

Towards global water use targets

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Summary

This paper focuses on the development of targets for global water use. Although a renewable resource, the availability of water is limited throughout the year due to variations in water demand and climatic conditions. As a consequence, in many regions – at least temporarily – the amounts of available water resources are exceeded by water withdrawal. This leads to a reduced water flow in rivers, lowering groundwater levels as well as polluted water bodies.

When discussing targets for water use different aspects have to be born in mind, which are of high relevance and specific for the resource water. These aspects cover, among others, the different types of water (blue, green, and grey), the different types of water flows (abstraction vs. consumption), and others. The paper discusses existing approaches for water use targets and indicates ways towards the elaboration of targets from the watershed to the global level.

Extended Abstract

Increasing resource efficiency as a means to achieve overall decoupling of resource use from economic growth and higher well-being has reached the highest levels of European as well as global economic-environmental policy agendas. Strategies like the European Commission's "Roadmap to a resource-efficient Europe" call not only for a measurement of resource use and an increase in resource efficiency, but also identify the need for target setting as a means to evaluate progress towards the overarching policy goals.

However, so far only in the case of greenhouse gas emissions a clear threshold of a maximum of 2°C temperature increase per year has been identified and translated into a maximum "allowance" of GHG emissions on the country level. The other three resource categories as specified in the Roadmap, i.e. materials, land and water, so far still lack such thresholds, as research is not yet as advanced and environmental thresholds and related limits for sustainable resource use not identified yet. Hence, there is a significant discrepancy between demand for thresholds to be met by humanity as a whole as well as individual country on the one hand and the already available thresholds and limits on the other hand.

This paper focuses on the development of targets for global water use. The resource water plays a crucial role for a sustainable living and survival of our societies on the planet. Although a renewable resource, the availability of water is limited throughout the year due to variations in water demand and climatic conditions. As a consequence, in many regions – at least temporarily – the amounts of available water resources are exceeded by water withdrawal. This leads to a reduced water flow in rivers, lowering groundwater levels as well as polluted water bodies. As a consequence the competition for the scarce water resources results in basic minimum water requirements not being met.

When discussing targets for water use different aspects have to be born in mind, which are of high relevance and specific for the resource water. These aspects cover, among others, the different types of water (blue, green, and grey), the different types of water flows (abstraction vs. consumption), the necessary spatial, temporal and sectoral differentiation, and others. Available data and methods can so far only partially consider these aspects. However, the more difficult the quantification of water use and consumption the more complicated the design of specific thresholds and targets will be. In other words, for the identification of meaningful water use targets a reliable data basis is needed.

The present paper discusses existing approaches for water use targets such as the Water Exploitation Index of the European Environment Agency, the Water Stress Index or the approach taken by Rockström et al. in their study on “Planetary Boundaries” and describes the strengths and weaknesses of these approaches. Building on these insights, we suggest following a multi-level-track – from the watershed to the global level and from the production perspective to the consumption perspective – incorporating all relevant aspects specific for the resource water: e.g. types of water appropriation, of water flows or temporal and spatial variations. As always in the context of establishing targets for sustainable resource use, the challenge lies not only in identifying a sustainable level for the best suited indicator but also in gathering the underlying data, as availability and quality vary significantly across countries and indicators. However, once a threshold or target is set up, there is also more demand for improved data supply.