

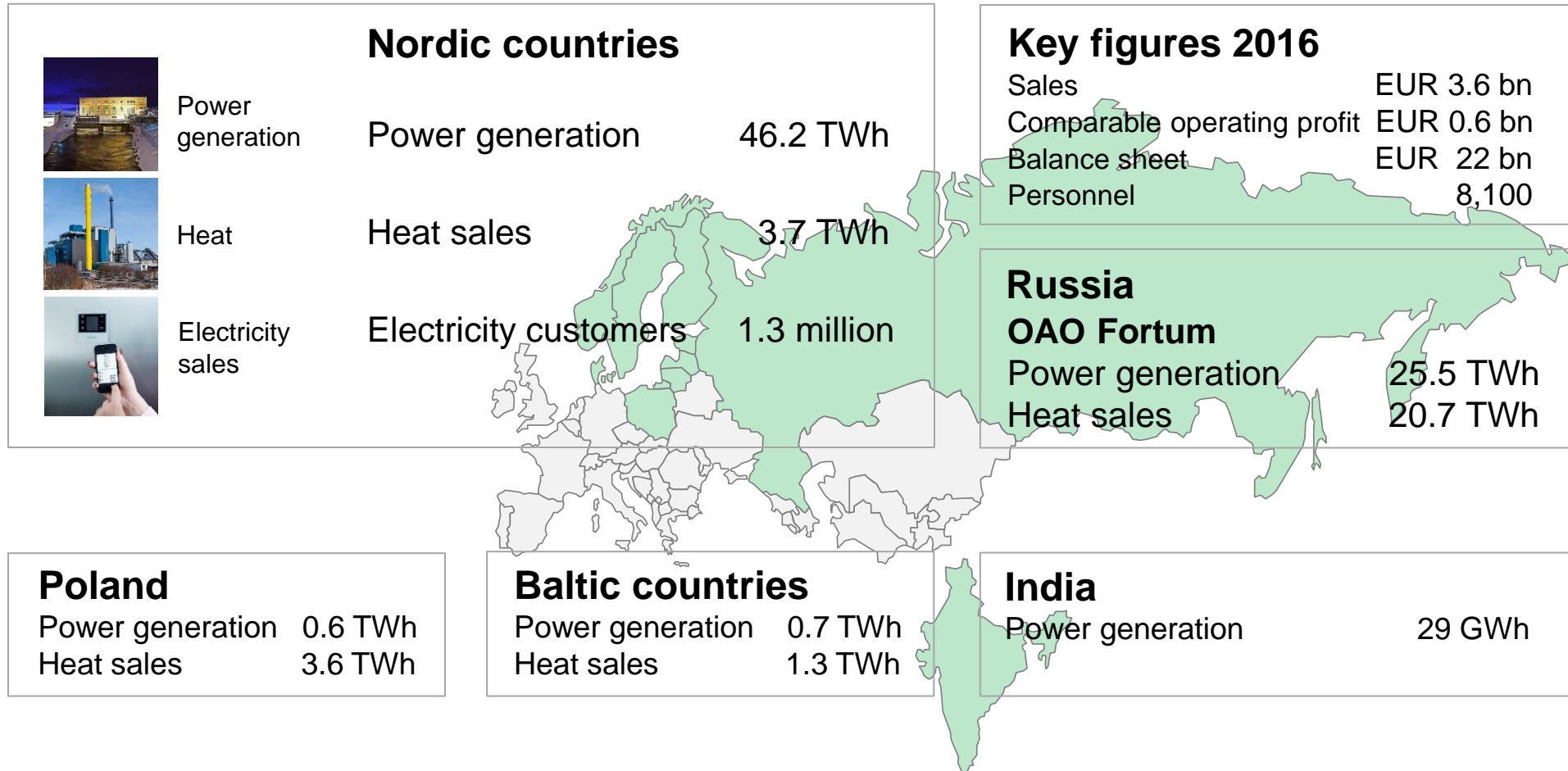


IEA Renewable Heating and Cooling Policy Workshop, Paris 7 February 2017

Fortum and renewable heating and cooling

Dr. Kim Fyhr / Fortum / Public Affairs

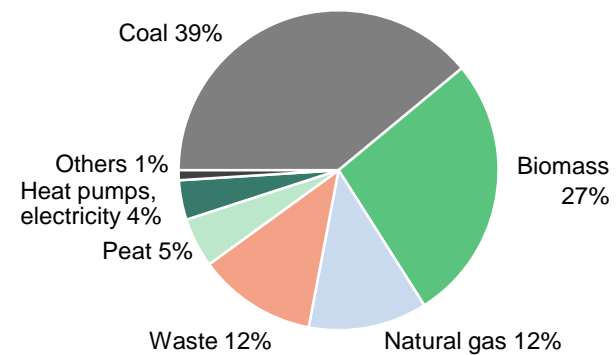
