

Spremljanje izpustov toplogrednih plinov in učinkovito ukrepanje prek lokalnih mrež na Finskem



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19. november 2020

Municipal GHG emissions monitoring and locally effective climate work through networks in Finland

Laura Saikku, Finnish Environment Institute SYKE, 19 November 2020

Why regional emission inventories?

- ▶ Major role and big opportunity for municipalities
- ▶ Concrete measures are taken at the local level
- ▶ Municipality = government, residents, businesses etc.
- ▶ Reliable emissions calculations establish a basis for local climate strategy and local action.
- ▶ We need to
 - ▶ identify the emission sources
 - ▶ set goals and targets and track the progress
 - ▶ prioritize the reduction measures
 - ▶ quantify the impact of the activities and
 - ▶ learn from others.

Essential aspects of regional emission calculations

Reliable, evidence-based data!

- ▶ Coverage – all the important emission sources
- ▶ Responsiveness – to the measures taken
- ▶ Transparency – reliability of the results
- ▶ Consistency – continuous process
- ▶ Comparability – nationally & internationally
- ▶ Fairness – different municipalities
- ▶ Encouragement – supports emissions reduction measures
- ▶ Communication – great public & decision-makers

Finnish emission calculations



Background for new calculation model

- ▶ Earlier experience and applied guidelines
 - ▶ Different various calculations previously done in Finland
 - ▶ National GHG Inventory (IPCC Guidelines)
 - ▶ GHG Protocol for Cities (GPC Standard)

→ ALas-model: GHG inventory for every Finnish municipality

The ALas-model

- ▶ 310 municipalities
- ▶ 14 emission sectors and 77 sub-sectors
- ▶ GHG emissions and energy consumption
- ▶ For each sector all accessible data was examined, and the appropriate calculation method was developed. Some sectors have specific, local data and others include a lot of modelling work.
- ▶ Latest release in June 2020 covering the years 2005-2018
- ▶ Upcoming release, spring 2021: Year 2019, preliminary results for 2020
- ▶ Methodology well documented and the results are open data

Setting boundaries for emission inventory

Accordance with GPC standard

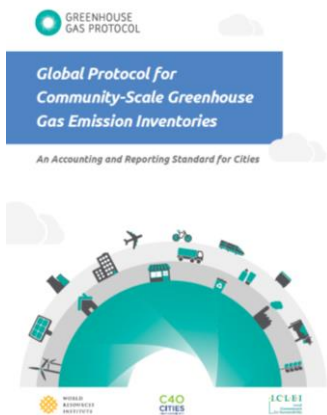
- ▶ Production-based emissions
 - ▶ Geographical boundaries
- ▶ ALas-model
 - ▶ Geographical boundaries, but certain sectors are based on consumption: electricity and heat (from grid), passenger cars and waste treatment
- ▶ Consumption-based emissions

GPC-standard

GPC standard

BASIC

BASIC+



Sectors	Scope 1	Scope 2	Scope 3
District heating	√	√	√
Electric heating	√	√	√
Oil and other heating	√		
Electricity	√	√	√
Electricity (industry)	√		
Industry fuel use	√		
Industrial processes	√		
F-gases	√		
Machinery	√	√	
Cars	√	√	√
Other road traffic	√	√	√
Rail traffic	√	√	√
Water traffic	√	√	√
Air traffic	√	√	√
Waste	√		√
Agriculture	√		
LULUCF	√		

GPC standard

BASIC

BASIC+

ALas-model



Global Protocol for
Community-Scale Greenhouse
Gas Emission Inventories

An Accounting and Reporting Standard for Cities



Sectors	Scope 1	Scope 2	Scope 3
District heating	√	√	√
Electric heating	√	√	√
Oil and other heating	√		
Electricity	√	√	√
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F-gases	√		
Machinery	√	√	
Cars	√	√	√
Other road traffic	√	√	√
Rail traffic	√	√	√
Water traffic	√	√	√
Air traffic	√	√	√
Waste	√		√
Agriculture	√		
LULUCF	√		

