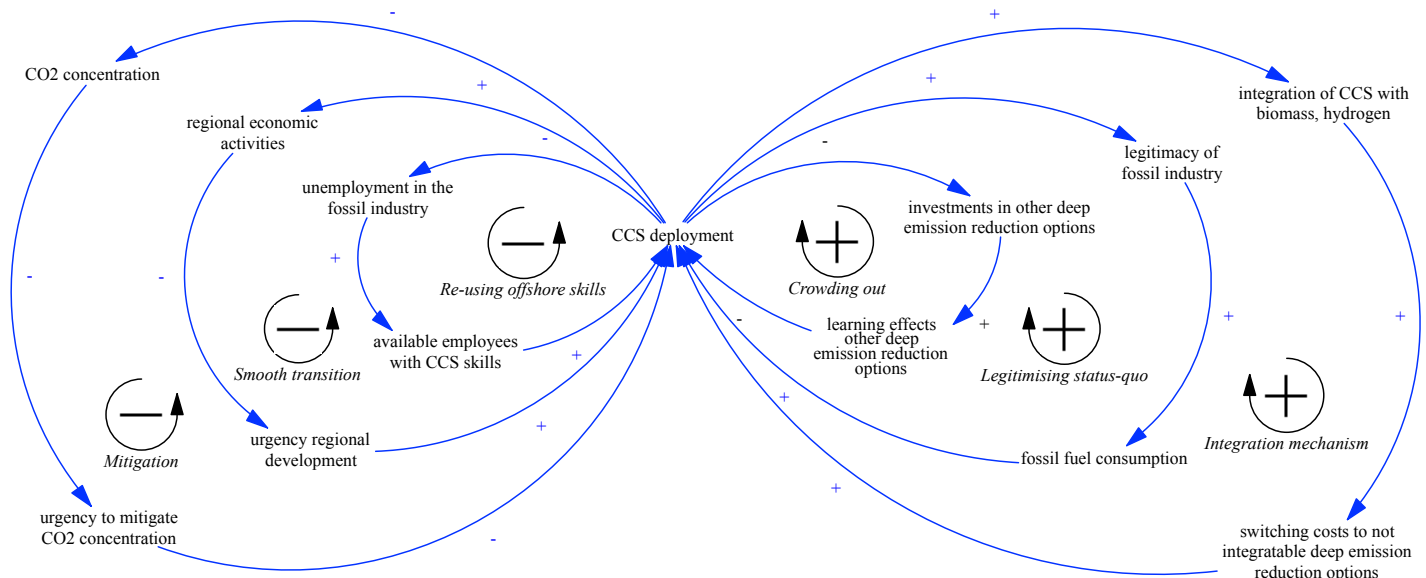
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Large scale deployment of carbon capture and storage is...

...helping the transition through just transition effects

...hindering the transition through lock-in effects



Problem & methodology

There is agreement that CO₂ capture and storage (CCS) can reduce CO₂ emissions. However, whether CCS will have a long-term positive impact on sustainable development and even climate change mitigation is fiercely debated in society and in the research community. The core disagreement revolves around the stark differences between the expected long term impact of CCS. Our contribution to the academic debate on the narratives of CCS in sustainability transitions in this paper consists of an expert interviews-based discussion of the existing narratives and an exploration into an alternative framing of CCS that takes the different views into account.

Results

Our findings indicate that CCS can hinder the transition towards a fully carbon neutral future by creating lock-in through crowding out investments in other not integrable options; legitimizing perpetuation of fossil fuels; and integration with other current and future technologies, making switching costs to other not integrable radical options costlier. On the other hand, CCS can facilitate reaching a just transition through avoiding job loss and even creating new jobs, preventing regional economic downturn and making regions more attractive for new investments, and avoiding CO₂ emissions ending up in the atmosphere.

Summary

Overall, we identified six mechanisms that influence whether CCS will help or hinder the sustainability transition, which we present in the form of feedback mechanism. Our results contribute to knowledge on the conditions under which the positive effects of CCS are realized, and negative effects of CCS can be avoided.

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