Our current geographical presence



Significant Experience of Operating District Heating and CHP Assets

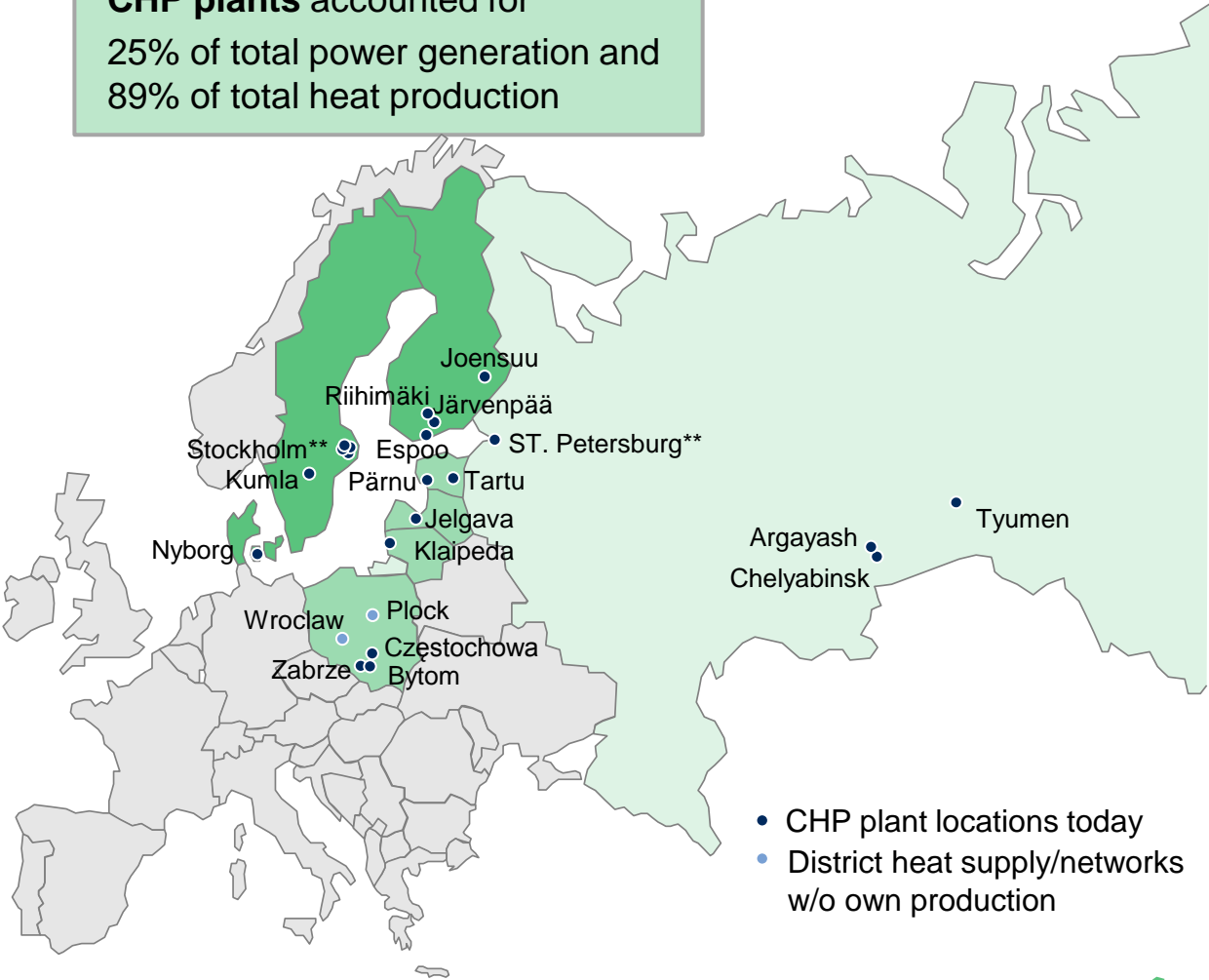
Heating and CHP Operations in 2016

Total heat sales, TWh	29
Finland	3.6
Sweden and Denmark	0.1