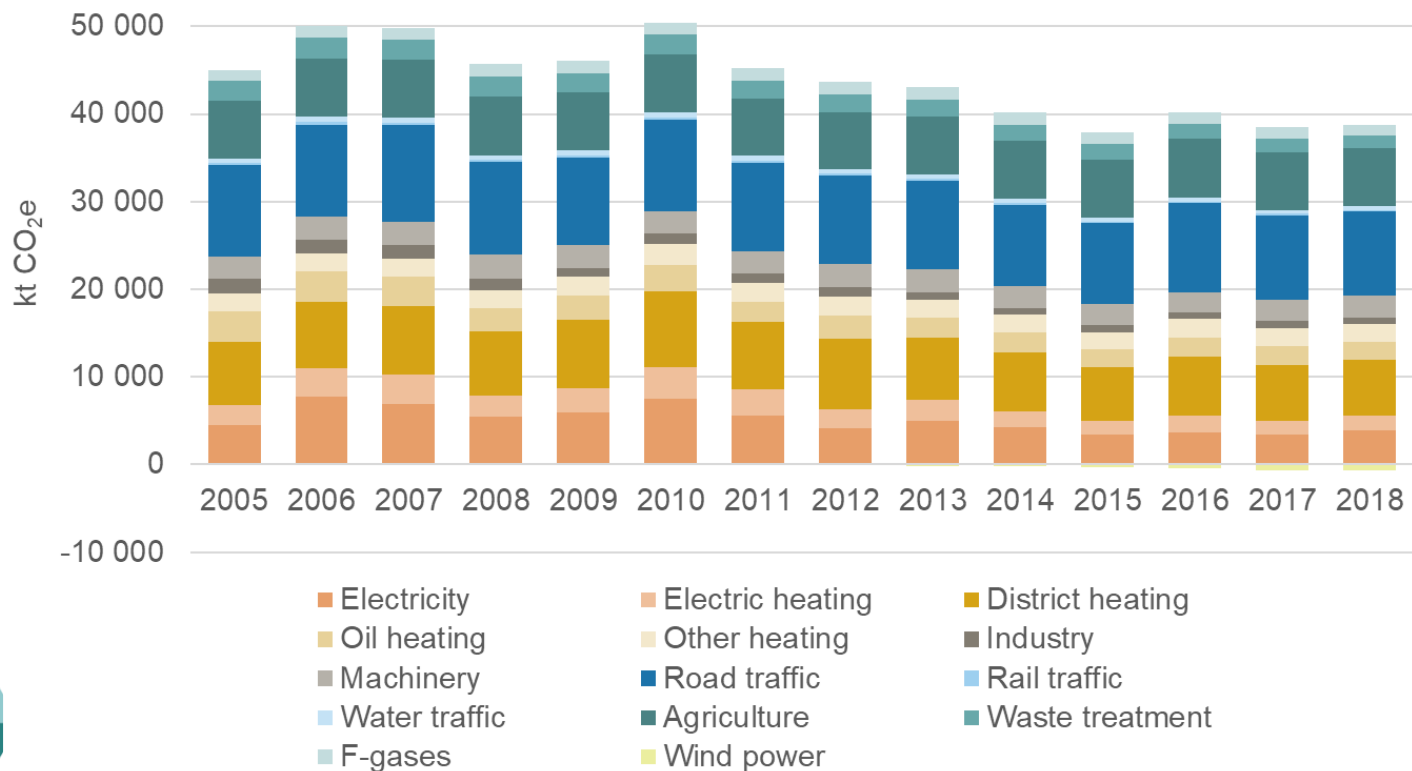
Accounting rules

1. Internationally comparable results – “All emissions”
2. Special accounting rules – “Hinku calculation”
 - ▶ Large-scale industry and drive-through traffic are excluded.
 - ▶ Emission credits / compensation for producing renewable energy.
 - ▶ Default calculation model for Finnish municipalities.

