A Review of Impacts, Limitations and Barriers

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Energy Sector: Context (1/2)

**Issue 1:**
Long history of energy generation from polluting and harmful sources (ie. coal, nuclear, natural gas)

**Outcomes:**
- Almost irreversible concentration of carbon dioxide in the atmosphere (Foster et al 2009)
- Increased healthcare issues and costs (DSS Management 2005)
- Displacement/poisoning of communities worldwide (Shiva 2002)
Issue 2:

Long history of centralized (state and corporate) ownership, planning and generation of energy generation

Outcomes:

- Efficiency losses during transmission
- Supply and price volatility (Lovins et al, 2002)
- Communities excluded from decision-making and benefits
- Perceptual disconnect from energy (Pasqualetti 2009)
Energy Sector: Renewables

Increased uptake of renewable energy (RE) since 1990s, however:

- Ownership mostly corporate (Huybrechts and Mertens, 2014)
- 80% of electricity generation still from fossil fuels as of late 2013 (REN21, 2014)

- Transition towards a sustainable energy system requires not only a switch to renewables, but also decentralization, democratization, and community participation!
What is Community Energy? (1/2)

- **Broad definition:** Direct community participation in, and ownership of, renewable energy (RE) projects

- Lack of unequivocal definition due to fluid meaning and self-defined nature of a ‘community’

- Communities can be brought together by geography, interest, etc. (van der Horst 2008)
What is Community Energy? (2/2)

- **CE Ownership Models:**
  - Co-operatives
  - Community Trusts (i.e. CEDIF model in Nova Scotia)
  - Non-profit entities
  - Municipal ownership
  - LLCs
  - ...and more

- How to tell a genuinely “community” owned RE project from one that is not?
Setting “Community” Energy Apart

Source: Walker and Devine-Wright 2008: 498
Renewable Energy Co-operatives

- A co-operative with the primary business of generation heat and/or electricity from renewable sources
  - Other co-ops in the RE sector: distribution, consumer, purchasing, service, etc.
RE Generation Co-ops Around the World

- As of early 2014, around 3,000 RE co-ops across Europe (80% in Denmark and Germany) – (REScoop.eu 2014)

- **Germany**
  - As of Spring 2012, 800m Euros invested for 290,000 MWh of power (DGRV 2013)

- **Denmark**
  - 3/4 of country’s windmills co-op owned
RE Co-ops in Canada

- 31 active RE co-ops in Ontario
  - 212 projects awarded Feed-in-Tariff contracts
  - Majority in development – 68%
  - Total of 75 MW capacity
  - $27 million raised

- Very limited activity outside of Ontario
Economic Impact on Members

1. Sharing costs of capital-intensive RE projects
   - Increased access to RE projects
   - Unsuitable properties

2. Income from electricity/heat sales
   - Feed-in Tariffs

3. Consumption of generated energy
   - Avoiding supply and price volatility (DGRV 2013; Platform 2014)

4. Generation of additional economic opportunities
   - Farmer-led RE co-operatives (Schreuer 2010)
Local Economic Impacts

1. Job Creation
   - 1.1 to 1.3 times more construction jobs
   - 1.1 to 2.8 times more operations & maintenance jobs
     (Lantz 2009)

2. Local Economic Activity
   - 5x more resources stay in the local economy
     (Galluzzo 2005)
   - Partnerships with other local institutions
     (municipalities, schools, hospitals, co-ops, etc.)

3. Surplus re-investment in the Community
Limitations to Economic Impacts

1. Not all projects succeed!

1. Communities-of-location vs Communities-of-interest (Tarhan 2015)

2. Exclusion of ‘community’ members lacking financial means

3. RE is capital-intensive
   - Low-income communities? (Tarhan 2015)
Social Impacts

1. Social Cohesion
   - ‘stronger sense of community’ (Willis and Willis 2012: 12)
   - ‘better spirit among people’ (Rogers et al 2008: 4223)
   - ‘in the old days the tone was one of heated debate and dispute – these days, decisions are reached far more quickly’ (DGRV 2013: 12)

2. Community Empowerment
   - ‘empowering impact of raising money funds from within the community versus some big company somewhere else’ (Willis and Willis 2012: 26)
   - Increased confidence, interest and capacity
Limitations to Social Impacts

Increased social friction

- Existing low levels of trust (Walker et al 2010)

- Undemocratic processes and/or private outcomes
  - Moel Maelogan (Ibid)

- Political and ideological divisions (Huybrechts and Mertens 2014)
Ecological/Perceptual Impacts

1. Clean Energy Generation

2. Increased acceptance of RE projects
   □ Overcoming NIMBYism?
     □ Zchadraß vs Nossen, Germany (Musall and Kuik 2011)

3. Promoting a culture of conservation?
   □ Prosumers are prone to conservation behaviours (Stern et al 1999; Devine-Wright 2007)
Barriers to RE Co-ops’ Emergence (1/2)

Perceptual Barriers

- Long history of centralized energy policy, planning and generation
  - Lack of community confidence (Rogers et al 2008)

- Lack of awareness among general public, politicians, financial sector, the co-operative sector (Huybrechts and Mertens 2014)
Barriers to RE Co-ops’ Emergence (2/2)

Barriers to Market Entry

- Access to capital (esp. start-up phase) (Huybrechts and Mertens 2014)
  - Key volunteer skills is crucial
  - Volunteer burnout an issue

- Lack of policy and project development support (Walker 2008; Seyfang et al 2012)

- Access to the grid (Lipp et al 2012)
Conclusions (1/2)

- Successful RE co-ops generate positive community development outcomes
  - while accelerating the social and perceptual dimensions of the global energy transition

- Co-op ownership does not guarantee successful outcomes of RE projects
  - *Processes and outcomes* matter (Tarhan, 2015)
  - Policy – and social demand for policy matter
Conclusions (2/2)

- Further research required for:
  - Insight into failed projects
  - Strategies to enable participation of low-income communities and individuals
  - Relationship between co-op membership and conservation behaviours (Tarhan, 2015)
Questions & Comments

- Thank you!

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References (1/2)


References (2/2)


