Good Energies Chair for
Management of Renewable Energies

University of St.Gallen

Is there a Case for Community-Based Participation in Swiss Hydropower Projects?

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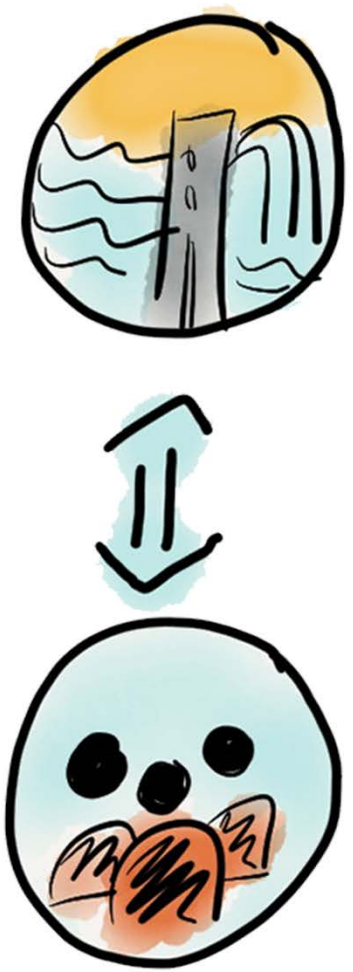
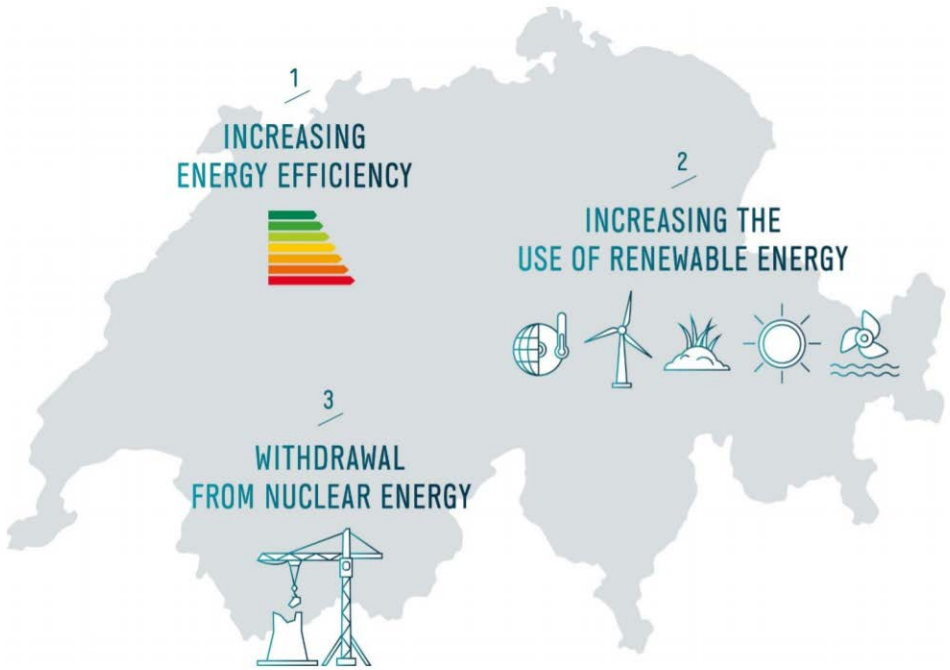


Research Context

Adoption of Energy Strategy 2050



Key Features of the ES2050

- Increased Funding for Feed-in-Tariff
  - But: Limited until 2022
  - But: No more feed-in-tariff for small hydro (less than 1 MW)
- Renewable Energy as a National Interest
- Simpler and shorter approval procedures for RE-projects
- Projected increase in production from hydropower

Source: BFE (2017)

Research Question

Research Question

Can Community-Hydro be a concept to support the increase in hydropower production within the context of the Energy Strategy 2050?

