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NINA
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HydroBalance WP 5

Results from study of non-technical barriers on local and national levels.

Marte Qvenild and Gerd Jacobsen, SINTEF Energy Research

CEDREN
Centre for Environmental Design of Renewable Energy

FME CENTRE FOR ENVIRONMENT-FRIENDLY ENERGY RESEARCH

Why are "non-technical challenges" important to address?

- Renewable energy infrastructure generally supported as an important means to reach climate targets

- Actual implementation is often controversial

Structure of presentation

- Overview of WP5
- Methods
- Results task 5.1: Policy and regulatory framework
- Results task 5.2: Societal acceptance
  - National stakeholders views;
    - Pre-study in 2011 and new study in 2015
  - Local stakeholders views;
    - Case study: Tyin as an illustration
- Conclusion: Non-technical challenges for hydrobalancing from Norway and possible measures

Overview WP 5

- SINTEF Energy Research, Norwegian Institute for Nature Research (NINA), and the University of Exeter (UK)

- Pre-study, conducted in 2011 (published in 2015)

- WP 5 tasks:
  - ***Task 5.1:*** *What are the regulatory and policy barriers and drivers related to increased use of balancing services?*
  - ***Task 5.2:*** *How are increased uses of balancing services perceived among stakeholders at the national, regional and local level?*
  - ***Task 5.3:*** *What are the main non-technical challenges that have to be addressed?*

Methods

- Qualitative methods (document analysis, interviews, focus groups)

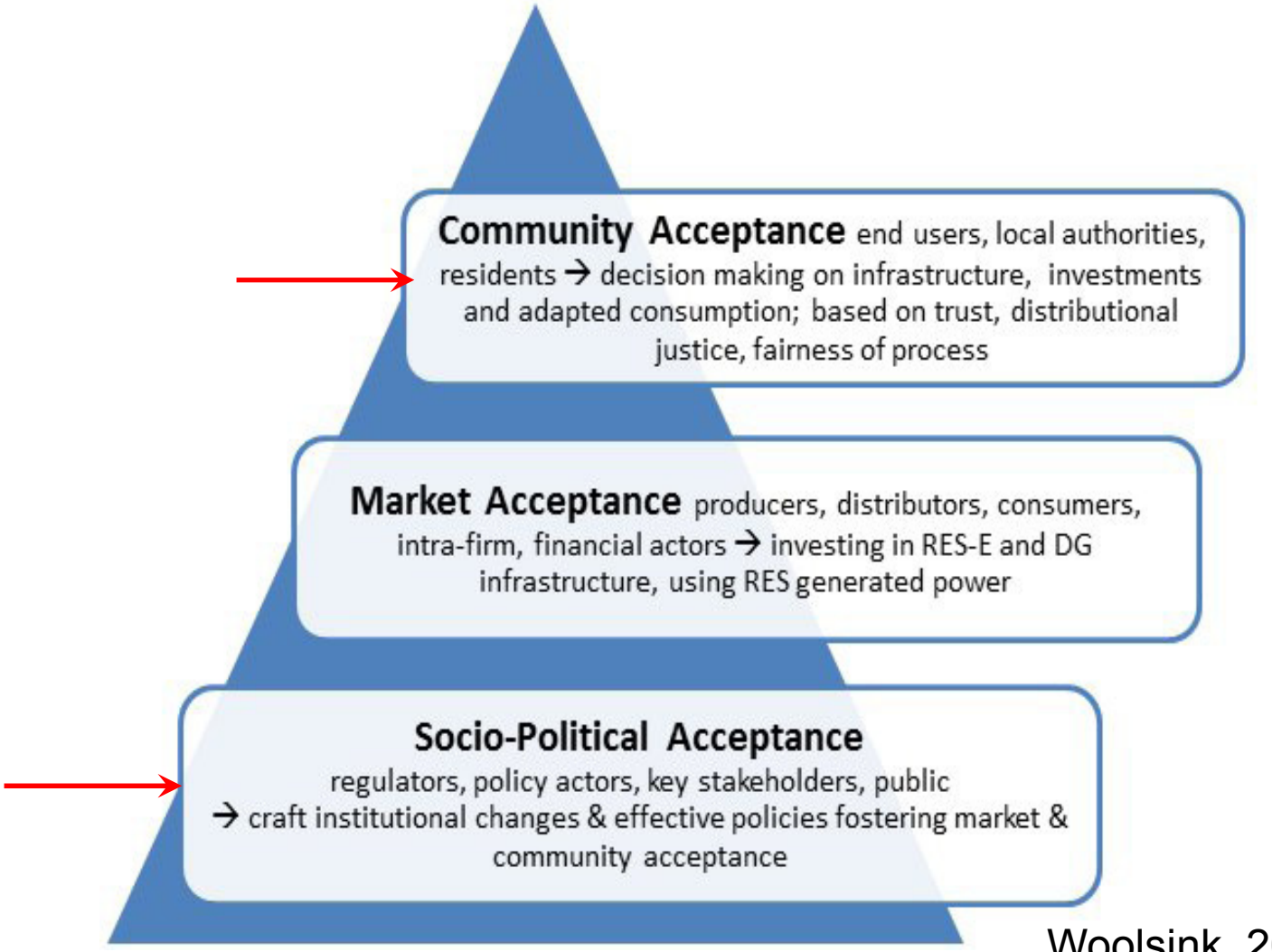
- Key informant interviews:
  - National level: Four informant groups
    - *Companies* (Statnett, Statkraft)
    - *Interest organizations* that represent environmental interest and energy intensive industry and hydro power interest
    - *Authorities* (The Norwegian Water Resources and Energy Directorate and The Norwegian Environment Agency)
    - MPs of *The Norwegian Parliament* (The Conservative Party, The Liberal Party and the Labor Party).