Baltic countries	1.3
Poland	3.6
Russia	20.7
In jointly owned companies, heat sales, TWh**	
Fortum Värme in Sweden	8
TGC-1 in Russia	28

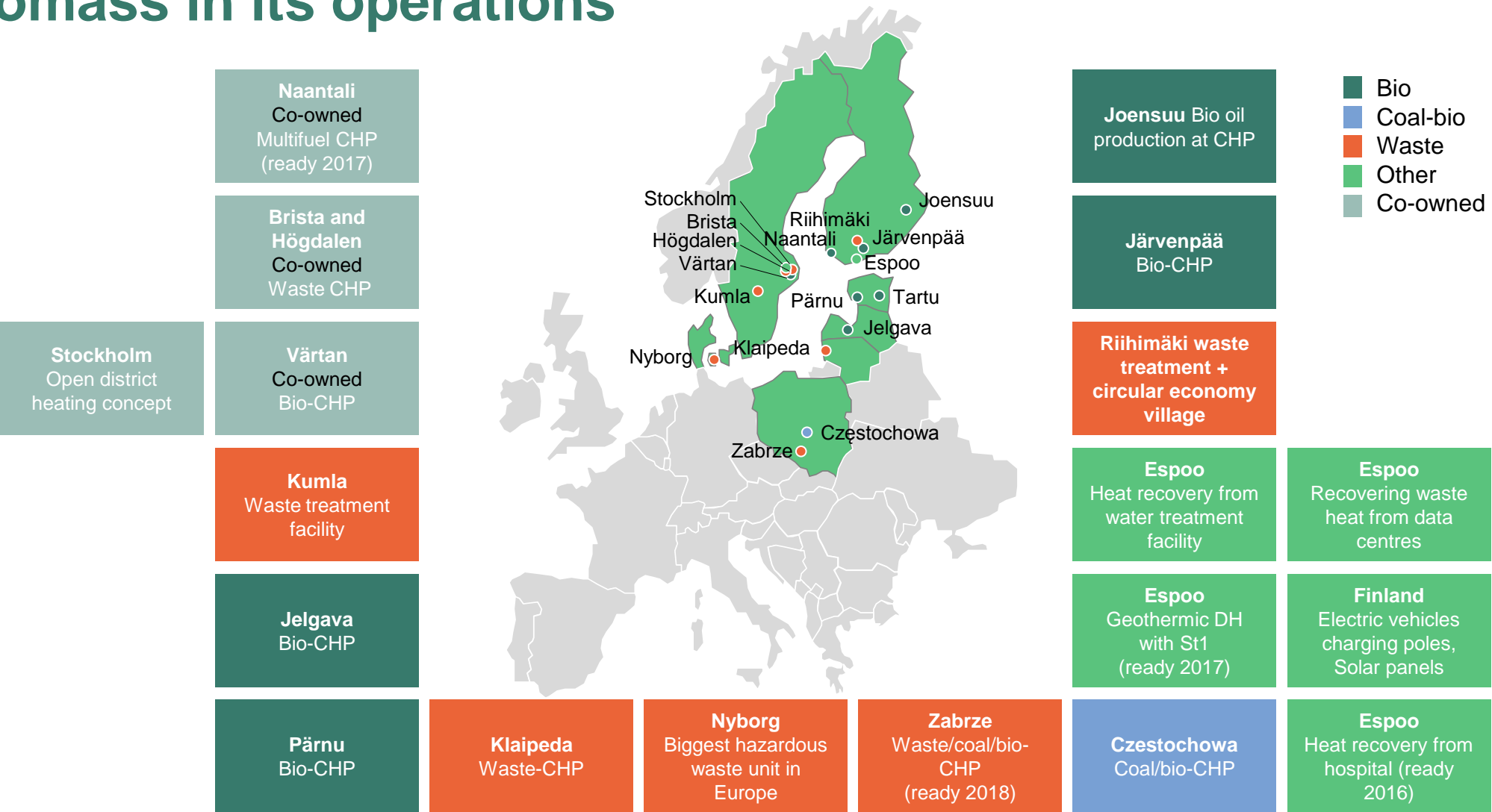


European heat production 7.1 TWh in 2016
(Production capacity 3,818 MW)

