



Post-glacial politics: negotiating land use in the Swiss glacier forelands

Contribution to the discussion

Development of **land use proposals** for
new and future glacier forelands in
Swiss energy and environmental policy



2000

2024

Outline

- I. Methods and approach
- II. The last hydropower frontier
- III. Protecting an ecological potential
- IV. Wrap up and questions

Two key proposals

How did Swiss glacier foreland come to be considered as suitable sites for hydropower expansion in Swiss energy policy ?

Why did proposals to protect glacier forelands' ecological potential remain on the margins of Swiss energy and environmental policy?



Approach

Theory

Science and technology studies

Policy process theory

Processes studied

Assessment. The process of judging or calculating the quality, importance, amount, or value of glacier forelands

Researchers • consultants • R&D

Formulation. The clarification and promotion of proposals (ideas, alternatives, solutions)

Political parties • private companies • interest groups • environmental NGOs • governments

Institutionalization. The development or modification of formal rules

Governments • political parties • interest groups

Methods

Data gathering

Interviews and participant observation

65 Interviews (March-December 2023)
Participation in meetings · field visits ·
conferences

Archival research (± 300 documents)

Policy reports · parliamentary debates ·
position papers · press releases ·
presentations · public consultations ·
administrative archives

Analysis

Process tracing and discourse tracing

([Beach and Pedersen 2013](#), [LeGreco and Tracy 2009](#))

Chronological data ordering · coding
evolutions in discourse and processes



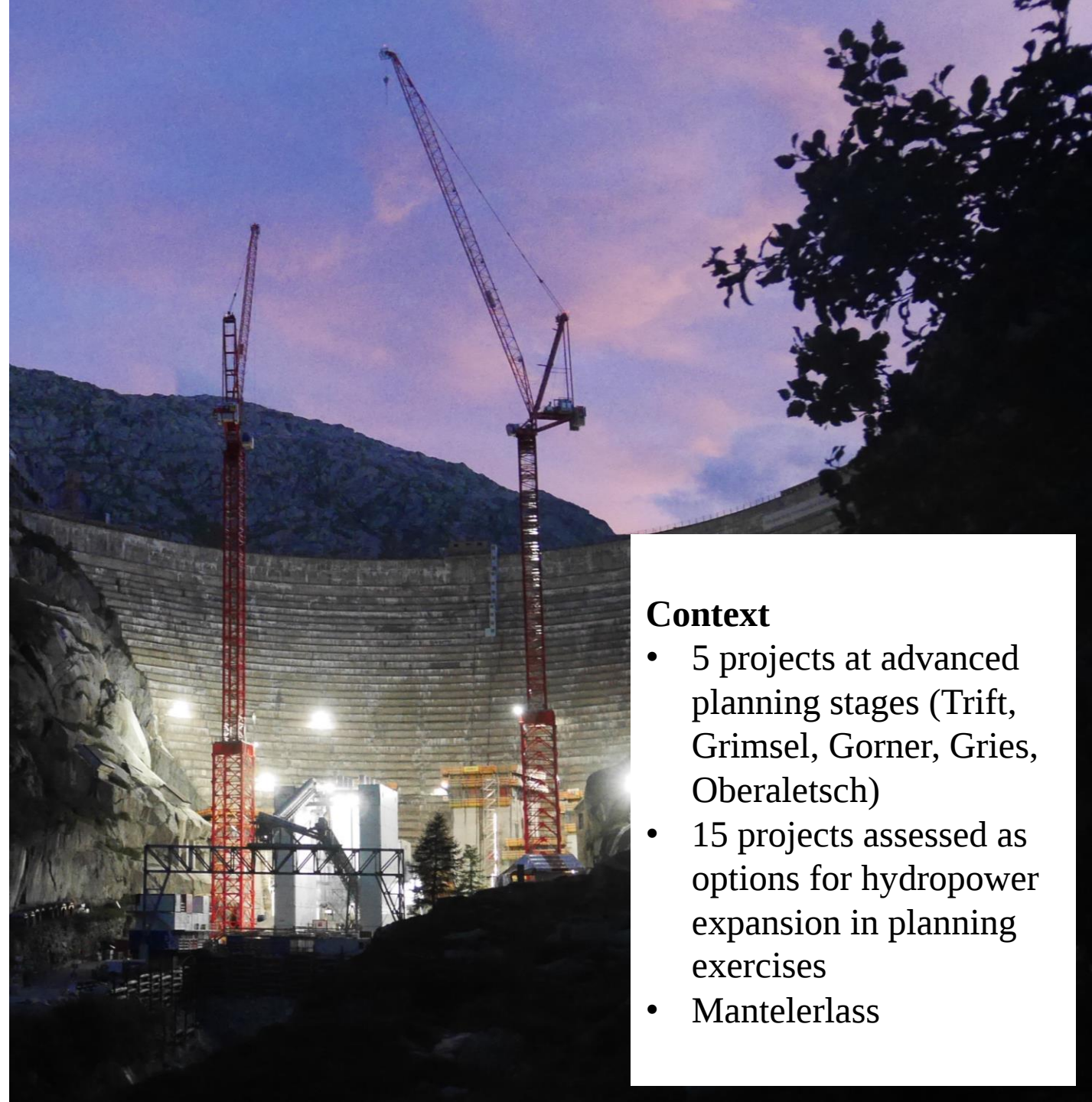
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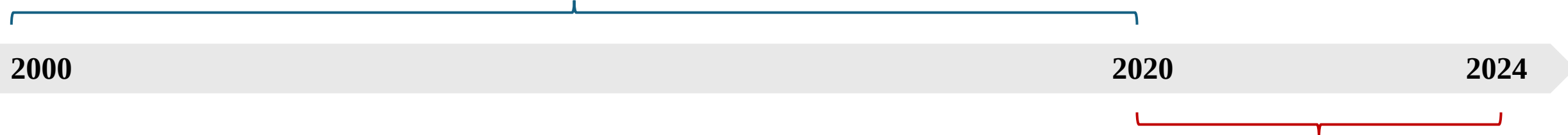


