



Aalto-yliopisto
Kauppakorkeakoulu



LAICA

Looking for active energy citizens (LAICA)

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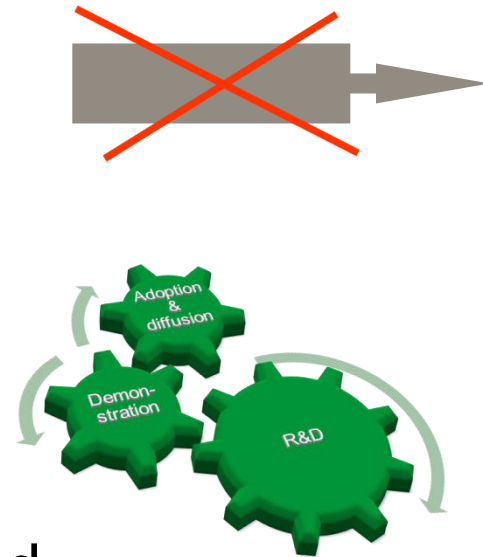
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Why LAICA?

- LAICA explores an alternative to traditional top-down approach to climate policy & the linear model of innovation diffusion
- Diffusion is a process of local (re)invention
 - necessary for technology to become accepted
 - necessary for technology to become useful and owned
 - can also enhance quality, expand the scope of tech solutions
- User innovation can also offer ownership and local meaning to the abstract global problem of climate change mitigation
 - **People are not just 'targets' or victims but active players!**



Finland's 1,1 million detached homes as "innovation environments"

- Completely new inventions
- Improvement and modification of existing technology to local conditions
- Combinations of existing technology in appropriate ways for user needs
- Domestication, learning to use, sense-making, adaption of/to everyday life
- Innovations-in-practice: new ways of using the building, organizing one's life, organizing social relations

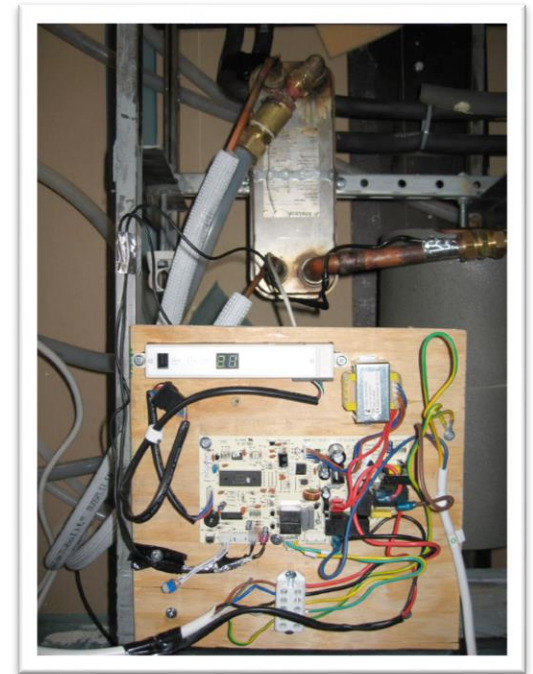


Aims of LAICA

- A. Identify and assess citizens' roles in shaping, configuring and locally adapting innovative solutions for energy saving and distributed renewable energy
- B. Identify sources and stimuli for low-carbon innovations, including crises and exceptional weather conditions
- C. Identify citizen-driven and local solutions that have a potential to mitigate climate change on the national level
- D. Examine pathways for their transfer among users and promote uptake of solutions via interventions
- E. As a synthesis: participate in rescaling and reframing of climate policy so that local and citizens' everyday activities are included.

