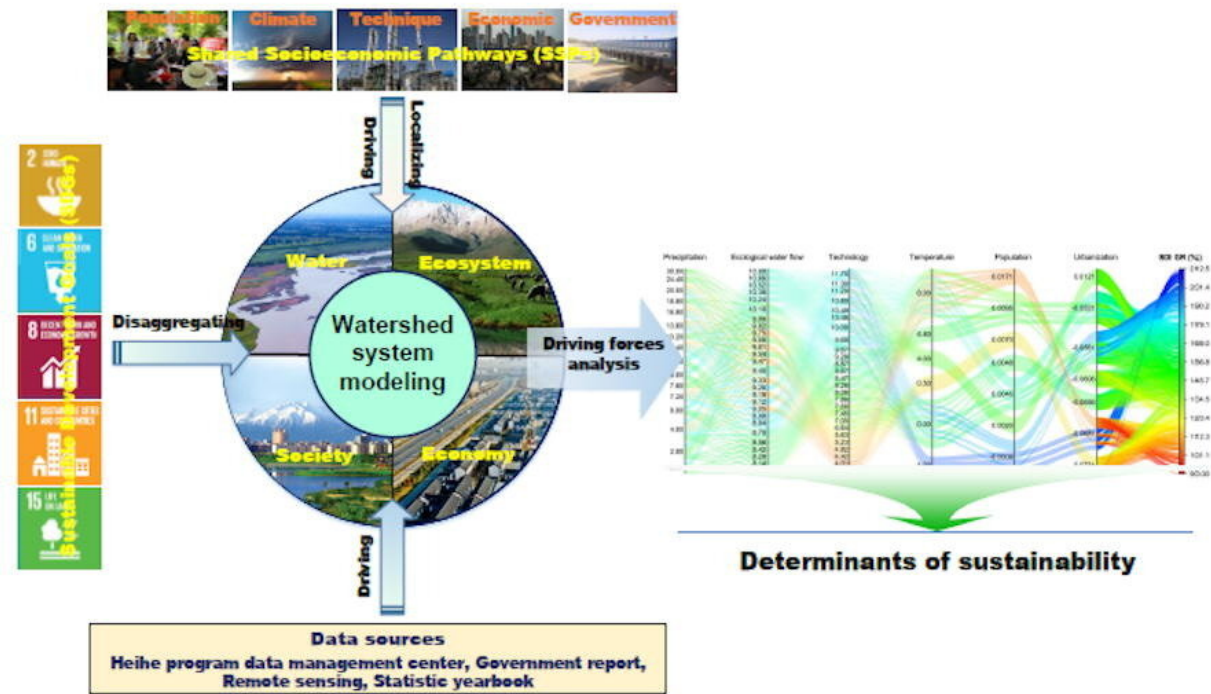


Researchers explore driving factors affecting sustainability of endorheic regions

September 30 2022, by Li Yuan



Graphical abstract. Credit: *Science Bulletin* (2022). DOI: 10.1016/j.scib.2022.07.009

Coactions of subtle climatic variations and mounting anthropogenic interference on the water-food-ecosystem-economy nexus create a new challenge in ensuring the security of water, food and ecosystems in most endorheic regions.

Recently, a joint research team from the Northwest Institute of Eco-Environment and Resources and Institute of Tibetan Plateau Research of the Chinese Academy of Sciences reported the first synthetic assessment of the combined effects of multiple driving and telecoupling factors (i.e., external factors: temperature and precipitation, and internal factors: technological level, population growth rate, urbanization rate, and ecological water flow) on the water-food-ecosystem-economy nexus under a changing climate.

The study was published in *Science Bulletin*. It links sustainability shifts through a broader integration of water, food, ecosystems and the economy at the operational level.

The researchers analyzed 2,162 scenarios pathways, results of which showed that the coaction of these factors on a complex human-environment system dominated sustainability in endorheic regions, not the "silo" factor, which can modify the efficiency frontier of [synergies](#) between water, food, ecosystems and the economy.

They found that sustainability pathways could be shifted by intentionally coregulating internal driving factors to adapt to changes from external driving factors in different human-environmental systems. Technological advances and ecological water flow were the most sensitive factors to sustainability transformation, especially their joint role.

Their findings improve our understanding of how to decouple [sustainability](#) shifts from ecological catastrophes under a changing climate and human behaviors.

More information: Yingchun Ge et al, What dominates sustainability in endorheic regions?, *Science Bulletin* (2022). [DOI: 10.1016/j.scib.2022.07.009](https://doi.org/10.1016/j.scib.2022.07.009)

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