Context

- 5 projects at advanced planning stages (Trift, Grimsel, Gorner, Gries, Oberaletsch)
- 15 projects assessed as options for hydropower expansion in planning exercises
- Mantelerlass

The last hydropower frontier

I. Hydropower expansion in glacier forelands: a prospect for some hydropower companies, experts, mountain communes, and cantonal authorities



II. Hydropower expansion in glacier forelands: a national policy issue for the achievement of federal energy policy goals

In house prospecting by industry

- Preliminary feasibility studies for potential infrastructure expansion
- “[Projects in] new lakes [would remain] castles in the air under the current [economic] conditions” – [Director of the Swiss Water Management Association](#)

Research on hydropower potential

- Since 2010, modeling current and future glacier forelands as glacial lakes & overdeepenings
- Quantifying HP: PNR 61 ([NELAK 2010-2013](#)), PNR 70 ([Ehrbar 2018](#), [Boes et al. 2019](#))

Planning hydropower expansion

- Prospective data for planning
 - 2019 [BFE Swiss Hydropower Potential](#) 700 GWh/ in deglaciaded areas
 - 2020 [Canton Wallis Baseline Study hydropower potential](#): 85% expansion potential new reservoirs in deglaciaded areas

Gradual formulation of projects and policy proposals to expand hydropower in glacier forelands for energy production, with limited uptake aside from notable exceptions (e.g., Trift)

I. A prospect for some hydropower companies, experts, mountain communes, and cantonal authorities

2000

2020

Strategic storage sites for the Energy Strategy 2050

- Increasing focus on storage in national energy policy: 2020 Federal Council sets policy target to increase winter electricity production 2 TWh by 2040
- 2020-2021 Roundtable on Hydropower: 59% of additional winter electricity in deglaciaded area

Hydropower expansion in glacier forelands as a national policy issue for energy storage and safety, broad political support