CHP plants accounted for 25% of total power generation and 89% of total heat production

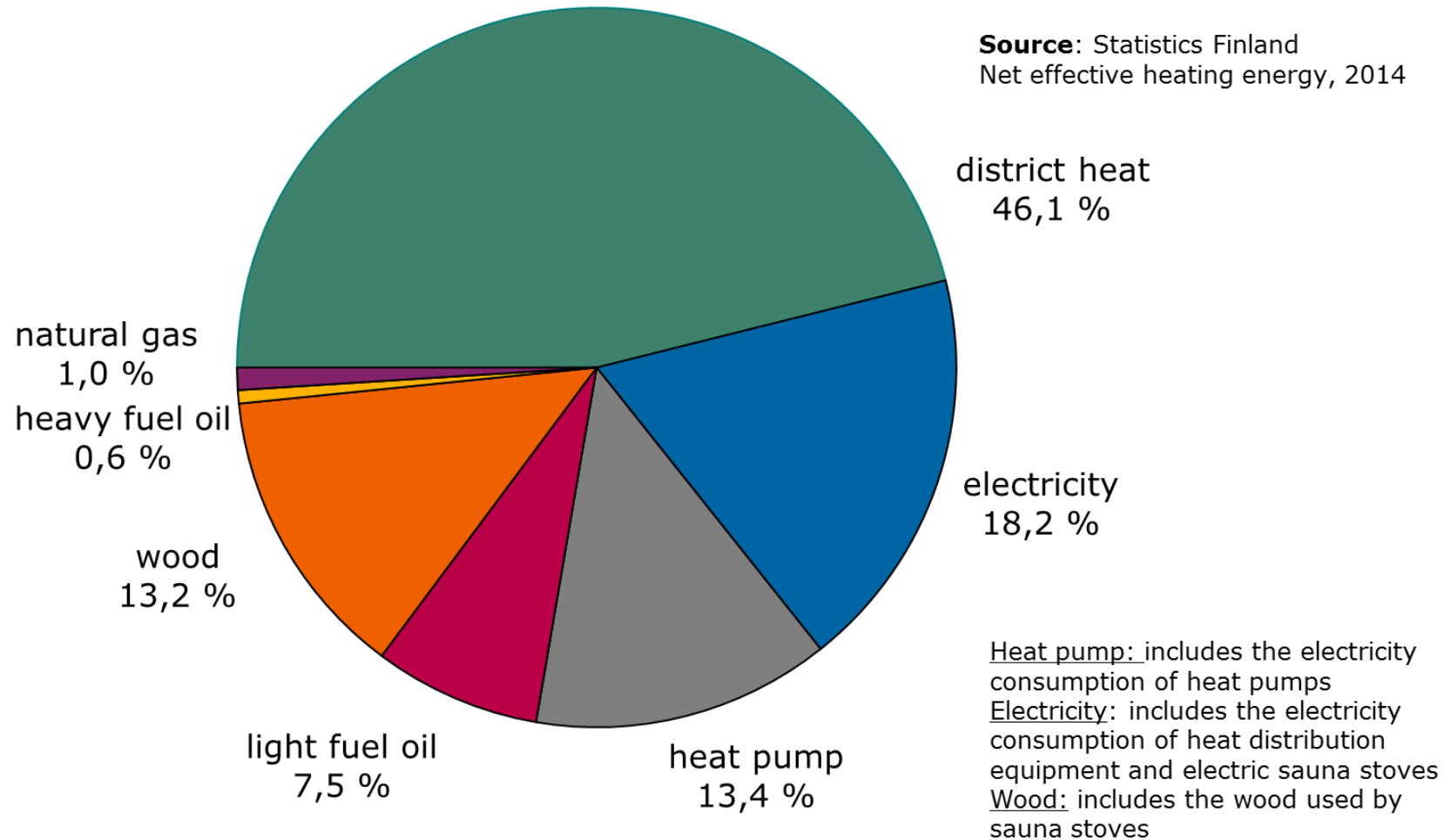


City Solution's ambition is to maximise added value of waste and biomass in its operations



