



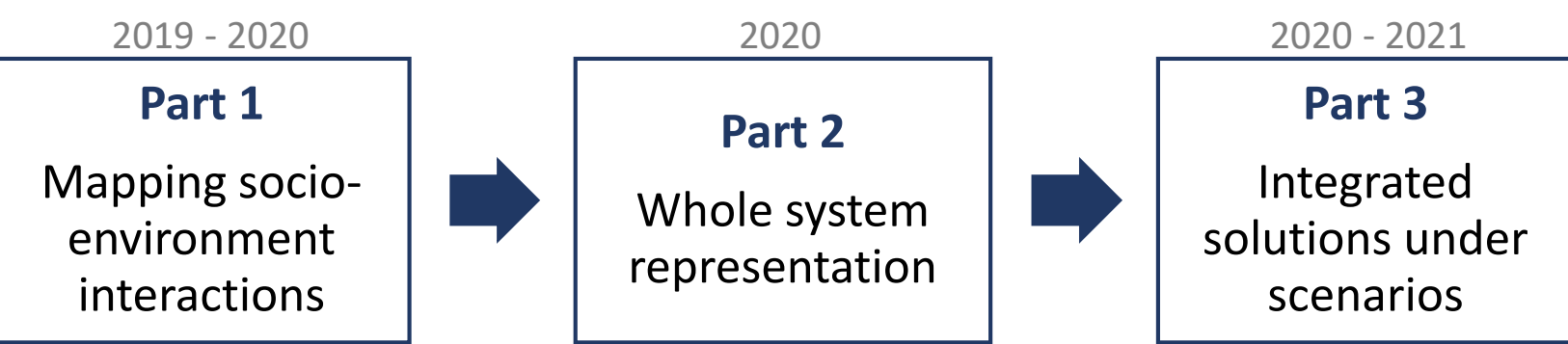
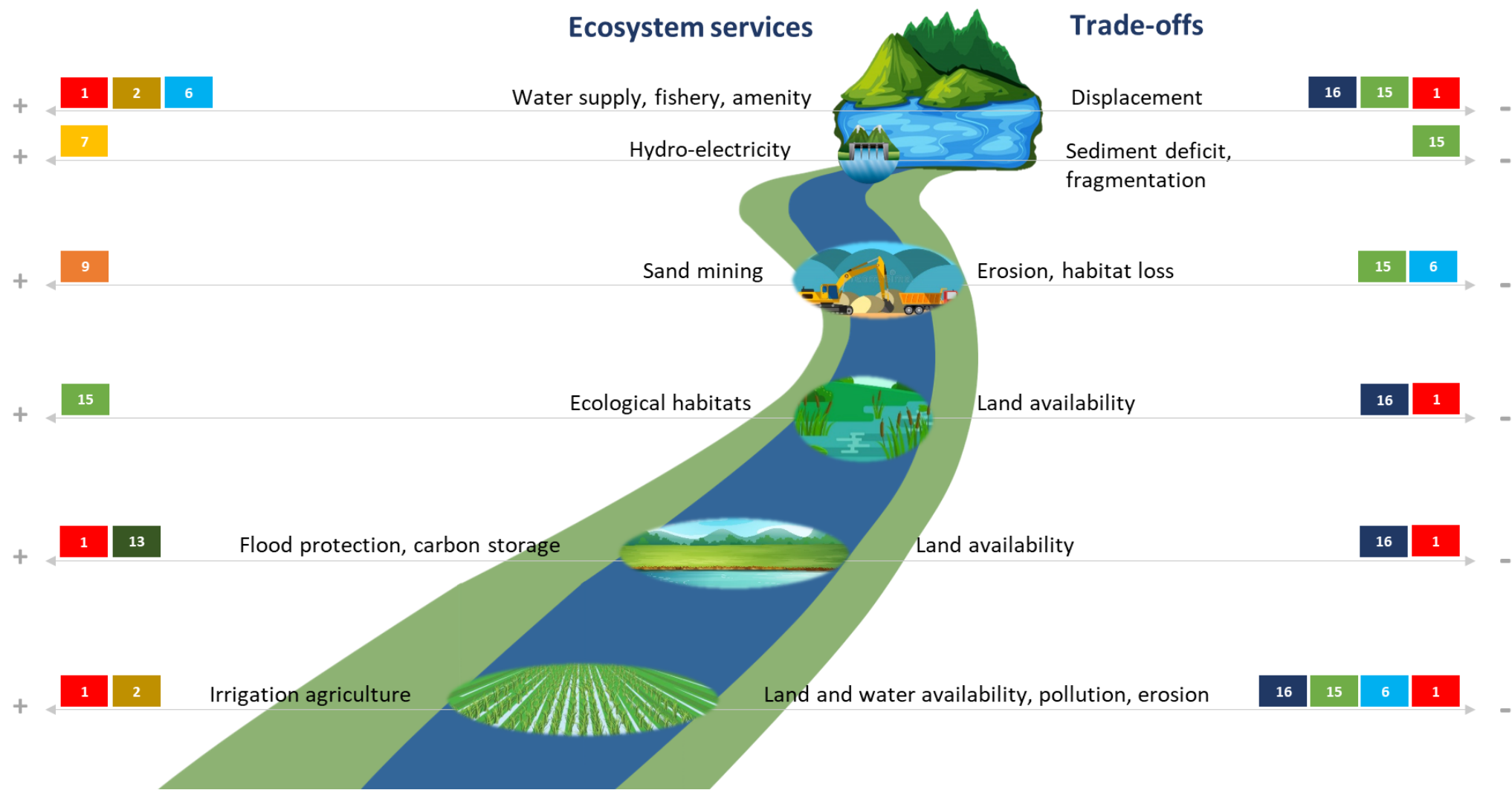
Social-economic-environmental trade-offs in managing the land-river interface

