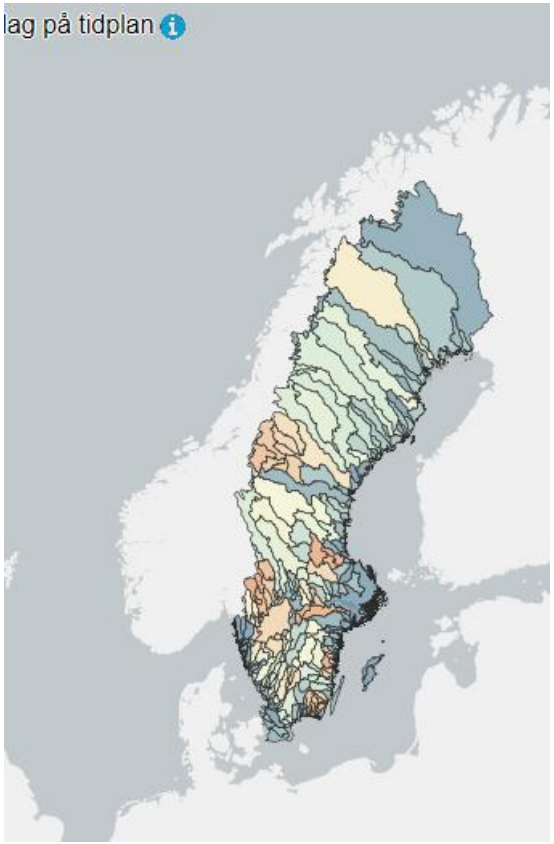
Overview and examples of mitigation measures implemented by Vattenfall

David Aldvén

Vattenfall R&D

Overview of Swedish situation

- National Review plan
  - 2022(?)-2040
  - Vattenfall 91 plants and dams between 2022(?)-2032
  - Approximately 2000 hydropower plants in Sweden



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Vattenfall

- Most work is focused on preparations to the review plan
  - However we are setting up a plan for voluntary measures in large scale hydro (>10 MW)
    - Measures without/with low (or increased) power production

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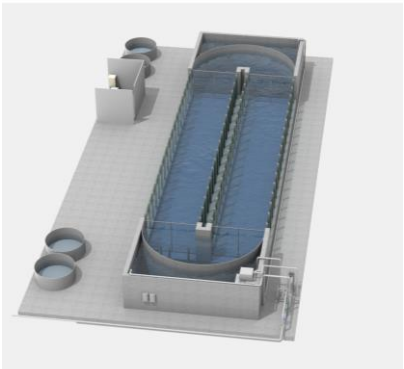
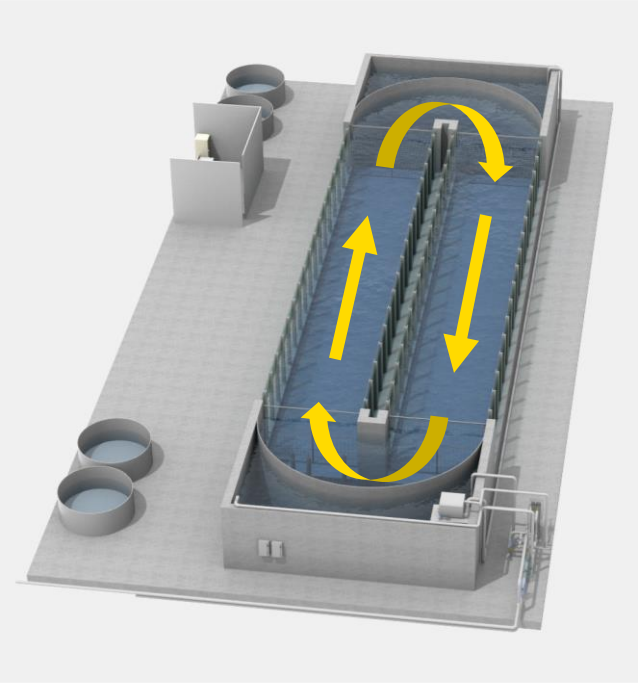
Ongoing projects