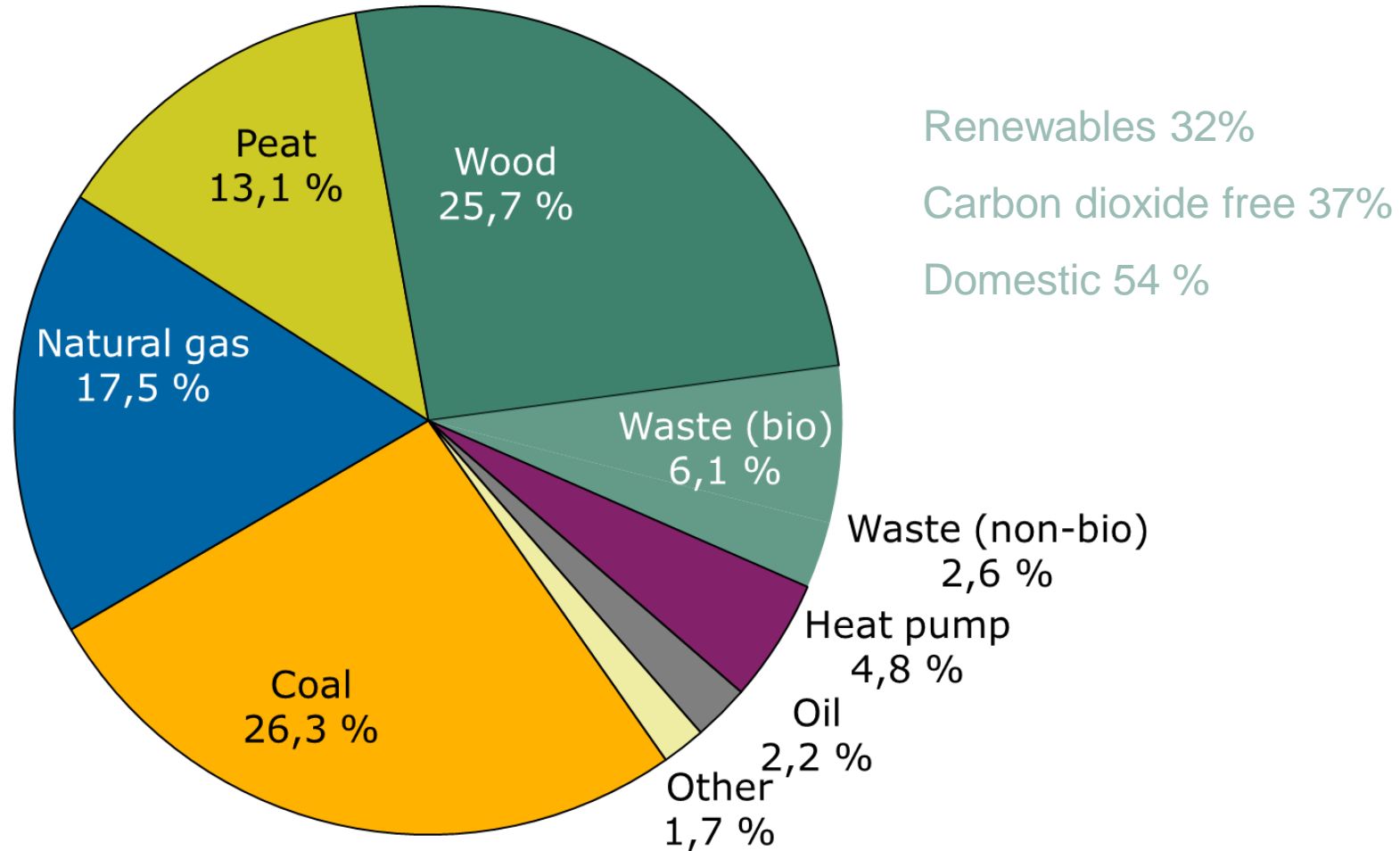
Market share of space heating (Finland 2016)

