

# National trade-off between biodiversity and hydropower

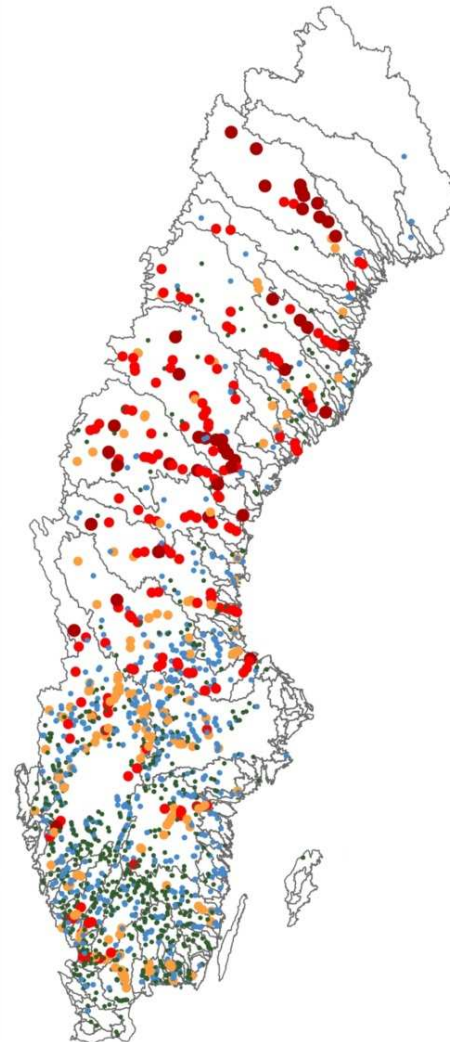


## Background

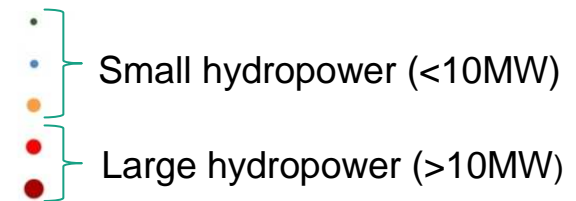
- Water Framework Directive
  - HMWB
- Habitat Directive
- Renewable Energy Directive
  - Intermittent energy

# Hydropower in Sweden

**Swedish Agency  
for Marine and  
Water Management**



Installed capacity



## Aim

A national strategy showing where environmental and energy measures should be located.

## Method

- Combining indicators for both environmental values and energy values in a GIS-environment.
- Decide which value should have precedence and how, using a multi-criteria analysis.

## Indicators for energy

- Energy value:
  - Regulatory ability (weight 2)
  - Installed capacity (1.1)
  - Production (0.9)

## Indicators for environment

- Environmental Quality Objective
  - Flourishing Lakes and Streams
    - 11 specifications, 6 of which were used
    - 38 indicators to describe the specifications



