



# Organizing shared resources and alternative business models

NTNU Samfunnsforskning

Catharina Lindheim, Gudveig Gjøsund, Lucia Liste, Asle Gauteplass

## Shared Resources' goal

---

**What can be done to increase the possibilities to establish energy- and resource collaborations?**



Inspire HighEFF members – and others – to creative thinking when searching for new energy collaborations, and by this increase the number of such collaborations.



# Data Collection

---

- Mapping existing relevant cases
- Internal collaboration within HighEFF:
  - RA6 – build on their work, form the basis for selected industries
  - RA5 – sharing empirical data
- Insights from reference group for case selection
- Insights from HighEFF workshop (mini-workshops)
- Two main cases (Elkem Salten and Alcoa Mosjøen)
  - Interviews with 18 informants representing a variety of actors
- Four secondary cases (incl. RA5 contribution)
  - Interviews and meetings (incl. RA5 contribution)
- Interviews aquaculture and greenhouse farming (incl. RA5 contribution)

# Preliminary findings

---

Elements being crucial to the challenges such energy collaborations face  
- and to the potential solutions

1. Types of collaboration
2. Possible partners and stakeholders
3. Timeline

# Preliminary findings

Elements being crucial to the challenges such energy collaborations face  
- and to the potential solutions

## 1. Types of collaboration

- Brownfield vs greenfield
- City or countryside
- Bilateral or multilateral (3+ partners) industrial collaboration
- Public-private collaboration

# Preliminary findings

Elements being crucial to the challenges such energy collaborations face  
- and to the potential solutions

1. Types of collaboration
2. Possible partners and stakeholders

- Local, regional and national authorities
- Resource suppliers
- Resource users
- Local enthusiasts
- Other suppliers of services, industries, companies
- Investors / Third partner
- R&D and education
- Trade unions
- Insurance companies
- Industrial parks organizations



# Preliminary findings -

Elements being crucial to the challenges such energy collaborations face  
- and to the potential solutions

1. Types of collaboration
  2. Possible partners and stakeholders
  3. Timeline
- Preparation
    - Location, compatibility/technologically feasible, common understanding, shared goals, anchorage, risk assessment
  - During the process of establishing agreement
    - stakeholders, partners, contractual issues, price models, risk sharing
  - After the establishment
    - daily operation and maintenance, support, flexibility
  - Continuously
    - dialogue with municipality, promote creative environment, autonomy

## Preliminary findings -

---

Elements being crucial to the challenges such energy collaborations face  
- and to the potential solutions

1. Types of collaboration
2. Possible partners and stakeholders
3. Timeline

*The first two are also important for choice of business model*



## Preliminary findings – Barriers and enablers (examples)

Barriers	Handling opportunities / Enablers
Costs	<ul style="list-style-type: none"> <li>• holistic mindset (long term perspective, socioeconomic profitability)</li> <li>• <b>service exchange</b></li> <li>• financial support schemes from public authorities (ENOVA, regional and national authorities)</li> </ul>
Lack of competence in the location	<ul style="list-style-type: none"> <li>• collaboration with other municipalities</li> <li>• use R&amp;D and university sector (new graduates and summer jobs)</li> <li>• share knowledge on special areas (i.e.: IT, logistic, automation)</li> <li>• have an attractive municipality</li> <li>• flexible organization of work</li> </ul>
Lack of ideas/ knowledge	<ul style="list-style-type: none"> <li>• <b>create a proactive local environment</b></li> <li>• include R&amp;D within industry</li> <li>• mainstream circular economy in education (high school, business schools, engineering, etc)</li> </ul>
Technical challenges	<ul style="list-style-type: none"> <li>• alignment of available surplus energy and use (in early stage)</li> <li>• cooperate with R&amp;D</li> <li>• invest in R&amp;D</li> </ul>
Management style/ Ownership	<ul style="list-style-type: none"> <li>• less conservative and de-centralized management style (risk taking, long time perspective, local autonomy, oriented on community outside industry)</li> </ul>
Risk	<ul style="list-style-type: none"> <li>• to share it with partners</li> <li>• public instruments for risk management</li> </ul>
Bureaucracy	<ul style="list-style-type: none"> <li>• effective case processing,</li> <li>• <b>close dialogue between local authorities and company over time (beyond a specific case)</b></li> <li>• use people with different hats</li> </ul>

## Preliminary findings – Matrix

	Greenfield	District	Value-chain	Public partner	
Community		+		+	
Contract process	+			+	
Inter - dependence	+		+		
Possible side-effects		+		+	

Correlation between type of collaboration and barriers/enablers/solutions (examples)

## Preliminary findings – Contracts and Business models

*How could this – in some way or another – be beneficial to us?*

Relevant questions, contract models

- Who should be involved, and how?
- **What should be included?**
- Choice of pricing model
- How to share risk
- Government's role



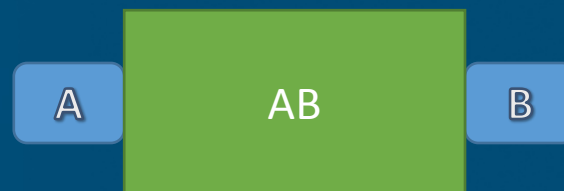
Possible collaboration with IØT (NTNU)



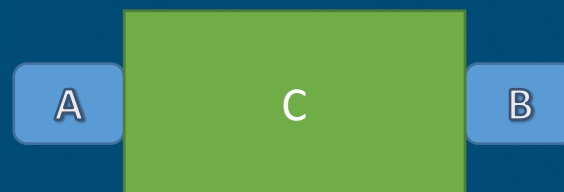
## Preliminary findings – Business models II



- A and/or B owns infrastructure, separately
- Choice of interface between A and B
- Eks. Elkem Salten and Sisomar, district heating



- A and B owns infrastructure together
- Eks. Elkem Salten and Kvitebjørn



- A third party own and runs the infrastructure and distributes energy (other resources)
- Eks. industry parks

The project are in the process of identify and synthesize

- important enablers
- potential additional contract elements for resource collaboration
- correlation between type of collaboration and barriers/solutions
- relationship between business models and barriers/solutions

to be included in the project report / handbook

# Inputs or comments?

---

How to present the  
results to HighEFF

What will be  
useful

Useful contract  
elements

Student  
papers

Changes in  
governmental  
schemes