- Focus group in Tyin - an illustrative example of local acceptance related to hydrobalancing development
    - Criteria for selection: A reservoir with balance power potential, Recreational use and various user interests
    - Number of participants (13): landowners (3), cabin owners (1), tourist entrepreneurs (3), local authorities (3) and NGO like friends of the earth (2) and the local hunters and anglers association (1)

Results task 5.1. Policy and regulatory framework

- No explicit hydrobalancing strategy or decision yet made by national policy-makers, and no specific incentives for hydrobalancing have been proposed thus far.
  - The notion of "green battery" not present in any strategies or policy documents
- However, current government has signaled positive attitude towards balancing power
  - Two new interconnectors from Norway to UK and Germany were recently granted licenses
- The current licensing system and other regulations are seen as sufficient to handle eventual hydropower development
  - Not proposed new policy instruments.
- Norwegian interest for further hydrobalancing development will depend on signals from EU and recipient countries.
  - Capacity markets and perceived as a challenge

What is social acceptance?



Woolsink, 2012

Socio-political acceptance: Study of national stakeholders in Norway

- A pre-study undertaken by Egeland and Andersen in 2011 amongst key Norwegian stakeholders (published in the report Solvang et al 2015)
  - 22 national stakeholders (energy companies, environmental NGOs and host communities)

- The study explored:
  - Legitimacy of using Norwegian hydropower as 'green battery' for Europe
  - The main socio-political drivers and barriers for Norwegian hydrobalancing
  - Finally the pre-study examined how the most important barriers could be overcome.