Agenda

Community-Hydro – a Visualization

Methodology

Status Quo of Community Based Participation in Switzerland

Aspects of Community-Hydro in Switzerland

Outlook and Conclusions

Community-Hydro in Switzerland

Process

Hydropower plant

Produced hydropower gets fed into the grid

Utilities

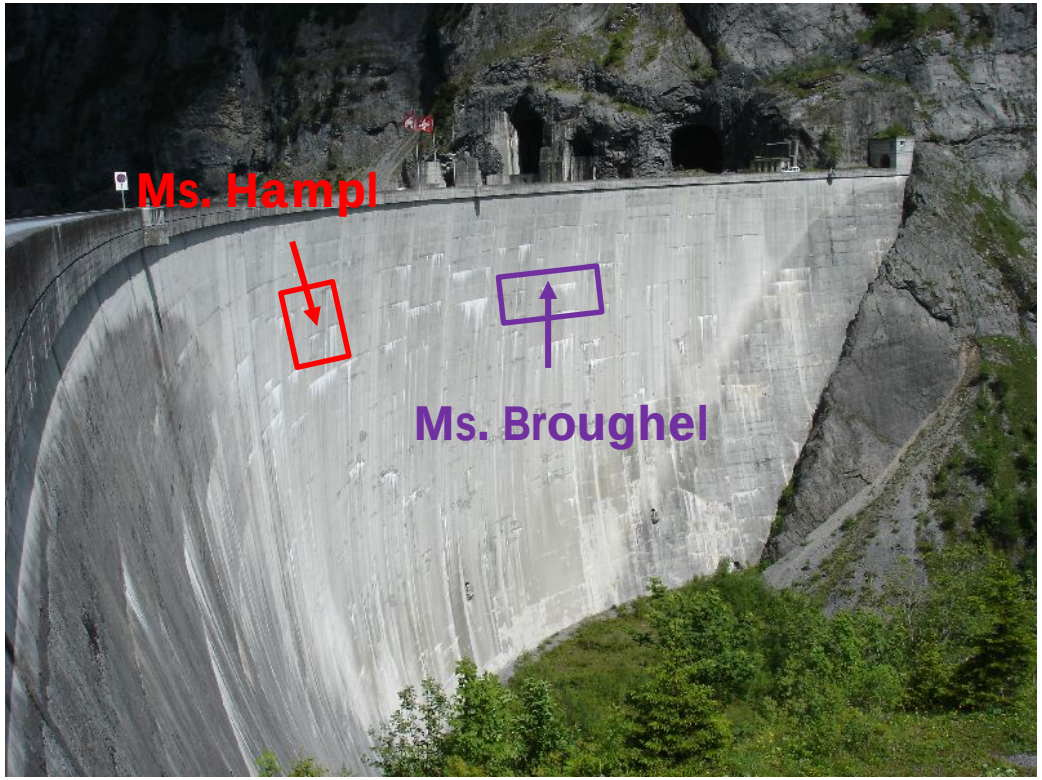
Customers get compensated for their parts

Customers

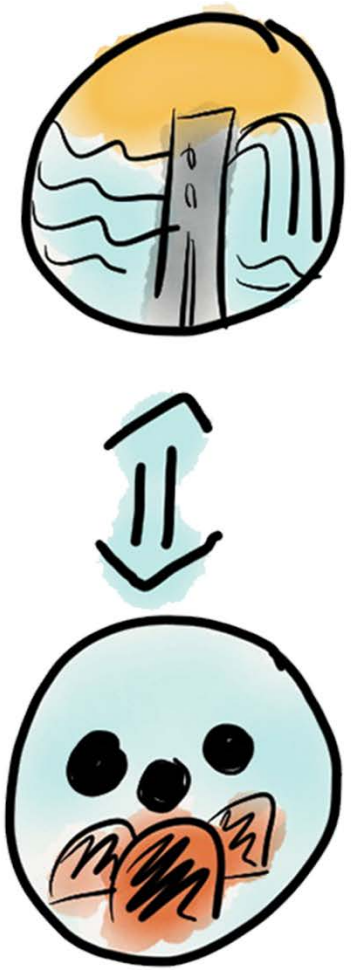
Customers buys a part of the hydro power plant

Source: Adapted from Chwastyk & Sterling (2015)