Residential, commercial and public buildings



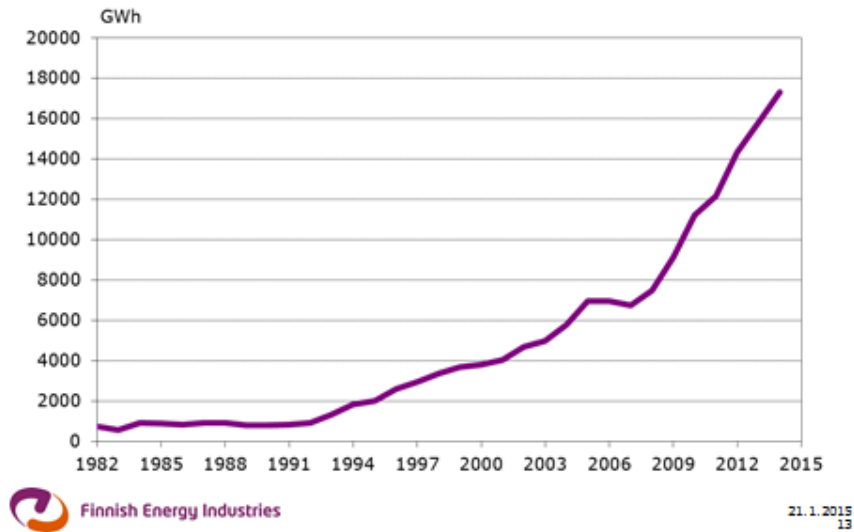
Fuel consumption in production of district heat and CHP 2016 (Finland 2016)

