

**Socioeconomic Analysis of Alternative Policy Measures for
Hydropower-affected Waterways:**

The case of the Emån and Ljusnan Rivers

*(in Swedish: samhällsekonomisk analys av alternativa åtgärder i flödespåverkade
vattendrag: emån & ljusnan)*

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Despite the fact that hydropower is a renewable resource with low emissions and minimal climate impact, the development of rivers for power production leads to impacts on fish and aquatic organisms, as well as the surrounding landscape. In addition, a number of new regulations require more information about the environmental impacts of hydropower production, including the Swedish EPA's Environmental Quality Objectives and the EU's Water Framework Directive. The purpose of this project is to apply an ecosystem perspective to study the socioeconomic impacts of alternative river policy measures (described below). The project is divided into two parts:

- (1) In the Ljusnan/Voxan Rivers, a socioeconomic study of proposed ecological measures aimed at low water levels and short-term flow regulation (sometimes called "ramping rates" which refer to rapid changes in water flow through the turbines in response to changes in electricity demand).
- (2) In the Emån River, a socioeconomic study of proposed ecological measures at dam facilities to improve up- and downstream fish passage for anadromous and other fish species.

The project includes fish biologists, aquatic ecologists, economists, and statisticians. The project begins by building a better scientific understanding of how the proposed policy measures will quantitatively affect fish populations and other aquatic organisms. In addition, the project will identify changes in the landscape through photographs and illustrations. The final output of the project will be an analysis of how society values the expected environmental changes and how these values may be balanced against the costs of such measures (e.g., foregone electricity production, etc).

This research effort is part of a larger project that receives funding from:

- Swedish Energy Authority (Statens energimyndighet)
- Swedish Environmental Protection Agency (Naturvårdsverket)
- Swedish Board of Fisheries (Fiskeriverket)
- Electricity industry research and development organization called Elforsk AB.