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Project background

Rivers and the land that surrounds them are focal points of economic activity and development in most countries. They are essential to humans for water supply, agriculture, transport and energy; hold significant importance socially and culturally; and have critically important ecological habitats that sustain high biodiversity. However, they are rarely managed in a holistic manner. Institutional boundaries, socio-economic drivers and barriers, and complex interactions between environmental processes limit our ability to integrate policies across the Land-River-Interface (LRI).

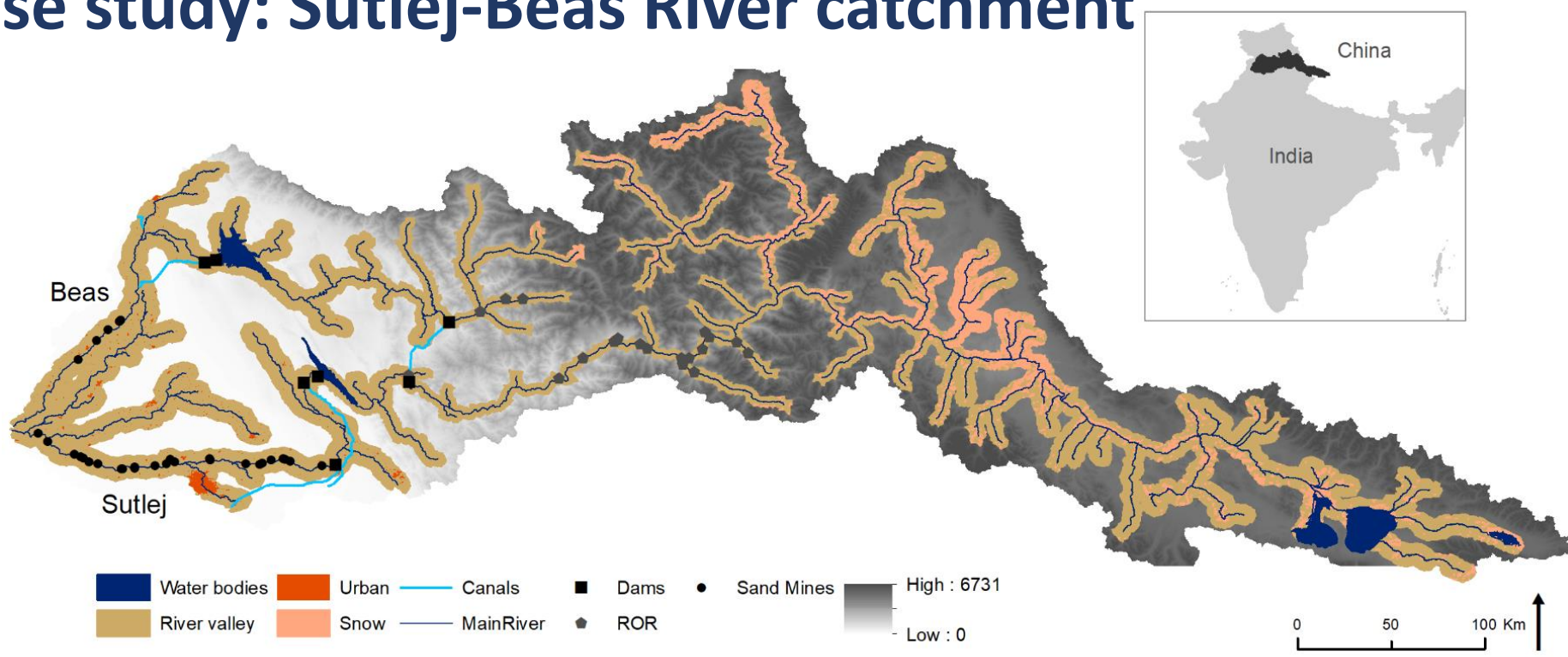
The aim of this research project (May 2019-2021) is to support the design of integrated and sustainable policy solutions for the LRI that enhance multiple Sustainable Development Goals (SDGs). To this end, investigation and modelling of the spatially-explicit social, economic and environmental interactions and trade-offs will be carried out under different socio-economic and climate scenarios. The research focusses on the transboundary Beas-Sutlej river catchment in the Himalayan region, and is co-designed with local stakeholders (universities, farmers, water management boards, regional and national government).