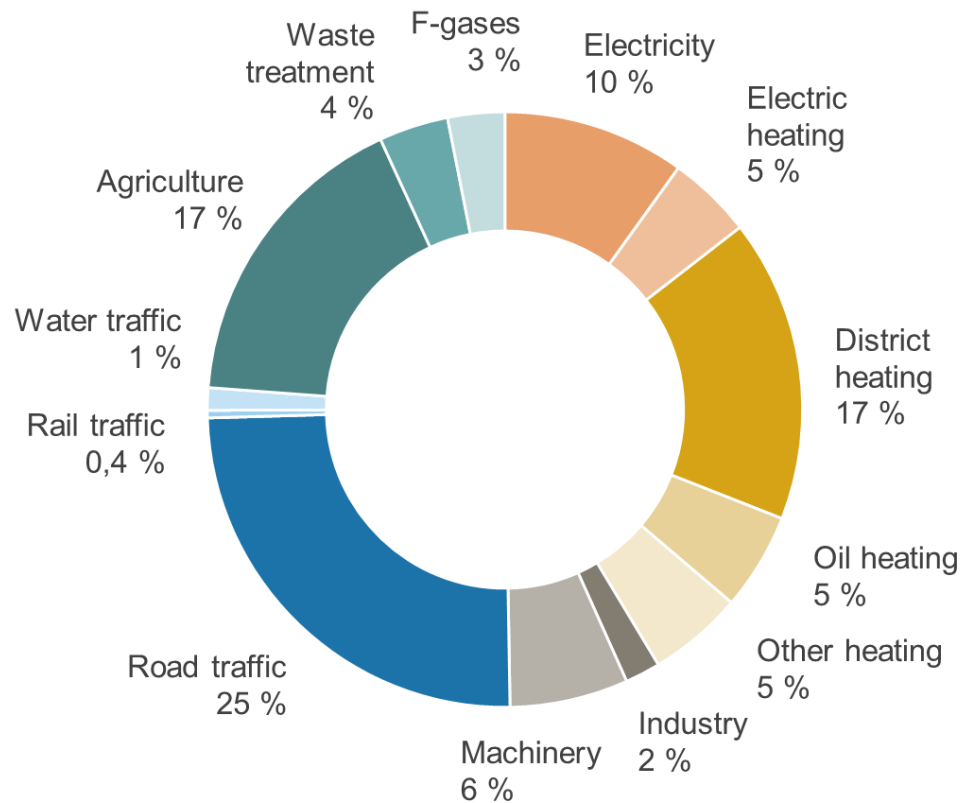
GHG emissions of the Finnish municipalities 2005-2018



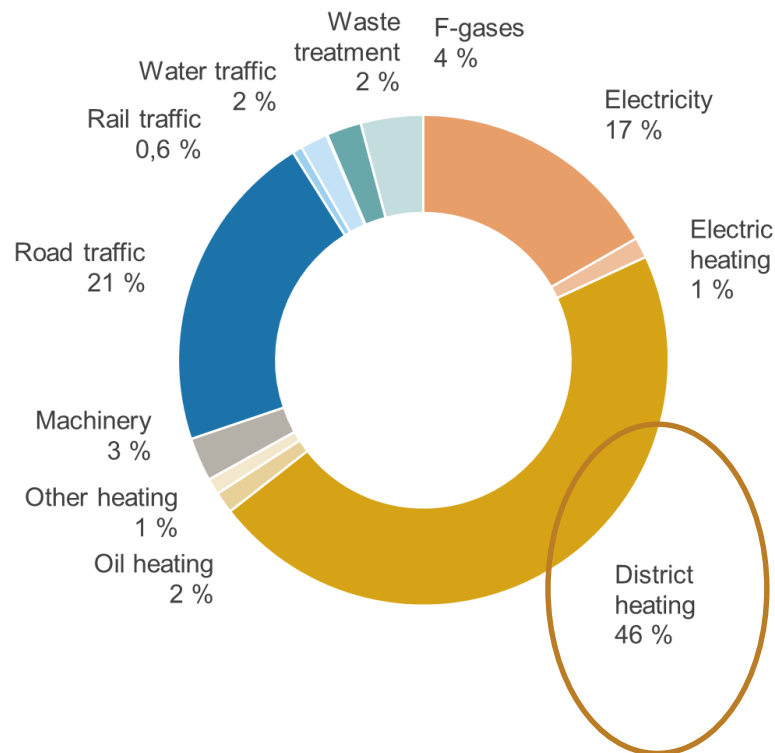
Emissions decreased in almost every municipality -15% 2005-2018