Visualization



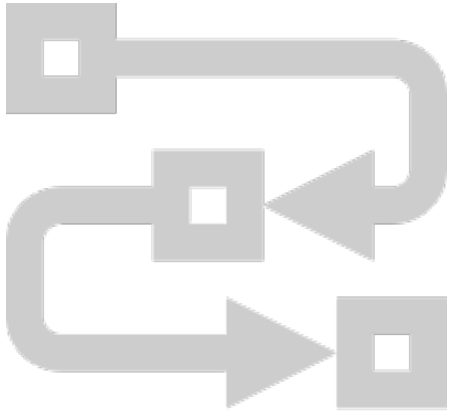
Methodology

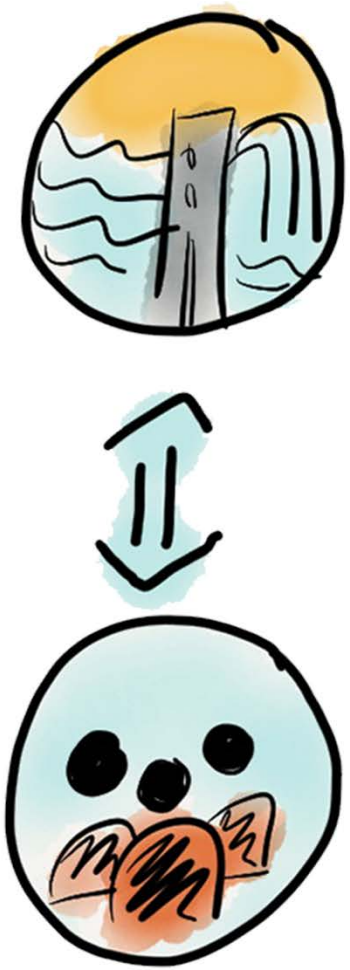


Methodological Approach

Methodology

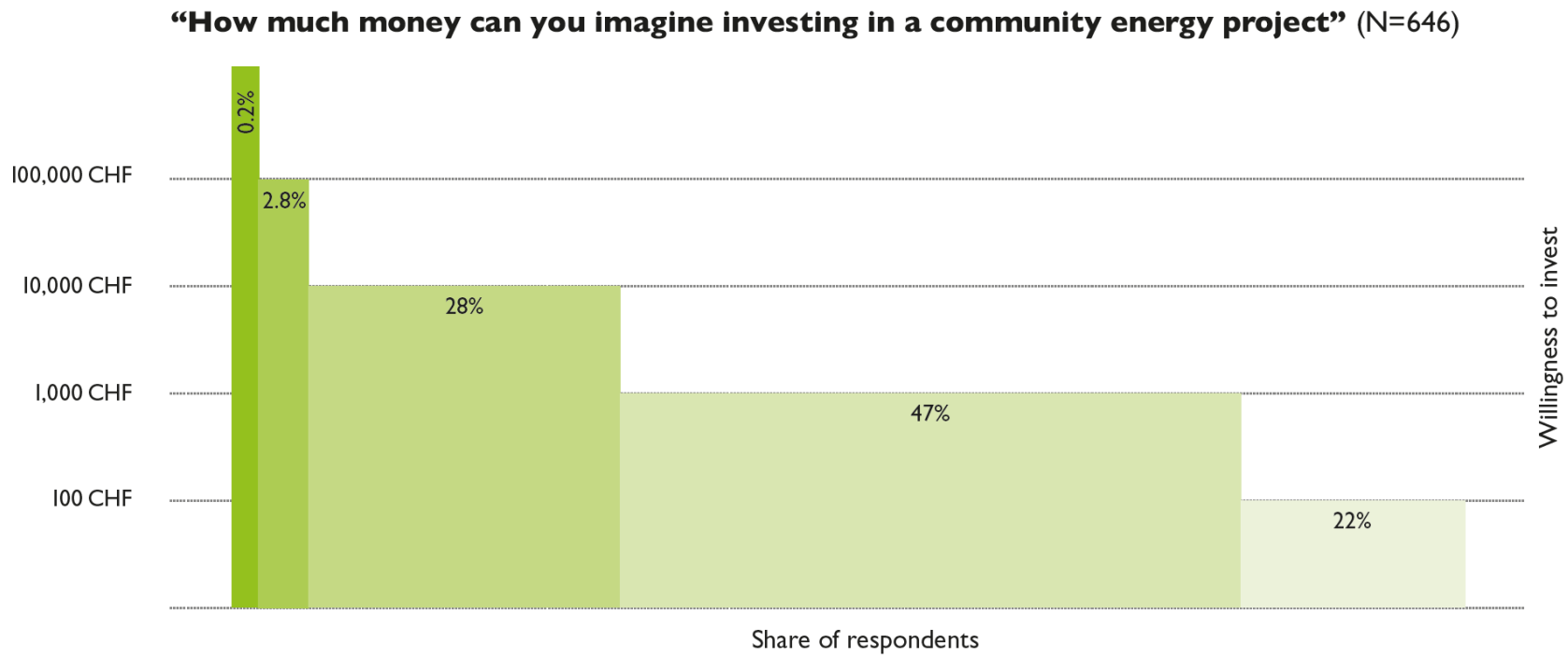
- Document Analysis
- Review of Studies on Future Potential of Swiss Hydropower
- Focus Group with Swiss Hydropower Practitioners
- Expert Interviews with BFE
- Comparison with Product Development Process for Swiss Community Solar Offering





