Citizens’ views on the future of decentralized renewable energy

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FutWend

- FutWend – project: Towards a future-oriented “Energiewende”: An anticipatory multi-level approach to the decentralised renewable energy transition
- Funded by the Academy of Finland (2016-2019)
- Partners: Finland Futures Research Centre (FFRC), Luke & Finnish Environment Institute (SYKE)
- The survey team: Vilja Varho and Annukka Vainio (Luke), Anna Pulkka and Riikka Paloniemi (Finnish Environment Institute SYKE) & Petri Tapio (FFRC)
Aim and research questions

**Aim:** Studying how Finnish people view the energy sector, its potential changes, and drivers.

**Research questions:**
- How desirable do citizens perceive various energy production forms?
- What dimensions can be found in the citizens’ images of Finnish energy system in 2030?
- What types of drivers do citizens consider important in the transition towards sustainable energy?
Data

• Marketing research company arranged an online panel, representative of the 17-75 years old internet users in Finland (N=1012), September 2017.

• Men, higher education and Southern Finland somewhat over-represented in the sample
Analysis

• Three sets of items analysed with exploratory factor analysis (EFA) using Maximum Likelihood and Varimax rotation for each set separately.

• EFA groups the items into clusters based on shared variance. Factors with eigenvalue of 1 or over were selected for further analysis (Kaiser, 1960) and factor loadings of $\pm 0.40$ or over (the absolute value) in the rotated solutions were used as a cut-off for selecting items for each factor (Stevens, 2012).
MLP – levels of transition

Increasing structuration of activities in local practices

Socio-technical landscape (exogenous context)

Socio-technical regime

Markets, user preferences

Industry

Science

Policy

Culture

Technology

Socio-technical regime is ‘dynamically stable’. On different dimensions there are ongoing processes.

New configuration breaks through, taking advantage of ‘windows of opportunity’. Adjustments occur in socio-technical regime.

External influences on niches (via expectations and networks)

Niche-innovations

Elements become aligned, and stabilise in a dominant design. Internal momentum increases.

Small networks of actors support novelties on the basis of expectations and visions. Learning processes take place on multiple dimensions (co-construction). Efforts to link different elements in a seamless web.

Time

Source: Geels 2011
### Results 1/3: Energy forms

<table>
<thead>
<tr>
<th></th>
<th>Next generation renewables</th>
<th>Fossil energy</th>
<th>Bioenergy</th>
<th>Established renewable vs. nuclear energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave energy</td>
<td>.70</td>
<td>-.10</td>
<td>.11</td>
<td>.21</td>
</tr>
<tr>
<td>A technology that is not yet in use</td>
<td>.70</td>
<td>-.18</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td>Ground source heat and other geothermal</td>
<td>.61</td>
<td>-.18</td>
<td>.22</td>
<td>.02</td>
</tr>
<tr>
<td>Coal</td>
<td>-.25</td>
<td>.91</td>
<td>.00</td>
<td>.03</td>
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<tr>
<td>Oil</td>
<td>-.22</td>
<td>.64</td>
<td>.16</td>
<td>-.20</td>
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<tr>
<td>Wood</td>
<td>.03</td>
<td>.07</td>
<td>.58</td>
<td>-.05</td>
</tr>
<tr>
<td>Biogas</td>
<td>.26</td>
<td>-.07</td>
<td>.53</td>
<td>.04</td>
</tr>
<tr>
<td>Arable energy plants</td>
<td>.34</td>
<td>-.02</td>
<td>.52</td>
<td>.19</td>
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<tr>
<td>Peat</td>
<td>-.20</td>
<td>.41</td>
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<td>.02</td>
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<tr>
<td>Natural gas</td>
<td>.04</td>
<td>.24</td>
<td>.32</td>
<td>-.10</td>
</tr>
<tr>
<td>Wind power</td>
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<td>-.09</td>
<td>-.05</td>
<td>.71</td>
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<tr>
<td>Nuclear power</td>
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<td>.08</td>
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<tr>
<td>Solar power</td>
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<tr>
<td>Hydropower</td>
<td>-.04</td>
<td>.12</td>
<td>.20</td>
<td>.33</td>
</tr>
</tbody>
</table>
Results 2/3: Energy sector changes

• 1 Renewing energy market: A new type of energy market, where renewable energy is increasing, new energy producers / prosumers have emerged alongside new business models, with smart technologies enabling it all. An energy regime transition.

• 2 Domestic power: Local energy companies, citizens and the state all have a significant role. International actors, on the other hand, are not present. Climate change affects energy policy decisions. Policy regime emphasised.

• 3 Small scale producers: Self-reliance is increased, new innovations are taken to use and prosumers share their energy to the grid, allowing households to buy from them. Represents a growing niche: the image is still not mainstream but rather characterised by individual prosumers’ activity.

• 4 Consumer awareness: The consumers are more aware of energy production alternatives and their environmental impacts. The regime and the markets have not changed. The awareness does not find an outlet, or is demonstrated in the purchase of “green” electricity from conventional energy producers.
Results 3/3: Drivers of transition to low environmental impacts

- **1 Mainstreaming renewable energy**: More drivers were loaded to this factor than any of the others. Various obstacles are removed: RE becomes more affordable, information gaps are removed, funding is available and companies take action. Existing actors suffice, the energy regime participates in the transition (policy making, finance sector, research, business sector, construction sector, education). No radical changes, rather the gradual removal of market barriers. Power resides mainly in the market: if renewable energy is affordable and feasible, it will be taken to use.

- **2 International actors**: Other states, environmental agreements and international corporations. This vision reflects the assumption that large-scale actors determine also the national energy sector. They are likely to affect markets, and possibly encourage Finnish policy makers and energy producers towards environmental sustainability. Both policy and markets seem to change in the landscape level.
Results 3/3: Drivers of transition to low environmental impacts

• 1 Mainstreaming renewable energy
• 2 International actors
• 3 Individual actions: Individual action and public acknowledgement of prosumerism. Responsibly behaving individuals take action and the small scale production of energy becomes well-known and perhaps a form of self-expression. Institutions do not dramatically change, instead the ordinary people gradually embrace new behaviour.
• 4 Changing values and economy: Large-scale, systemic changes such as degrowth. This signifies a much broader change than that of the energy sector regime: the entire economic landscape is changing.
• 5 Emancipatory change: A change in citizenship. A “citizen” rather than a “consumer” drives the change. Citizens are seen as more enlightened or environmentally friendly than the existing regimes. People are seen as a collective rather than individuals. The present political system is challenged: a change is required for environmental reformation.
Discussion

• Finnish respondents strongly support the sustainable energy transition.
• The majority of the respondents preferred the production and consumption of RE to increase (both currently used and new ones), and the use of fossil energy to decrease by 2030.
• Citizens’ future-oriented values and attitudes have an important role in driving transition
  – but only when citizens have the possibility to actively engage in transition
References


Thank you!