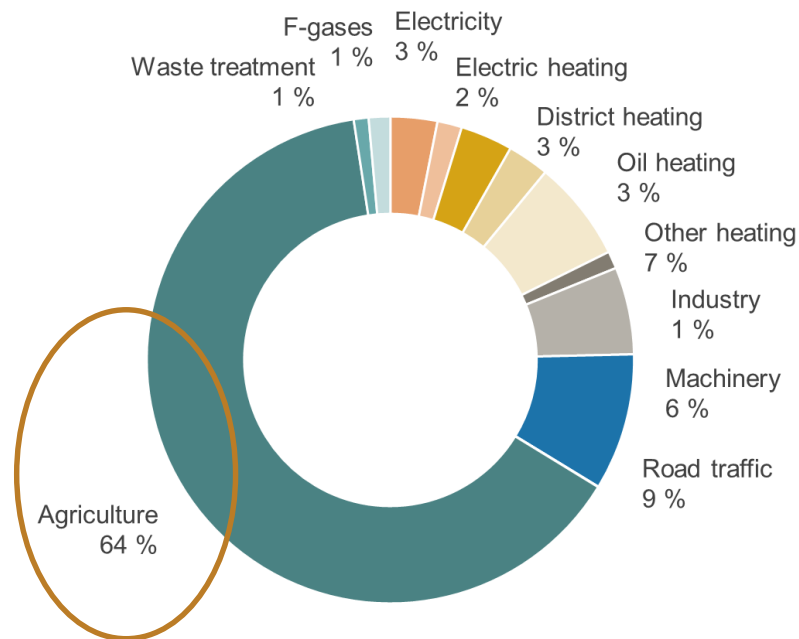
Finland 2018



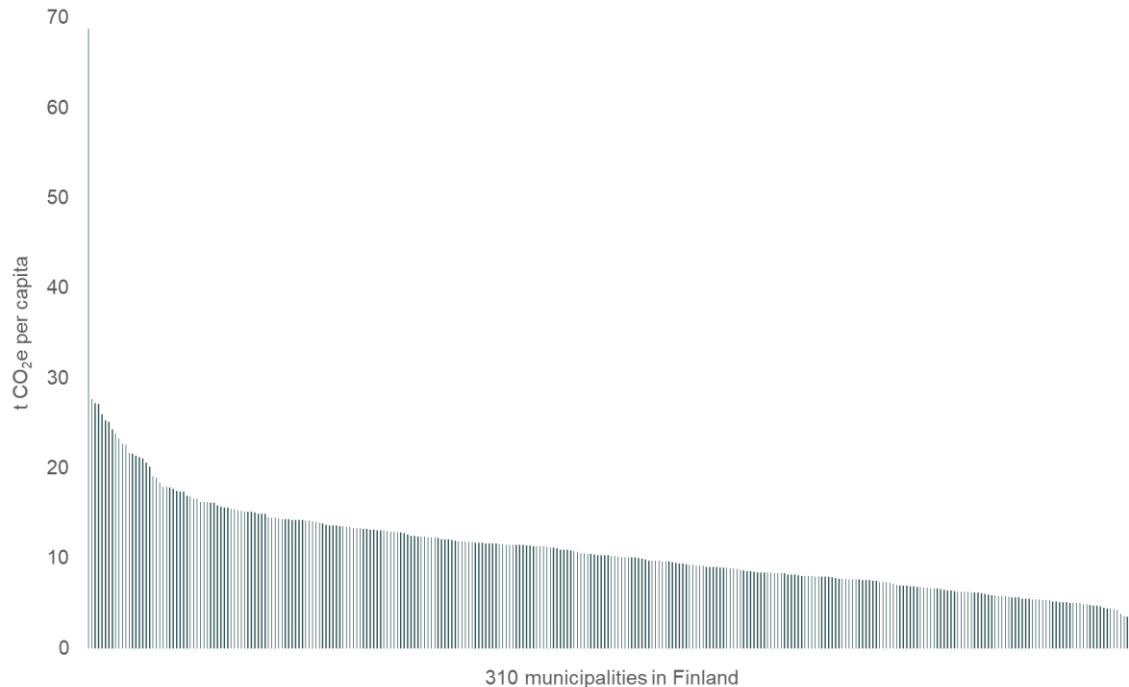
Helsinki 2018



Halsua 2018



Average emissions 6,9 t (CO₂e) per capita. Range from 3 to 25 tonnes.