A. Identify and assess citizens' roles in shaping, configuring and locally adapting innovative solutions for energy saving and distributed renewable energy

- More than 200 user innovations identified in heat pumps, pellet burning systems, solar collectors and solar photovoltaic systems in citizen-run discussion forums
- Forums facilitate innovations in practice, in adopting and combining renewable heating solutions, assisting in domestication pathways of new technologies



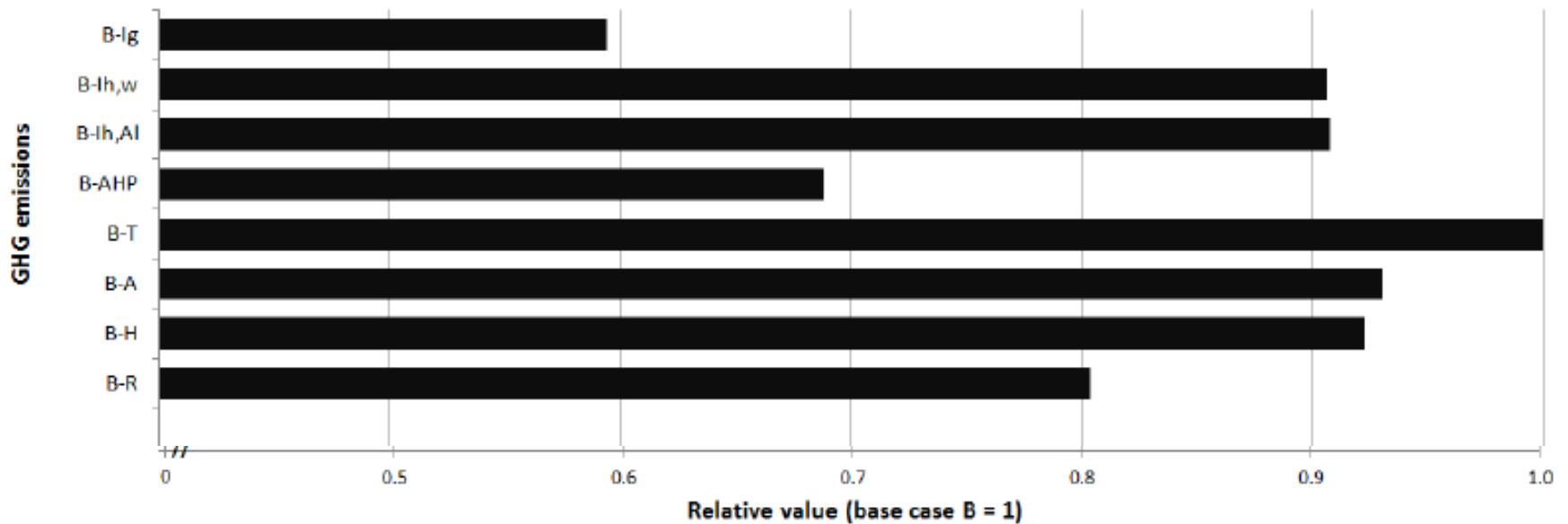
B. Identify sources and stimuli for low-carbon innovations, including crises and exceptional weather conditions

- Stability is the norm, and everyday practices are seldom challenged by distant problems like climate change
- Other more local crises explored via diary data & practice studies:
 - power cuts and cold/hot winters usually occasion only short-term measures to reinstate the status quo
 - ownership changes of detached homes are a moment for "opportunistic climate policy", bringing in new evaluation criteria