- fuel consumption 55,5 TWh

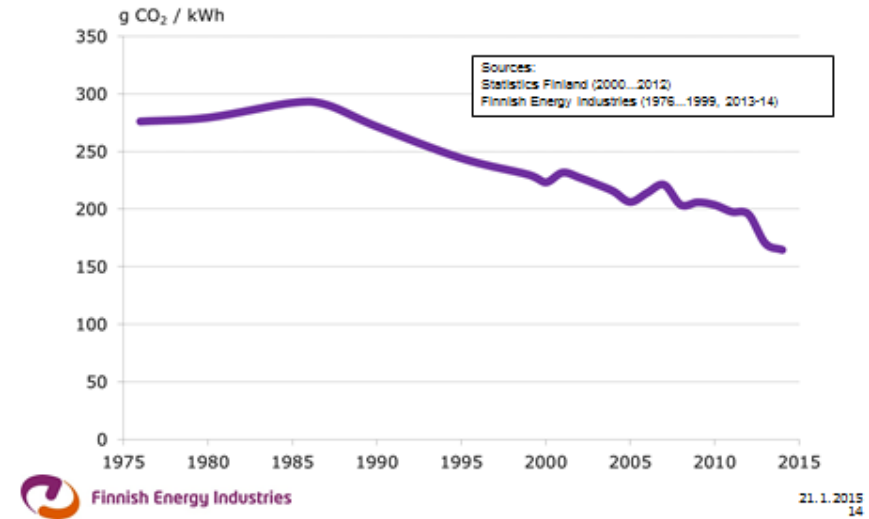


RES heating and CO₂ developments in Finland

Domestic renewable energy sources in production of district heat and CHP



Specific carbon dioxide emissions from district heat production



Heat markets should be driven by customers and competition



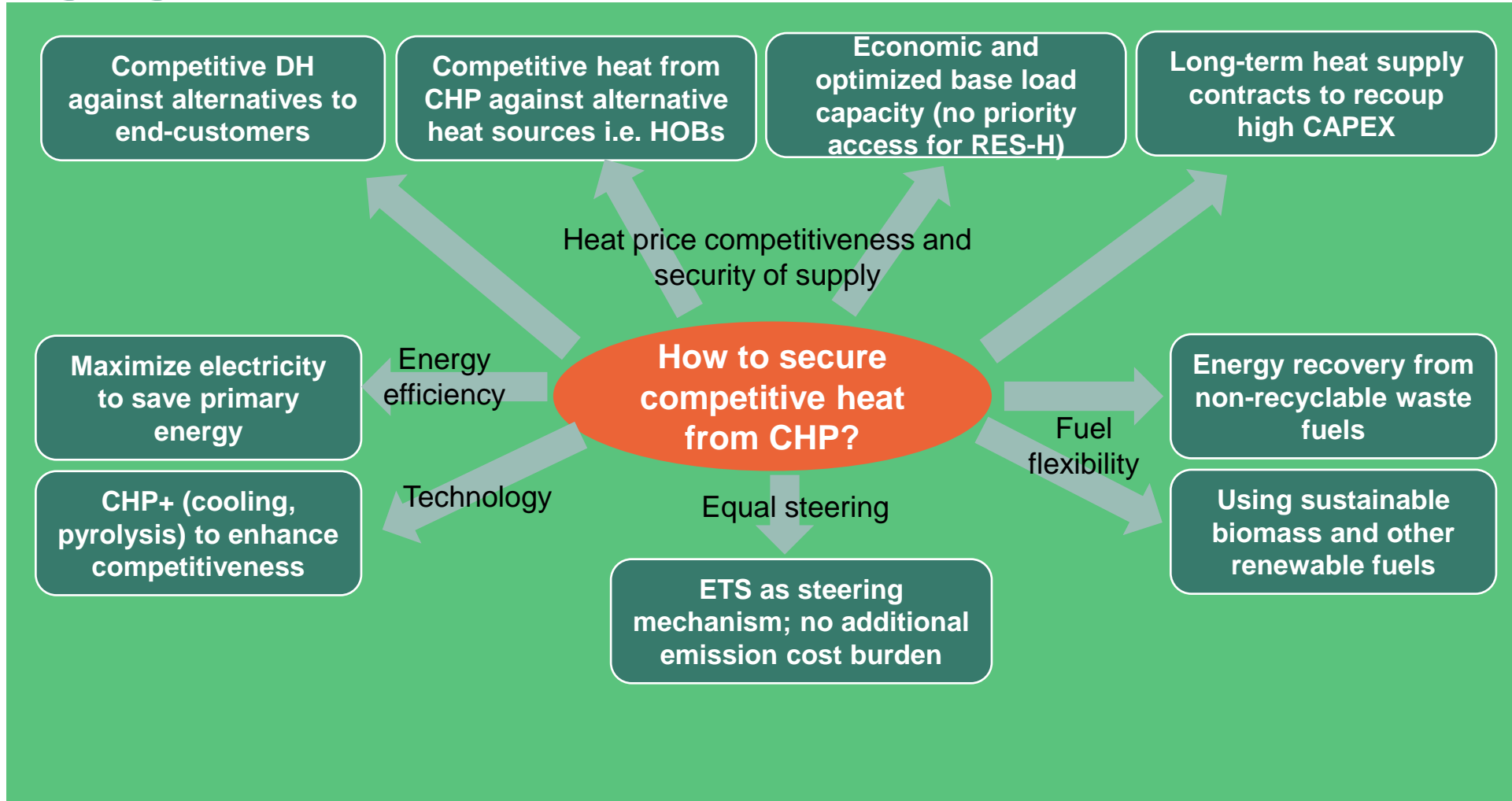
- Free choice by end-customers enhances engagement and trust on heat providers
- Fair competition between alternatives calls for affordability
- Equal competition rules that replace uneven regulatory treatment between alternatives
- New technologies more likely to emerge and to be utilized
- Drives for best resource and system efficiency

Increased heat system flexibility required

Consequences from effective competition in heat markets in Finland

- Lowest DH prices in Western Europe and lowest in the EU when adjusted with purchasing power parity
- Total costs of DH are generally always competitive against alternatives (including taxes and CAPEX)
- Most reliable DH systems – service security 99,9 %
- Average DH network losses 8 % - lowest in Europe
- Highest total efficiency of CHP-plants (83 %)
- Satisfied DH customers based on regular surveys
- Bringing gradual reduction of the emission levels
- National DH market share in space heating 46 % (residential, commercial and public buildings) and between 80 %-90 % in urban areas

Promoting high-efficient renewable CHP in heat markets; Challenging situation due to low power market prices



The share of heating and cooling is about half of EU final energy consumption but still

very often policy discussions at different levels of policy-making focus on electricity and transport.