Impact of a local level climate action – a forerunner municipalities network as a case



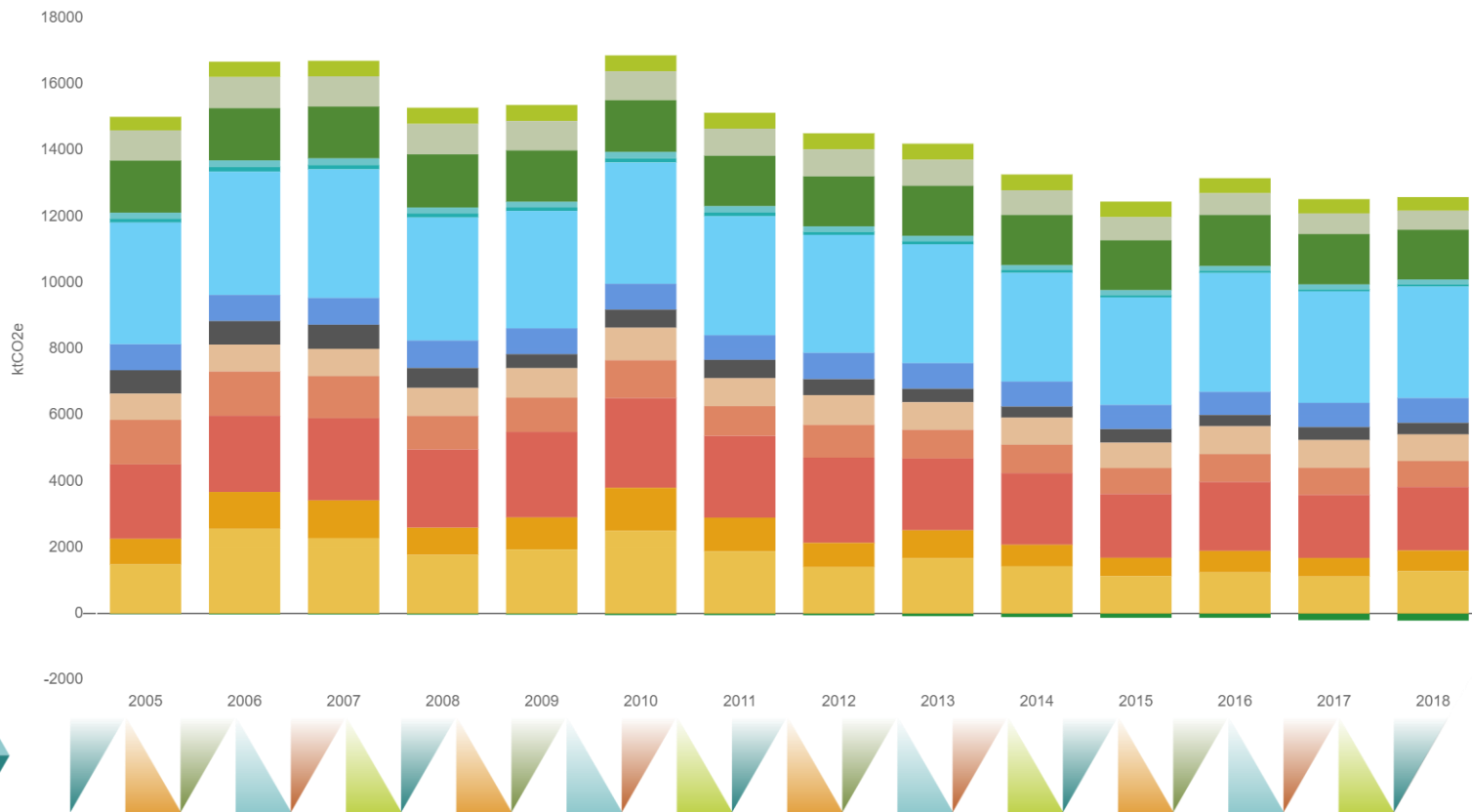
Voluntary climate commitments of Finland – The Hinku network