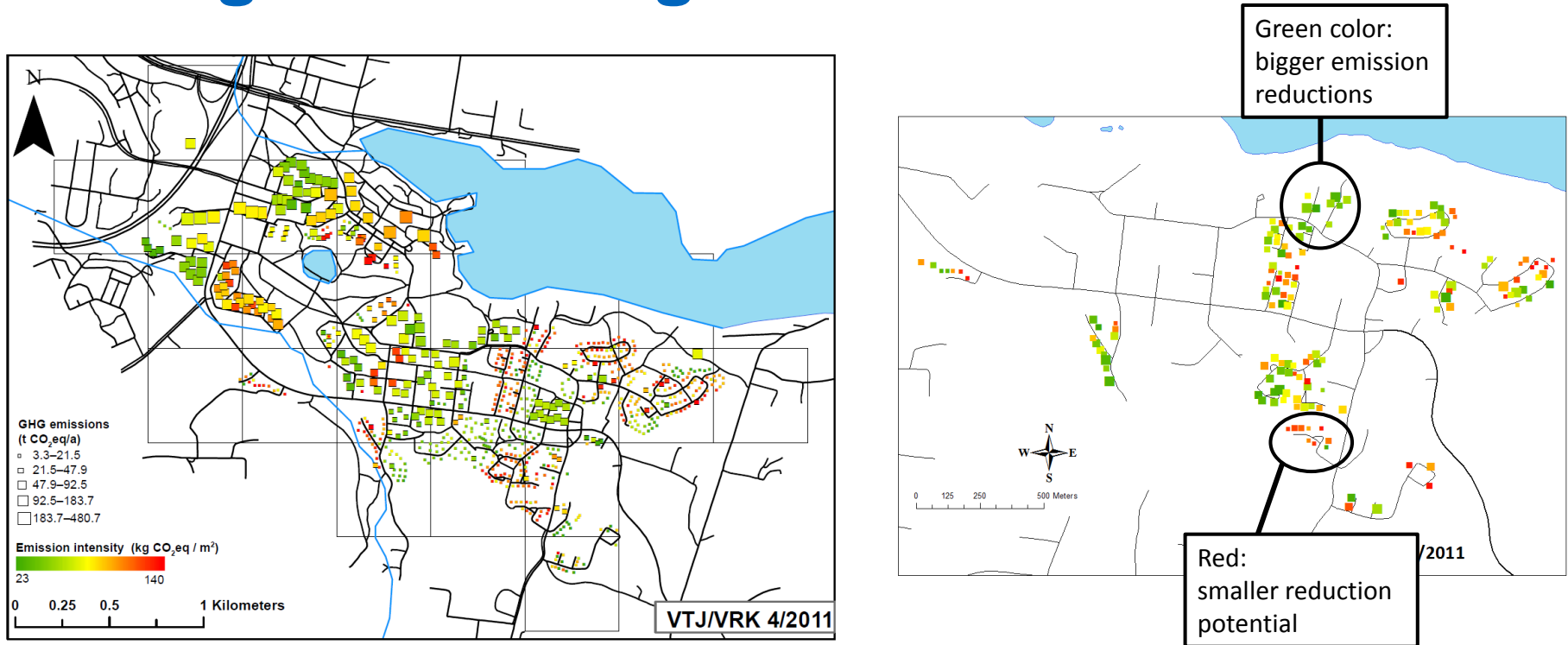


C. Identify citizen-driven and local solutions that have potential to mitigate climate change on the national level

Decrease in emissions due to measures in a 'typical' house using direct electricity for space heating (from top): installation of ground-air heat pump (40 %), solar heat collectors (10 %), air-air heat pump (30 %), timing of washing machine use (1 %), energy-efficient appliances (7 %), habits (8 %), renovations (20 %).



C/2: Modeling and visualization of residential sector energy consumption and greenhouse gas emissions



- based on national building register ('RHR') and new version of the model EKOREM by TUT (Juhani Heljo et al.)
- Mattinen, Heljo et al. 2014. Journal of Cleaner Production 81: 70-80