- Current study (2015): Any changes in attitudes?
  - Including MPs of *The Norwegian Parliament*
  - Approved interconnector projects to the UK and to Germany

Comparison: 2011 study and 2015 study

2011 study (Solvang et al 2015)	2015 (Knudsen et al. Forthcoming)
All stakeholders supported the idea of Norwegian hydrobalancing. BUT: Doubted the *realism* of large scale hydrobalancing	Stakeholder more divided; "sceptics" and "supporters" of Norwegian hydrobalancing All support a certain combination of domestic energy use and export

Sceptics:
"It is more politically sensible to consider how the Norwegian energy can be used to stimulate domestic industrial investments, than to be exported abroad". (MP)

Supporters:
"No one aims to solve Europe's energy need, but we can contribute a lot" (Interest organization)

Comparison: 2011 study and 2015 study

2011 study (Solvang et al 2015)	2015 (Knudsen et al. Forthcoming)
Use metaphor "green battery"	Do not use metaphor "green battery"

I1: "We had a notion or vision of Norway as Europe's green battery"

I2: "…that was a terrible rhetoric!"

I1: "Yes, firstly it is directly harmful as it gave the impression that we had an unrealistic understanding about how Europe perceived Norway. We naively thought that Norway was going to save Europe's energy future" (Interest organization)

Comparison: 2011 study and 2015 study

2011 study (Solvang et al 2015)	2015 (Knudsen et al. Forthcoming)
Important barriers - Commercial basis for pumped storage - Existing grid policy - Distribution of benefits and costs from new cables - Share of benefits to host communities - Biodiversity concerns - Lack of a clear European strategy	Most of these barriers still prevail in 2015

Community acceptance: The Tyin case

- Located in Vang (Oppland) and Årdal (Sogn og Fjordande)
- Lake Tyin is 33 km^2 large, with a catchment area of 387 km^2
- The Tyin lake is the upper reservoir for Tyin power plant, water outlet in lake Årdalsvatnet
- Established in 1910, totally modified in 2004
- Entrance point of Jotunheimen national park and a heavily used area for recreational activities such as hiking, mountaineering, skiing, hunting and angling.
- The tourist/recreational seasonal use is year round, with peaks in autumn and spring

Community acceptance

- NIMBY ("Not in my backyard")
- Opposition by residents to a proposal for a new development because it is close to them
- Often more nuanced community opposition: Not necessarily selfishness, but concern for local community, landscape qualities and biodiversity, or perceptions of what fits into the rural landscape

General concerns about environmental, visual and economic impacts locally

- "If the water level in Tyin is regulated more rapid up and down, the sources of food for the fish stock will be washed away along the shore" (Local informant, NGO)

- "If this happen it will be dangerous and impossible to travel on Tyin during winter time" (Local informant, Landowner)

- "In Tyin the water is completely clean. If you start pumping water into Tyin it will be polluted" (Local informant, Landowner)

- "People come here because of nature. Many already comments that a low water level make the shore look ugly" (Local informant, tourist entrepreneur)

How can Hydrobalancing be locally accepted?

- Measures should be done with least possible environmental impact
- Electronic warning system (security issue)
- Early involvement and information about possible social and environmental impacts
- Improve/maintain local infrastructure (ski tracks, keeping roads open over the winter, maintaining boat piers, roads, internet access)

Non-technical challenges for Hydrobalancing from Norway

- ***Task 5.1:*** *What are the regulatory and policy barriers and drivers related to increased use of balancing services?*
  - No overall strategy with long-term objectives for hydrobalancing
    A clear political commitment from European countries and the prospect of a long-term, standardized market framework will increase Norwegian political decision-makers' confidence and long-term interest.

- ***Task 5.2:*** *How are increased uses of balancing services perceived among stakeholders at the national, regional and local level?*
  - *A general support for the idea of hydrobalancing*
  - Issues to be resolved at national level: grid infrastructure, cable ownership, distribution of costs and benefits

- ***Task 5.3:*** *What are the main non-technical challenges that have to be addressed ?*
  - Non-technical challenges both related to policy framework (5.1) and societal acceptance (5.2)
  - ➢ **How to overcome the challenges?**
  - Early involvement of local stakeholders to increase community acceptance
  - Compensation measures (local infrastructure, electronic warning system, development funds) at the local level seem to be a key measure in order to prevent conflicts and ensure less time-consuming processes.