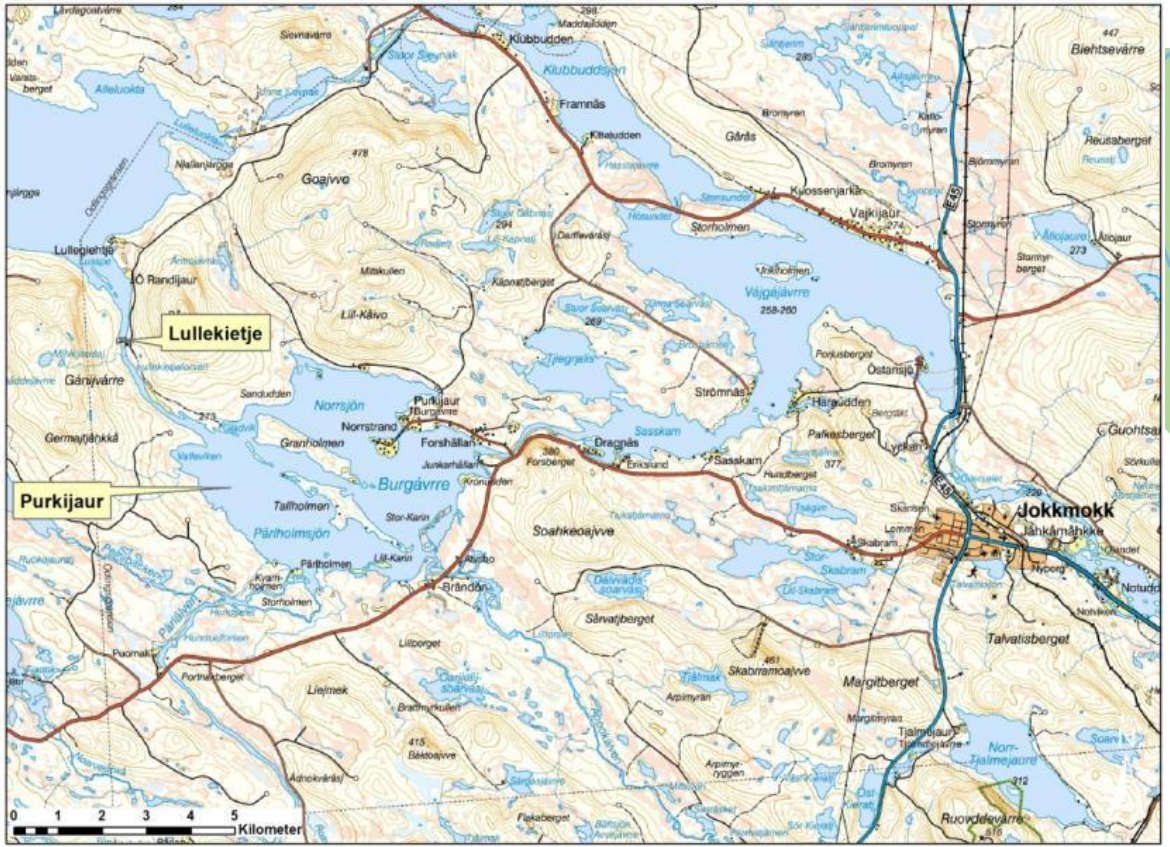
- EcoHab – measures without/low production loss
- Restoration of tributaries in larger rivers
- Mattis och Kuouka – Restoration of main stem Lule River
- Purkijaure – restoration/redesign of an overflow dam in Lule River
- T&T eel – eel transport from lake Värnen to the sea
- Laxeleratorn – Alternatives to trash rack in large scale hydro
- Kungsådran (Dalälven) - Hydraulic modelling and restoration
- Attraction flow – mobile platform
- Migromat – Netherlands Alphen (Meuse) and Maurik (Rhen)

