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B. Biome Working Group sessions: B2 - Planning and implementing Nature-based Solutions for water management at different scales

Ecosystem services of the Piave River catchment (Italy), examining climate and river restoration scenarios

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The development of new approaches for the analysis of long-term changes in riverine carbon, hydrological and nutrient cycles is important to identify potential impacts on the ecosystem services provided to the local population. In the present study, we explore a series of scenario of climate and river basin management on the spatial variations of carbon storage and sequestration, nutrients (N & P) and sediment delivery and water yield combining citizen science and modelling (InVEST) to support decision making for one of Italy's most important rivers. Bringing together traditional and novel information sources about land use, nitrogen, phosphorus and carbon contents of the topsoil, vegetation and river, we explore possible impacts on national and European directives related to water quality (Directive 2000/60/EC) and habitat (Directive 92/43/EEC). The Piave River is one of the most artificialized waterways in Europe. Among the scenarios developed (current and future-2050) we explore potential restoration actions to the riverbed to return the functional processes to the river ecosystem. We also explore the potential of long-term trends in agricultural land abandonment and their potential impact on ecosystem services. The participation of the local population as citizen scientists, coordinated by experts and using standardised methods allowed for both increased engagement with the project as well as fundamental data gathering for the ecosystem service models.

Keywords: ecosystem services, river restoration, climate change, citizen science, spatial resolution models