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## Implications of the future global demand for food on fluvial systems

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Today, agriculture is the largest water consuming human activity on Earth and is causing significant environmental impacts on fluvial ecosystems. This pressure on water systems is expected to unceasingly grow in the next years: by 2050, the agriculture sector should roughly double supplies in response to population growth and diet changes. However, forecasting the world's areas that will face the major environmental impacts induced by the future demand for food is a challenging task, as international trade geographically decouples food consumers from the freshwater environments impacted to produce food.

In this context, we project the future impact of food consumption on local and foreign surface water resources. Based on recent projections on food demand and trade, we forecast the future pathways of agricultural water use by considering four different scenarios, which reflect different: (i) diet choices, (ii) population trends, and (iii) market's globalization degrees. Then, we estimate the irrigation water supplied from surface water sources to produce and trade food items. Finally, we forecast the food-induced impact by adopting an indicator that takes into account both (i) the local environmental relevance of the fluvial area where water will be withdrawn (biodiversity richness, sediment transport, etc.) and (ii) the downstream effects of water withdrawals. By this approach, we forecast the world's regions where the increasing stress on (local) surface water resources will arise from the growing demand for food products locally and abroad.