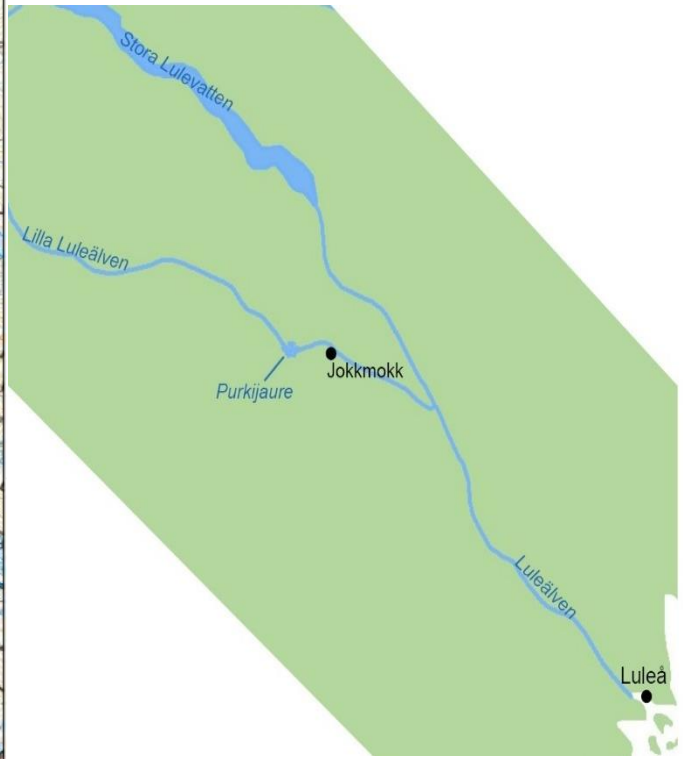


Laxeleratorn



Purkijaur





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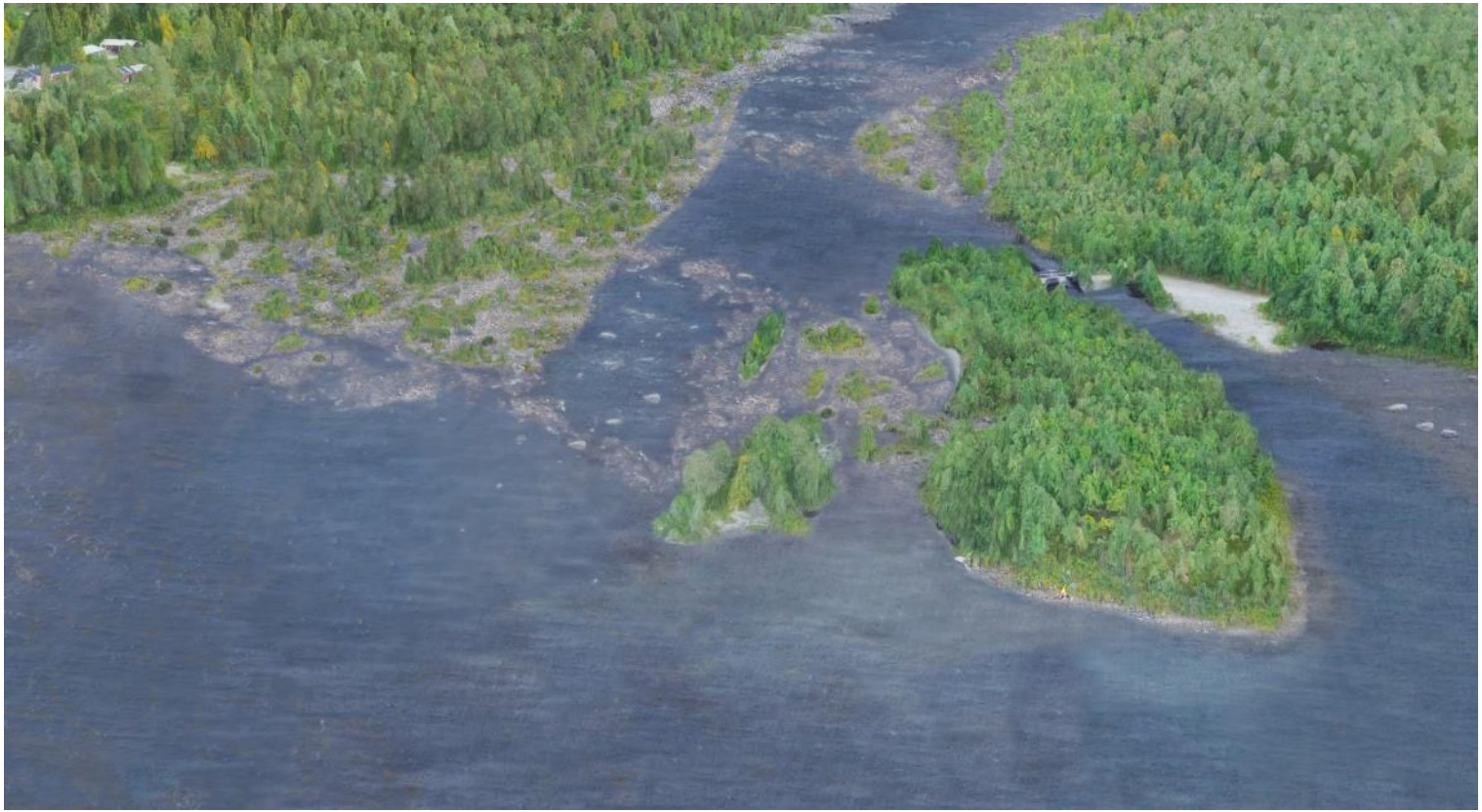
Purkijaur