- ▶ Target: GHG emissions -80 % by 2030 from 2007
- ▶ Scope: reduction in electricity, heating, transportation, agriculture and waste management (excl. industry under the EU ETS), 60% of total in 2017
- ▶ Commitment with a decision by municipal council
- ▶ 74 municipalities, around 2M inhabitants
- ▶ Coordinated by the Finnish Environment Institute



Emission change in Hinku-municipalities

-17% 2005-2008



Has the Hinku-network influenced on emission reductions?

- ▶ The impact of Hinku on municipality's GHG emission in 2005-2017 estimated.
- ▶ Panel regression model, where a large set of exogenous variables was included, e.g. the monthly mean temperatures and precipitation, fuel prices, urbanity and land surface area, gross domestic product in the municipality, and mean socio-demographic characteristics of the population in each municipality.
- ▶ Highly statistically significant and negative relationship between municipality's GHG emissions and being a Hinku-municipality: emissions -3% in Hinku-municipalities

The perceived role of the Hinku-network

- 40 municipalities interviewed
- Motivation, inspiration; peer support
- Almost half feel that expert support has been important
- Support from complementary projects or recruitments
- Organisational support, justification of action in the municipality
- Positive PR image and communication support
- Activation of actors outside the municipal organisation
- **Most experienced that the network had an impact on concrete actions, or at least on the decision-making processes!**

Reliable, evidence-based data needed for regional emission inventories

Developing detailed greenhouse gas metric enables evaluation of the effectiveness of local climate work

In Finland we showed that joining a climate network can lower local emissions



References

- ▶ *paastot.hiilineutraalisuomi.fi*
- ▶ https://hiilineutraalisuomi.fi/en-US/Emissions_and_indicators/Calculation_principles
- ▶ Lounasheimo, Johannes; Karhinen, Santtu; Grönroos, Juha; Savolainen, Hannu; Forsberg, Tommi; Munther, Joonas; Petäjä, Jouko; Pesu, Janne. Suomen kuntien kasvihuonekaasupäästöjen laskenta, ALas-mallin menetelmäkuvaus ja laskentojen tuloksia 2005–2018 (*The calculation of the greenhouse gas emissions of Finnish municipalities*) Suomen ympäristökeskuksen raportteja 25/2020. In Finnish.
- ▶ Karhinen, S., Peltomaa, J., Riekkinen V., Saikku, L. Impact of a climate network: the role of intermediaries in local level climate action. *Submitted to Global environmental change*.

5. nacionalna konferenca o trajnostnem upravljanju z viri skupnosti



S Y K E

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Vse predstavitve s konference so
dostopne tukaj.

Posnetki predstavitev so dostopni na
Youtube kanalu Dovolj za vse.

Več o projektu si preberite na
dovoljazavse.si