D. Examine pathways for their transfer among users & promote uptake

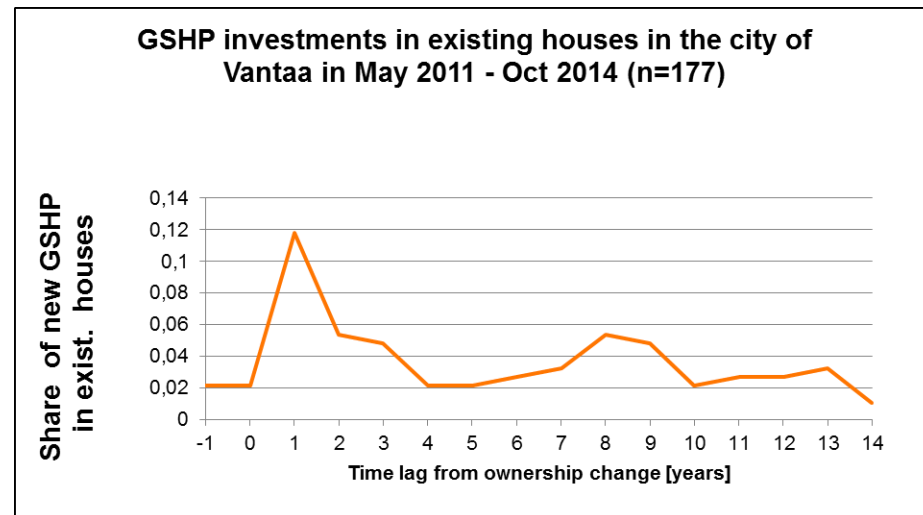
1. Open Homes events – sharing of experiences of new solutions among neighbours tested in three municipalities
2. Courses – impacts of solar heater self-build courses
3. Banks – role of local co-operative and savings banks in the transfer of new energy solutions
4. Local discussion events based on maps of energy use by neighbourhood
5. Joint procurement of solar panels



E. Rescaling and reframing of climate policy so that local and citizens' everyday activities are included

Pragmatic climate policy

- builds on what is, not what ought to be (not in opposition to regulation or carbon pricing...)
- stimulates first steps for broader engagement
- supports connections between citizens and national policy: forums, Carbon-Neutral Municipalities
- builds on windows of opportunity
(global oil price, private life changing event, change of ownership)



Publications – selection / 1

Heiskanen E et al. (in print). The local community as “low-carbon lab”: Promises and perils. *Environmental Innovation and Sustainability Transitions*.

Heiskanen et al. 2013. Learning about and involving users in energy saving on the local level. *Journal of Cleaner Production* 48: 241-249.

Hyysalo et al. 2013. Internet Forums and the Rise of the Inventive Energy User. *Science & Technology Studies* 26(1): 25-51.

Hyysalo et al. 2013. User innovation in sustainable home energy technologies. *Energy Policy* 55: 490–500.

Jalas & Rinkinen (2013). Stacking wood and staying warm: time, temporality and housework around domestic heating systems. *Journal of Consumer Culture*.

Jalas et al. 2014. Self-Building Courses of Solar Heat Collectors as Sources of Consumer Empowerment and Local Embedding of Sustainable Energy Technology. *Science and Technology Studies* 27(1): 76-96.

Publications – selection / 2

Juntunen 2014. Domestication pathways of small-scale renewable energy technologies. *Sustainability: Science, Practice, & Policy*, 10(1): 1206-1030.

Mattinen et al. 2014. Modeling and visualization of residential sector energy consumption and greenhouse gas emissions, *Journal of Cleaner Production* 81: 70-80.

Mattinen et al. (in print). Energy use and greenhouse gas emissions of air-source heat pump and innovative ground-source air heat pump in cold climate. *Journal of Industrial Ecology*.

Nissinen et al. (in print). Combinations of policy instruments to decrease the climate impacts of housing, passenger transport and food in Finland. *Journal of Cleaner Production*.

Rinkinen 2013. Electricity blackouts and hybrid systems of provision: Users and the 'reflective practice'. *Energy, Sustainability and Society* 3(25): 1-10.



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Thanks!

laica.fi

See also: www.syke.fi/en-US/Research_Development/Research_and_development_projects/Projects/Local_adaptation_and_innovation_in_practice_in_energy_efficiency_and_carbon_neutrality_LAICA
www.syke.fi/hankkeet/laica (in Finnish, link to the page in English above)