Logging + Hydropower

- 1960
- 2010

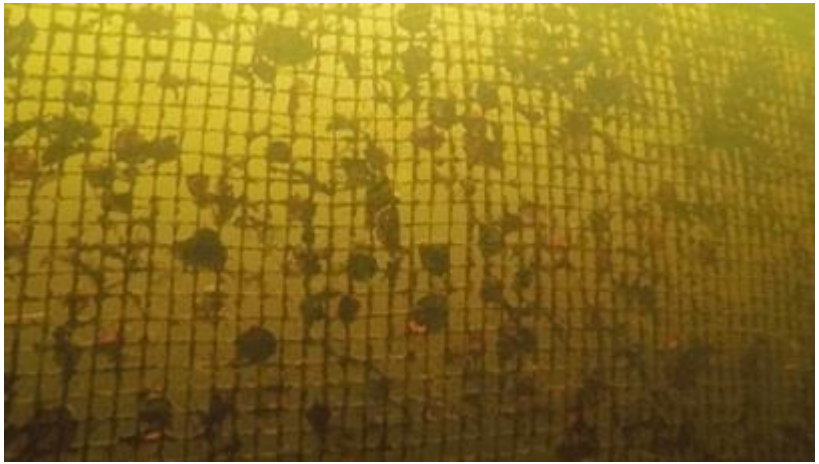
Today

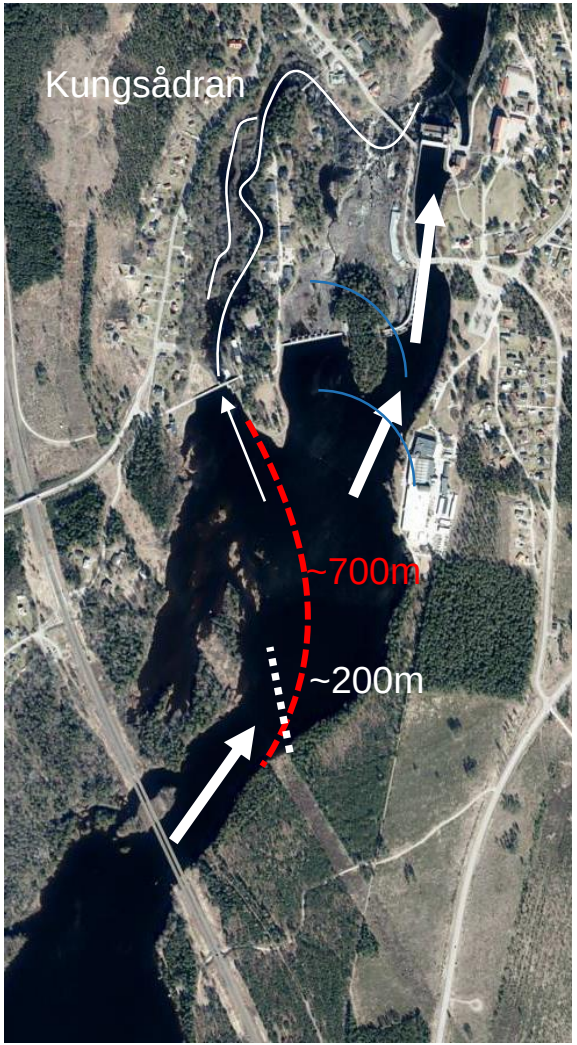
Goal



Planned work

- Large (full) scale downstream experiment Dalälven
  - Surface net 2.5x200m
  - Proposed solution 2.5x700m