Status Quo of Community Based Participation

Status Quo Swiss Community Based Participation

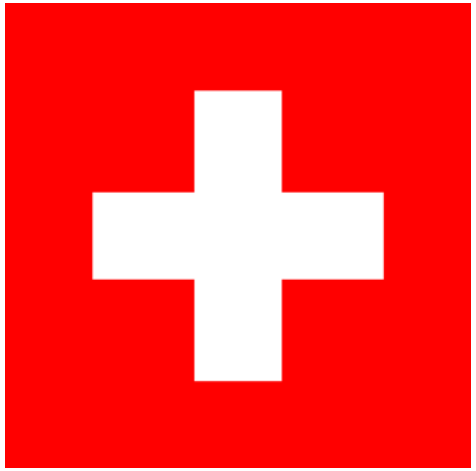


Swiss Community Finance

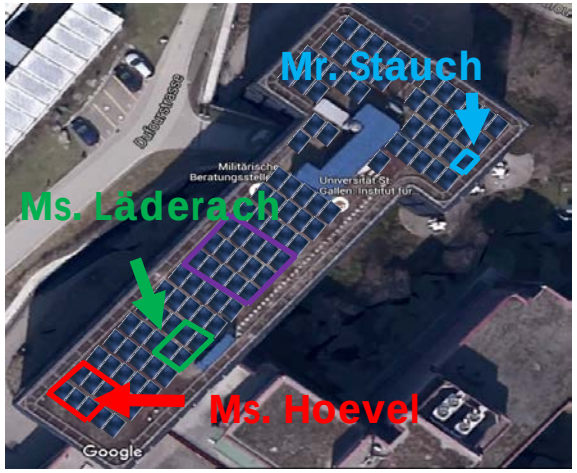
- 61% of surveyed Swiss retail investors are interested in community finance
- Of those, 69% can imagine investing up to 1‘000 CHF, another 28 % between 1‘000 and 10‘000 CHF

Source: Gamma, Stauch & Wüstenhagen (2017)

Status Quo Swiss Community Based Participation



Status Quo Switzerland

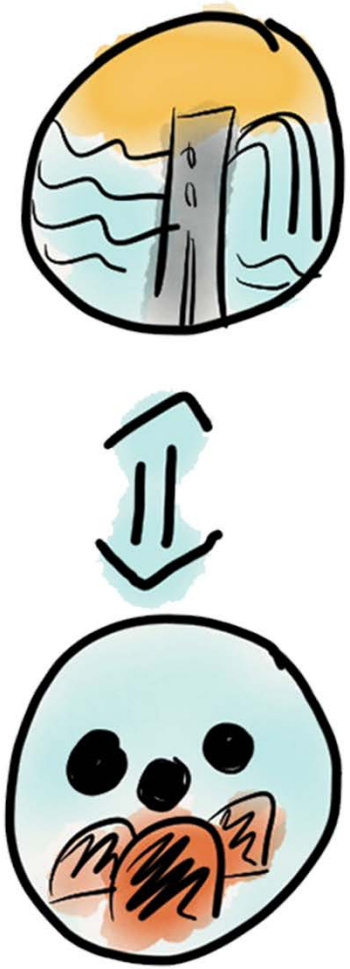


Community Solar

Community Wind

Source: Picture: Dufourstrasse 40a, St. Galllen (google maps), Wind Park Saint-Brais JU

Aspects of Community-Hydro in Switzerland



Potential Actors and Benefits

Potential Actors

Large Utilities

- No (few) end customers
- Large conglomerates
- Typically owner of large hydro power

Small and Medium Utilities

- Strong local position
- Owner of small hydro (historical reasons)
- End customers

Cooperatives

- Strong local focus
- Challenge: Acquiring hydro power plants
- Partnership with utility needed

Potential Benefits

Customers

- Every customer can take part
- Pullout is possible at any time
- Low financial barriers
- Taking part in the Energy Transition