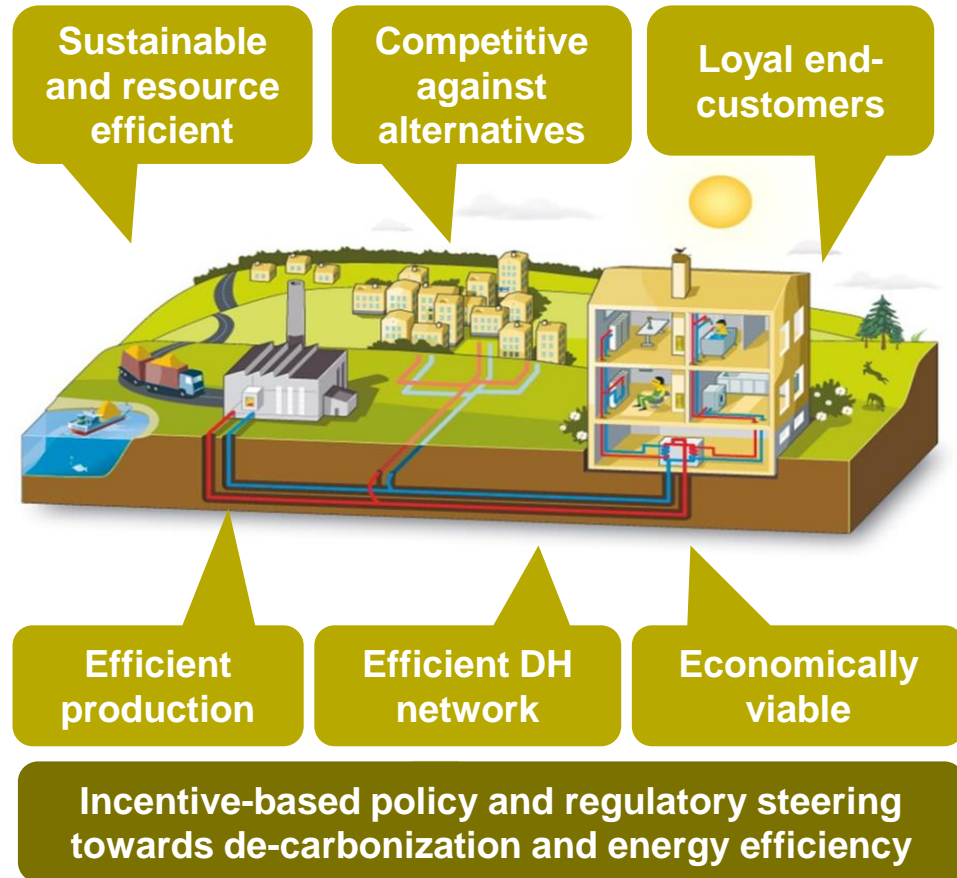
Fortum policy messages

- District heating and cooling can contribute significantly to the decarbonization of economy and achieving the targets of the Paris agreement. It has a positive impact on reducing energy imports and dependency as well as lowering costs for households and businesses.
- Upcoming IEA ministerial 2017– heating and cooling should be included as a discussion point.
- Heating and cooling markets should be developed so that they are based on competition between different solutions and technologies and on customer choice. Fair competition would require equal treatment of various heating and cooling options (compare: individual boilers outside ETS). Competition must take place between alternative heating methods, not inside district heating (distinction to be made between DHC systems and heating markets).

Fortum policy messages con't

- **A sufficient level playing field in heating and cooling should be created. The necessary tools to accomplish this are:**
 - Relevant market definition derived from competition policy to carry towards gradual non-regulation of heat markets.
 - Recommended (energy) policies and targeted heat market model(s).
 - Technology neutrality and even cost burden of externalities (CO₂). Tax policies should be coherent with emission reduction targets.
 - Free choice of customers supported by transparency and objectivity.
 - Encouraged synergies between heating and electricity. System approach to be taken into account, utilize flexible two-way heat network options.
 - Building sector governance to support continuous energy savings.
 - Much less but better incentive-based regulation to encourage fixing heat market failures; not to be utilized as social policy measures.

Well-functioning DHC system



Source: Fortum



Thank you!