

Feedback Loops and Interdependencies between Arctic and non-Arctic Regions

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Motivation

The ongoing **transformations** occurring in the Arctic region are deeply intertwined with regional and global systems and processes, both in the sense of the Arctic affecting and being affected by systems and processes reaching beyond the Arctic's southern borders. Natural sciences generally and climatology specifically have produced a vast amount of literature as to the ongoing and likely feedback loops between the **climatic, environmental and atmospheric systems** of the Arctic and the rest of the globe. Interdependencies between more social science aspects – such as **economic developments, legal frameworks and patterns of livelihoods and generally organization of societies** – affecting and being affected by the ongoing changes in the Arctic region have so far received less attention.

Feedback Loops & Interdependencies

Both feedback loops and interdependencies are important to understand the interconnectedness between Arctic and non-Arctic systems and processes and how they affect each other. A **feedback loop** literally feeds back to the initial process or system, either amplifying the original effect (positive) or inhibiting the effect (negative). **Interdependencies** describe that systems or processes are (either mutually or unilaterally) affected or affect each other but these can be one way, i.e. they do not “feed back” to the initial process or system. Interdependencies can be differentiated between “**causing**” and “**effecting**” or “being a cause/having an effect” and “being affected” between systems in and outside the Arctic. [1]



Conclusion

This poster illustrates some **interdependencies and feedback loops** between natural systems but especially between thus far rather neglected social processes and systems within and outside the Arctic, focusing especially on the **determining factors of Arctic energy developments**. Among other feedback loops and interdependencies between Arctic and non-Arctic regions, this poster especially intends to show the bigger picture of the Arctic's (actual and potential) significance in global energy supply and security, and the role of global energy trends for Arctic energy scenarios.

The aim of this poster is to contribute to a broader research effort to develop a new framework and understanding of the **Arctic in the Age of the Anthropocene**, i.e. as embedded in and interacting with broader regional and global processes. Interactions between global trends and regional developments do not only play a significant role for the Arctic's energy resources but are equally important to understand next to all transformations occurring in the region, ranging from shipping, fishing and mineral resource development to the environmental changes and dangers as well as risks and opportunities for the people living in the Arctic.

References

- [1] “Arctic” is hereby understood as the Arctic areas of the eight Arctic states according to their respective national definitions. “Non-Arctic” is understood as including countries, territory and waters beyond the Arctic Circle, including territory of Arctic countries south of the Arctic Circle (e.g. US lower 48 states, Canadian provinces, southern Norway), based on the national definitions of each Arctic state as to how they define their national Arctic areas.
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