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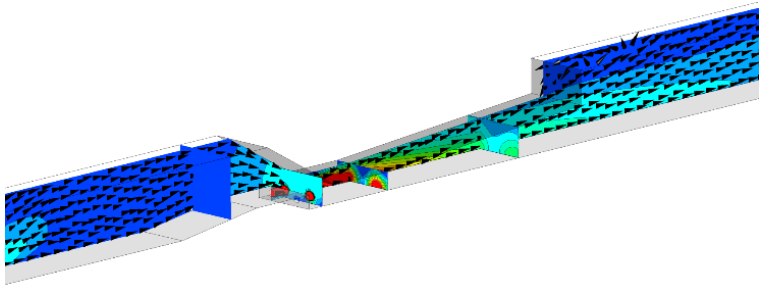
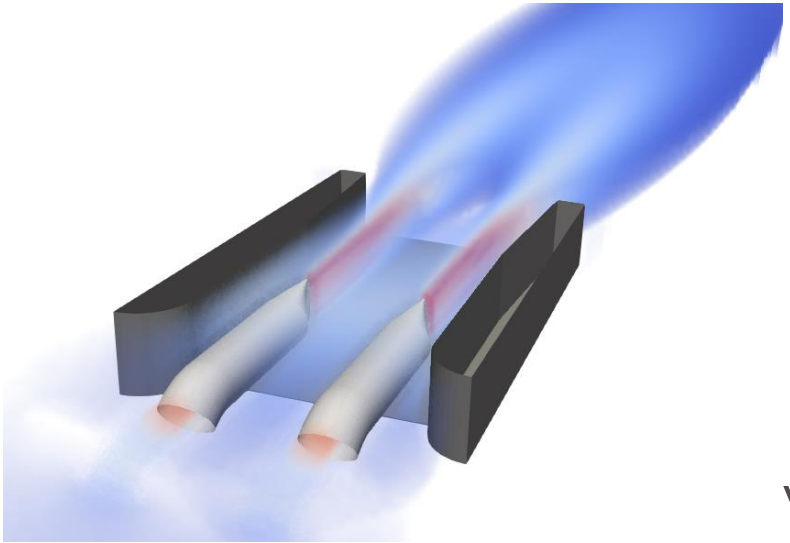
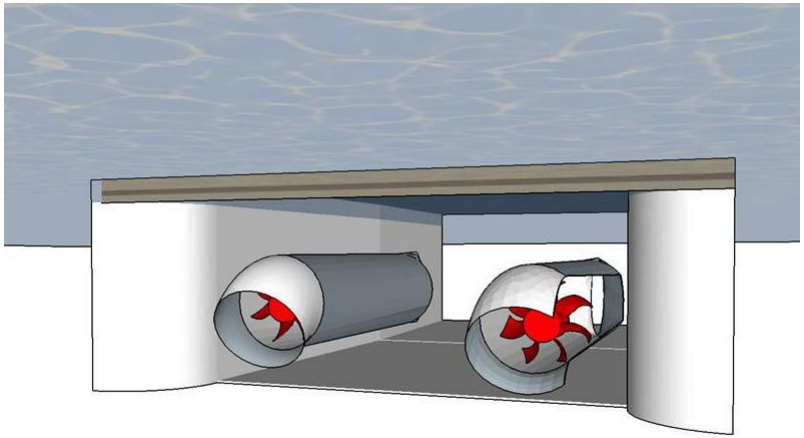
Planned work



- Attraction flow → mobile platform
  - “The results show that the required spill can be reduced to 1/3 with fairly simple geometries. For a 7m head the estimated saving is about 0.5 MSEK/yr, but for a plant with 20 m head the savings could be triple”





Other R&D projects

- AI – Fish recognition
  - Size, farmed/wild, spices, direction, individual etc

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