A necessary compromise for energy safety: the Mantelerlass

- War on Ukraine: renewed sense of urgency
- Mantelerlass parliamentary debates (2021-2023) Singling out some glacier forelands from other biotopes of national importance to cut losses – proposal from Green-socialist coalition

First proposal (Spt 2022): UREK-S minority

Context - “The implementation of all environmental provisions [...] must neither hinder nor prevent [...] the construction, maintenance, expansion, and renovation of facilities intended for renewable energy production” (Proposal ESPEC-S majority Art.2.a)

Second proposal (Feb 2023): UREK-N majority

Effects – Legal distinction between biotope of national importance and glacier foreland protected after January 1, 2023 (Art. 12.bis.a)

II. A national policy issue for the achievement of federal energy policy goals

2020

2024

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Protecting an ecological potential

I. Revising the Fed Inventory of Alluvial Zones: protecting new and future glacier forelands

2000

2021

2024

II. Attempts at formulating a compromise in national energy policy debates

Assessment glacier forelands' ecological potential

- Since 1990s: no update of IGLES data to assess glacier forelands' ecological value
- 2020 Clivaz (+7) postulate ([Rejected 20.4662](#)) and 2022 Munz (+9) ([Rejected 22.4581](#))
- Independent assessments:
 - 2020 Grimsel (1C_356/2019), 2022 Trift
 - Pro Natura ([Gsteiger, 2021](#))

Updating the Fed Inventory of Alluvial Zones

- 2017 revision of the inventory: adjacent areas (Art. 3), precautionary protection (Art 7 and 11.a) ([RS 451.31](#)).
- Criticisms and efforts to limit environmental protection in forelands

A topic?

- Lack of concept: protection of new and future glacier foreland on few organizations' agenda prior to 2020
- Exception: social mobilization at the Grimsel and Trift

Some policy proposals focusing on the revision of a biotope inventory and the comprehensive assessment of new and future glacier forelands

I. Revising the Fed Inventory of Alluvial Zones: protecting new and future glacier forelands

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The search for compromise

- Mantelerlass (2021-2023) significant debates and decisions over use vs. protection rights in glacier foreland in energy policy context
 - multiple objectives
 - protection under attack
 - tense energy context

“The situation is filled with uncertainties and calls for adjustments” - [Lisa Mazzone, State Council, 22.09.22](#)

- [2023 UREK-N minority \(6\)](#) formulated two proposals:
 - Exceptions only for specific projects
 - No exceptions, maintain absolute protection

Heightened awareness and mobilization for the protection of glacier forelands at national level in the context of energy policy debates

II. Attempts at formulating a compromise in national energy policy debates

2021

2024

Wrap up

How did Swiss glacier foreland come to be considered as suitable sites for hydropower expansion in Swiss energy policy ?

Incremental science-policy-industry prospecting

Uptake as solution in national energy policy debates and legislation

2000

2020

2024

Wrap up

Why did proposals to protect glacier forelands' ecological potential remain on the margins of Swiss energy and environmental policy?

Attempts to fill data gaps, update, and modify federal inventory + oppose specific projects

Finding compromise in tense energy policy context

2000

2021

2024

Thank you!



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PhD research: “The Trouble with Climate Opportunities:
Negotiating Post-Glacial Futures in Switzerland”

April 2025

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Some ideas

Assessment. The process of judging or calculating the quality, importance, amount, or value of glacier forelands

Researchers • consultants • R&D

- Anticipatory actionable data for the elaboration of land use proposals
 - NRP on glacier forelands
 - prospective modeling and visualizations
- Academic knowledge integration “While data might exist [...] politicians don't have access to it – it might be a matter of knowledge brokering” – Interview with WWF

Formulation. The clarification and promotion of proposals (ideas, alternatives, solutions)

Political parties • private companies • interest groups • environmental NGOs • governments

- Issue framing: from the inventory of alluvial zones & energy to...
 - climate adaptation ([e.g., Ice&Life](#))
- Exemplifying solutions
 - inventory of existing protection practices ([e.g., Salim 2023 “Glacier tourism without ice”](#))
 - examples of multifunctionality in articulating energy production and protection