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

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

**Process**

- **Hydropower plant**
  - Produced hydropower gets fed into the grid

- **Utilities**

- **Customers**
  - Customers buy a part of the hydro power plant

- **Customers**
  - Customers get compensated for their parts

**Visualization**

Source: Adapted from Chwastyk & Sterling (2015)
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
§ 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

Source: Picture: Dufourstrasse 40a, St. Gallen (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

<table>
<thead>
<tr>
<th>Potential Actor</th>
<th>Potential Object</th>
<th>Potential Customer</th>
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</table>
| ▪ 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!
Sources


- Focus Group – Workshop: How to make capital costs of hydropower plants in Switzerland work for investors. REMforum, May 12th 2017.