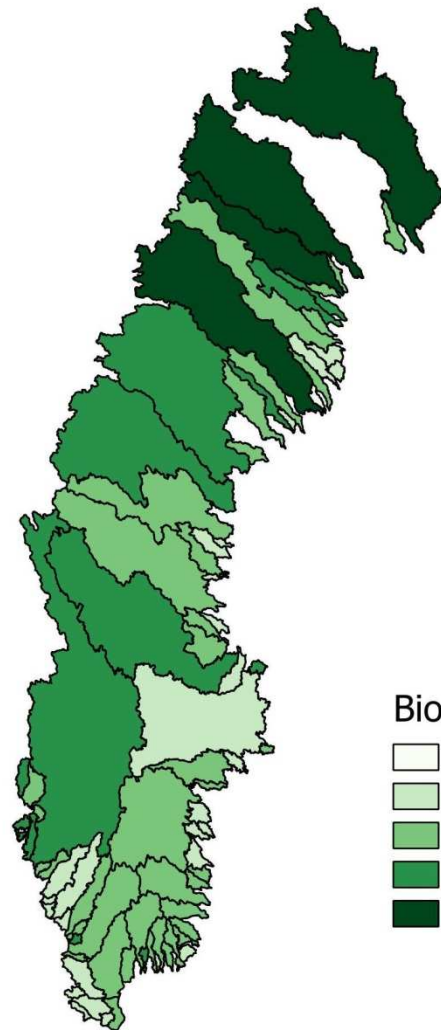
# Indicators for environment

## -data sources

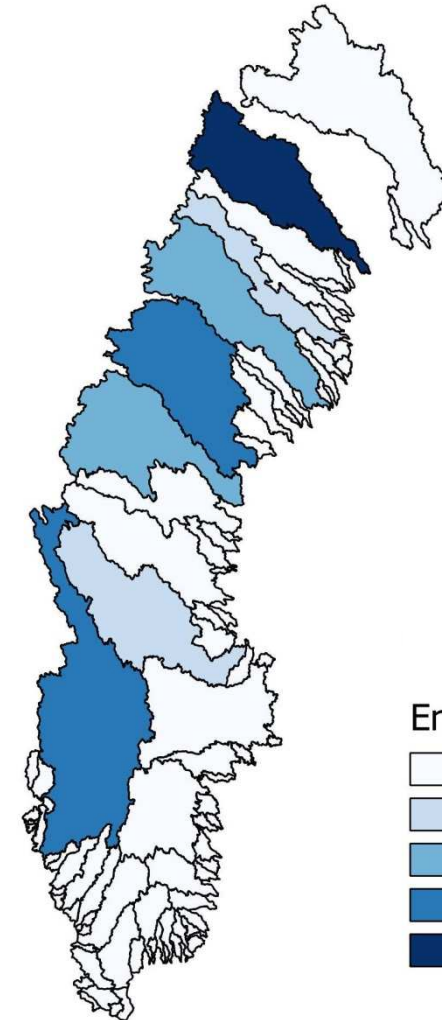
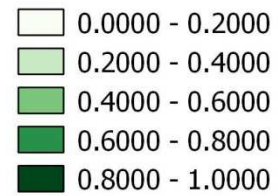
- WFD status classifications
- Species data
- Migratory barriers
- N2000 areas and species
- Restoration measures
- Protected areas
- Cultural heritage values



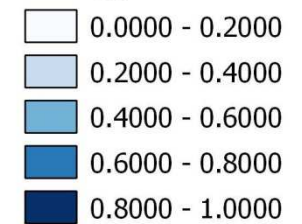
# Results



Biodiversity value

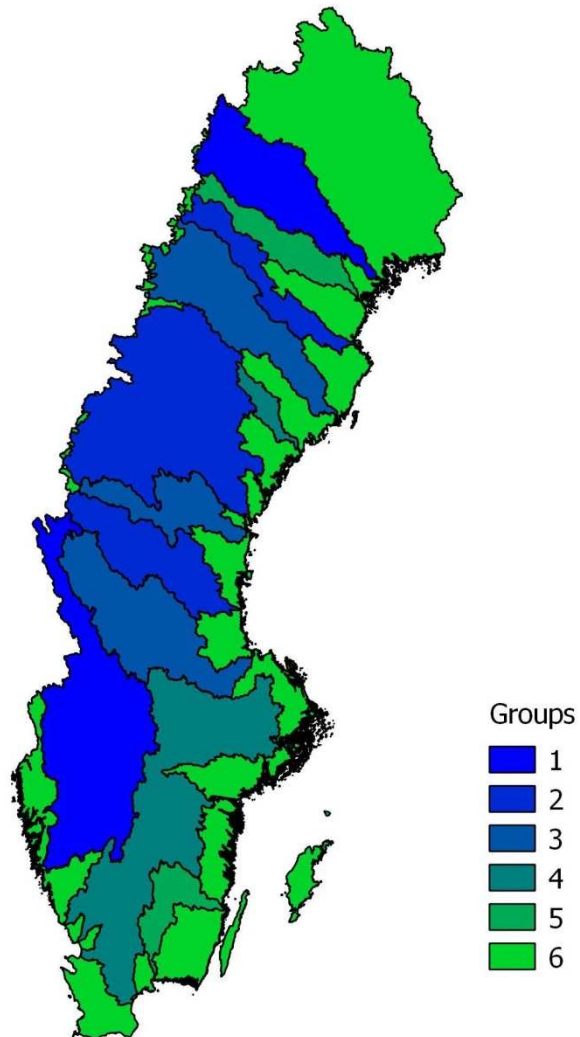


Energy value



## Results- strategy

- 6 groups of catchments was identified



Swedish Agency  
for Marine and  
Water Management

## Strategy

- Environmental objectives can be reached without an adverse effect on hydropower production and...
- a maximum of 2.3% (1.5 TWh) of the annual production can be used for environmental measures.