Actors

- Increased customer satisfaction
- Increased customer retention
- Creation of jobs
- Addressing a new customer segment
- Image of a local company
- Contributing to the implementation of the Energy Strategy 2050

Potential Investment Objects

Large Hydropower (>10 MW)

Ownership Structure

- Mostly large Swiss Utilities
- Partner-Plant-Structure
- Conglomerate of state-owned / semi-state-owned utilities
- Option to buy first by partners
- Interested in keeping complexity as low as possible

Project Structure

- Large project sizes
- Many stakeholders involved
- Very long planning phases

Small Hydropower (<10 MW)

Ownership Structure

- Owned by small and medium sized utilities
- Strong connection to the local population – contact to end customers
- Mostly owned directly by utility – not many different stakeholders
- Large number of power plants

Project Structure

- Community Finance friendly project sizes
- Planning phases shorter – national interest

What does that mean for Community-Hydro in Switzerland?

Focus on Small Hydropower

- Using the potential of the existing small hydro power plants
- Restoration of old hydropower plants – in harmony with nature and adhering to ecological standards
- Producing hydropower where it is used – decentral and close to the people

Local Utilities

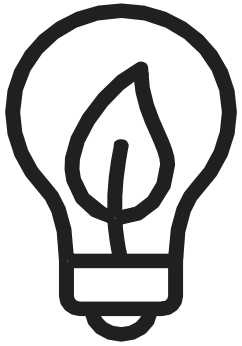
- Local utilities with end customers compared to large utilities (energy producer)
- Direct contact with customers
- Local utilities often times own small hydropower plants
- Need for increased production in hydropower sector obvious

Project Size

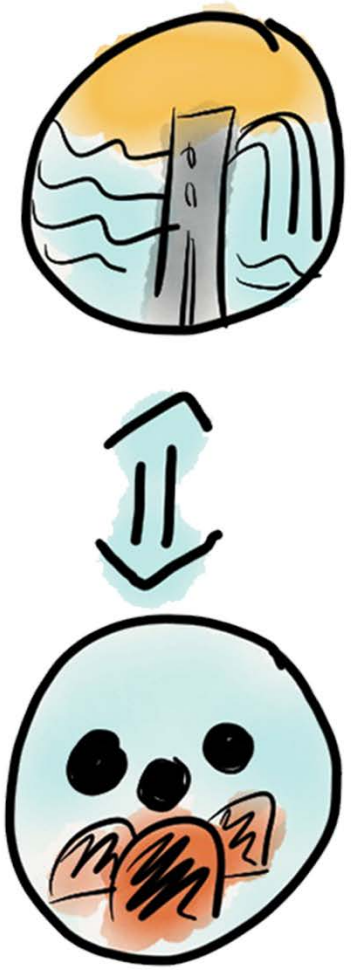
- Small hydro with community-friendly project size
- Duration for projects should be reduced given the ES2050

Tangibility

- Small hydro a lot more visible
- Local attachment to small hydro
- Number of projects available



Outlook on further Research



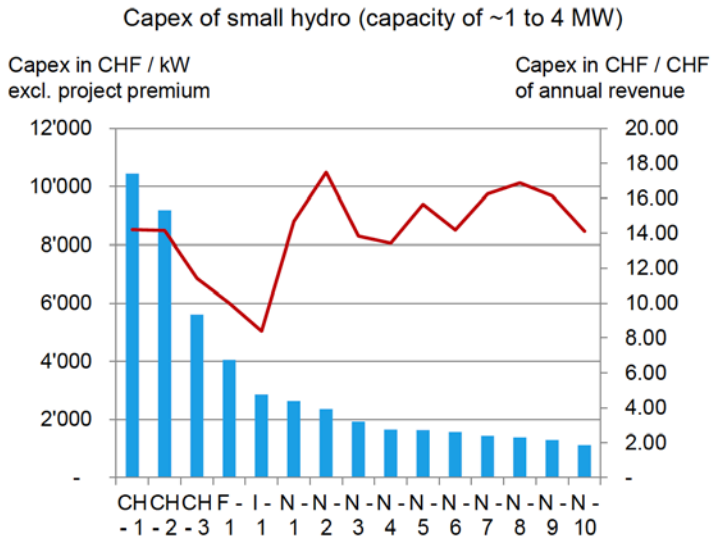
Outlook on Further Research

Role of New Regulation

- Further reducing policy hurdles – Designing other policy instruments in a community-friendly way
- For example: reduced grid costs for community projects