Research Team



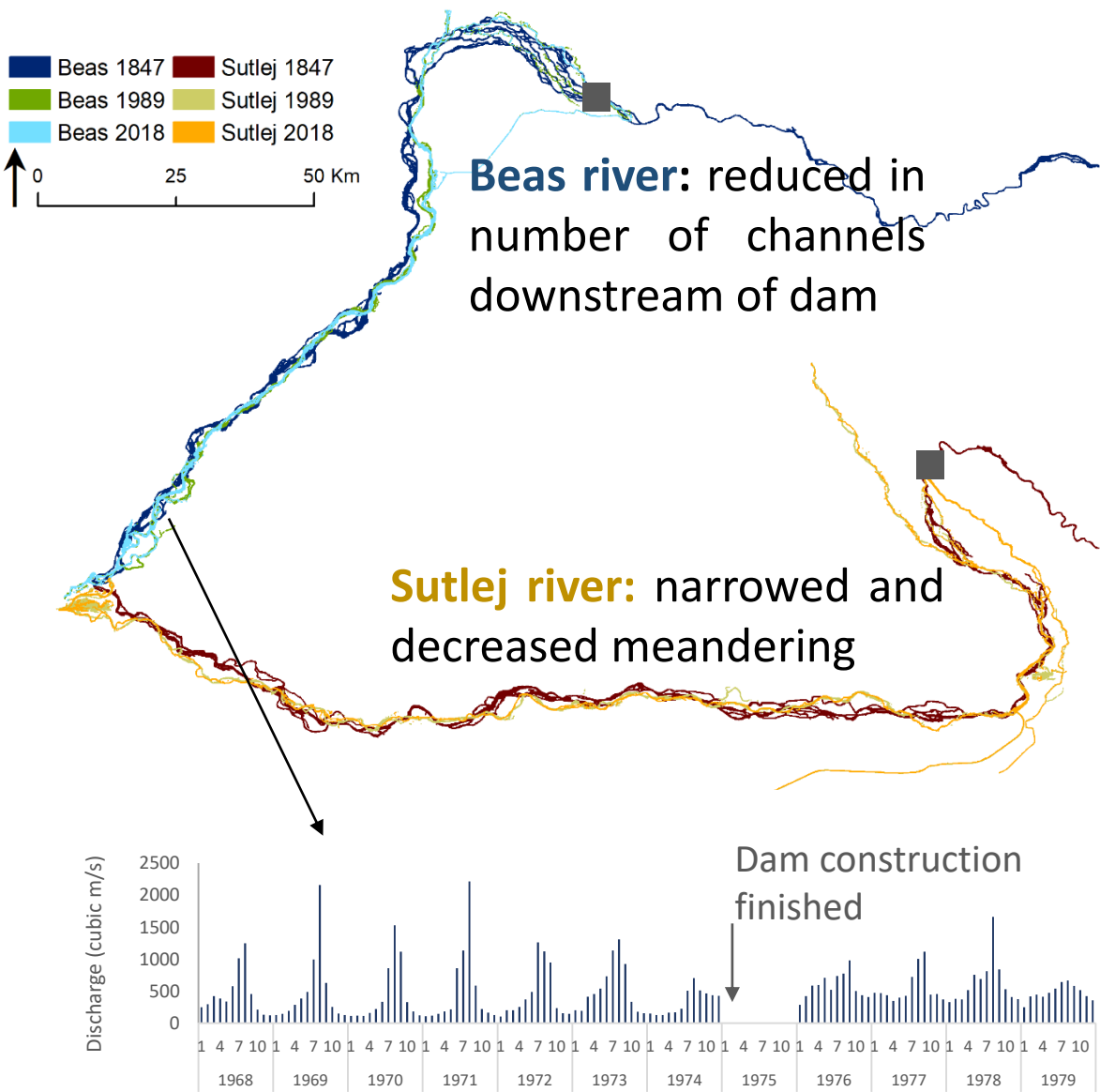
Case study: Sutlej-Beas River catchment



Project objectives

1. Synthesise how institutions, policies and regulations at national to regional scales impose a structure on LRI management;
2. Construct improved conceptual understanding of socio-economic drivers, enablers and barriers to integrated LRI management;
3. Develop improved understanding of interconnections, thresholds and spatial dependencies between hydrological, ecological, geomorphological and anthropogenic processes operating in the LRI;
4. Integrate the improved understanding of the social, economic, cultural and environmental aspects of the LRI to develop a whole system representation of the LRI and the trade-offs in ecosystem services and indicators of SDG targets.
5. Evaluate the impacts of climate scenarios and co-designed shared socio-economic pathways to inform solutions applicable at multiple scales.

First research findings: river geomorphic change



A significant decrease in the total bank-full river area for both rivers is observed in the post-dam period compared to pre-dam.

River planform dynamics since 1989 vary between the Sutlej and Beas rivers. While the Sutlej river shows a continuing decrease in area and width, the Beas rivers appears to be more stable.





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Quantifying how hydrological and geomorphical dynamics in the land-river interface create opportunities and trade-offs for sustainable development

Vercruysse, Kim; Grabowski, Robert C.

2021-04-30

EGU: European Geophysical Union

<https://doi.org/10.5194/egusphere-egu21-4693>

Vercruysse K, Grabowski B. (2021) Quantifying how hydrological and geomorphical dynamics in the land-river interface create opportunities and trade-offs for sustainable development. In: European Geophysical Union General Assembly 2021, 19-30 April 2021, Virtual Event