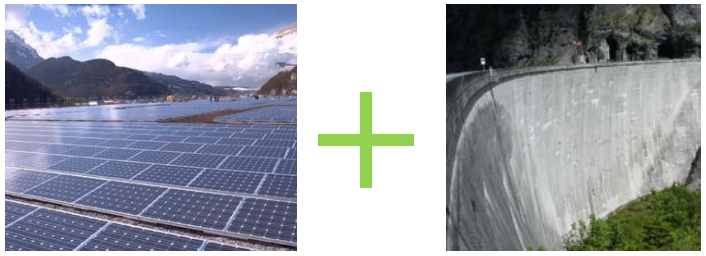
Improving Profitability

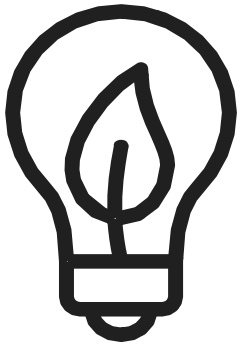
- Reducing Gold-plating in construction in order to address high capex
- Especially given the exclusion of small hydro from the feed-in-tariff system



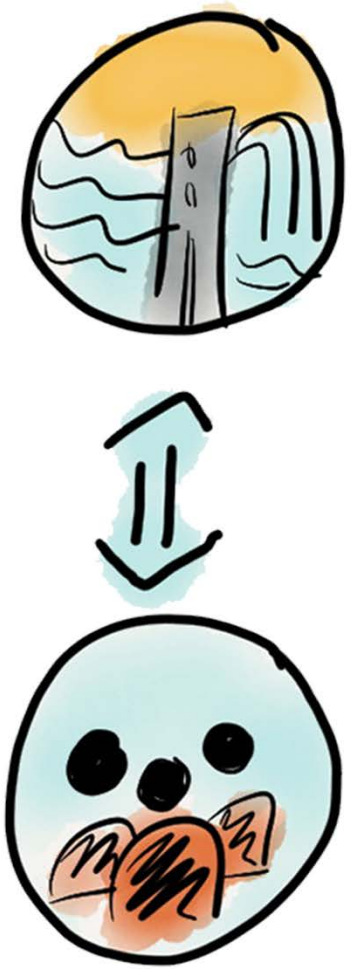
Community Storage + Solar

- Combining Community Solar with Community Storage
- Acquiring your personal storage capacity





Conclusions



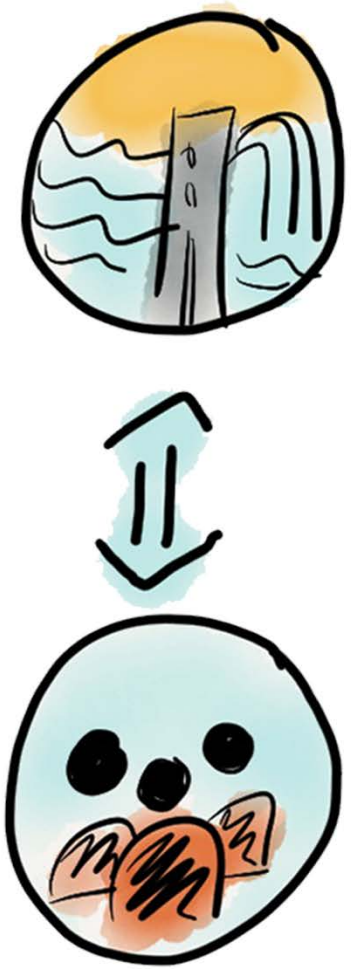
Can Community-Hydro be a concept to support the increase in hydropower production within the context of the Energy Strategy 2050?

Hypothesis: Yes, BUT

Potential Actor	Potential Object	Potential Customer
▪ Small and Medium Utility ▪ Strong contact to end customers ▪ Interest in customer retention and satisfaction	▪ Small hydropower plant ▪ High visibility and tangibility ▪ Producing hydropower where it is used ▪ Large number of projects	▪ Low financial barriers ▪ Locally attached ▪ Pullout option at any time ▪ Being part of the Energy Transition

Challenges
▪ Profitability of small hydro ▪ Consequences of regulation changes due to ES2050

Thank you very much for your attention!



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