



The EU and local policies influence on the development of future district energy supplies.

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Monika Kuusela, Senior Manager Public Affairs

Fortum in brief

Our core

Hydro and nuclear
Combined heat and
power production
Circular economy
Energy-related
products and expert
services

We have
2.5 million
customers.

96% of our
electricity
production is CO₂
free in Europe,
57% in all
operations

Total sales
€5.2bn

**Total power
generation**
74.3 TWh

Total heat sales
31.5 Twh

8,300
professionals
in the Nordics,
the Baltics,
Russia, Poland
and India

2/3 of our
power
production is
**hydro and
nuclear**

Fortum's strategy

Our vision: For a cleaner world

Our mission:

We engage our customers and society to drive the change towards a cleaner world. Our role is to accelerate this change by reshaping the energy system, improving resource efficiency and providing smart solutions. This way we deliver excellent shareholder value.

Build options for significant new businesses

Drive focused growth in the power value chain

Ensure value creation from investments and portfolio optimisation

Pursue operational excellence and increased flexibility

Main drivers for change:

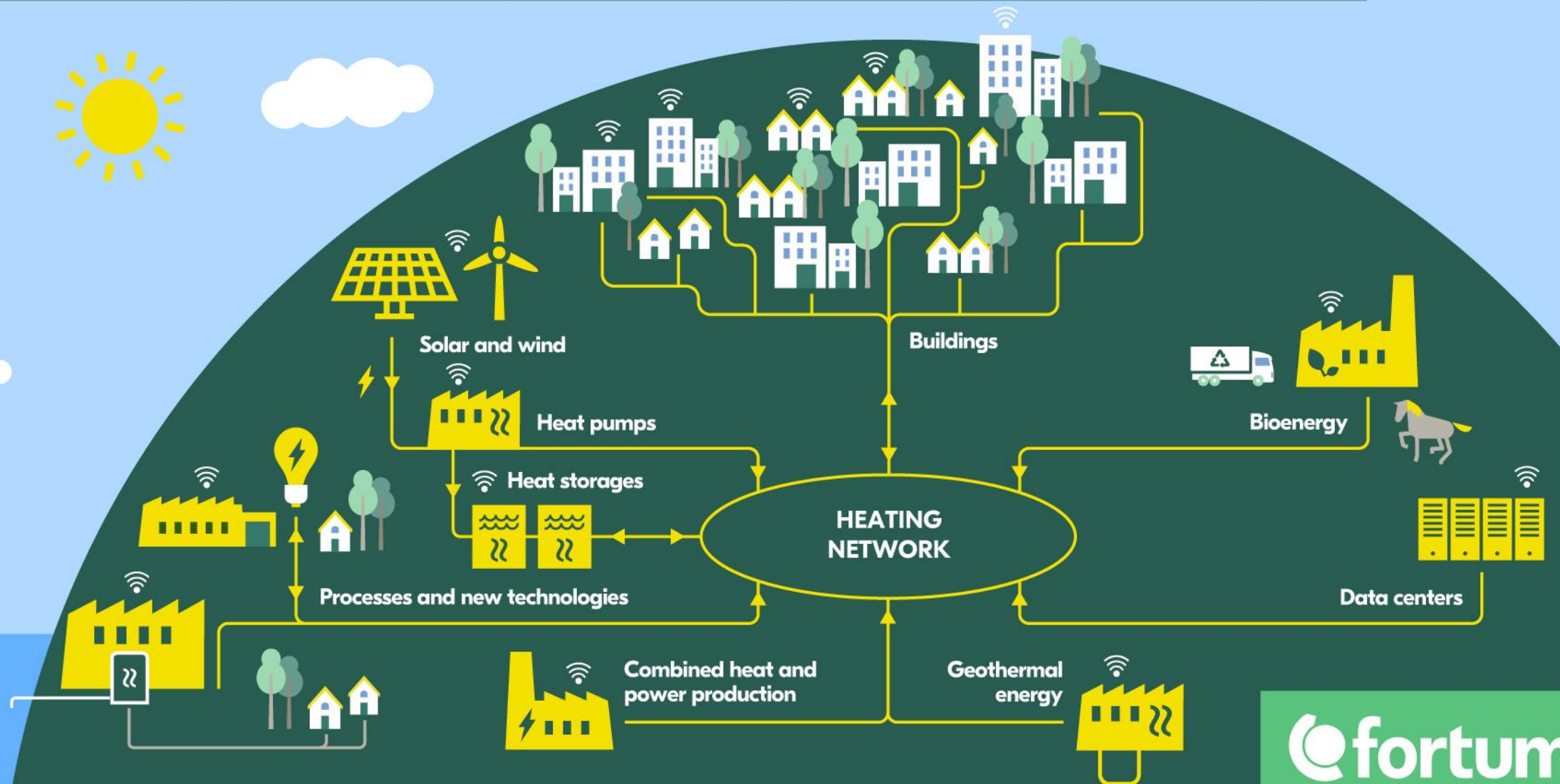
Climate and environment

Politics and regulation

Technology development



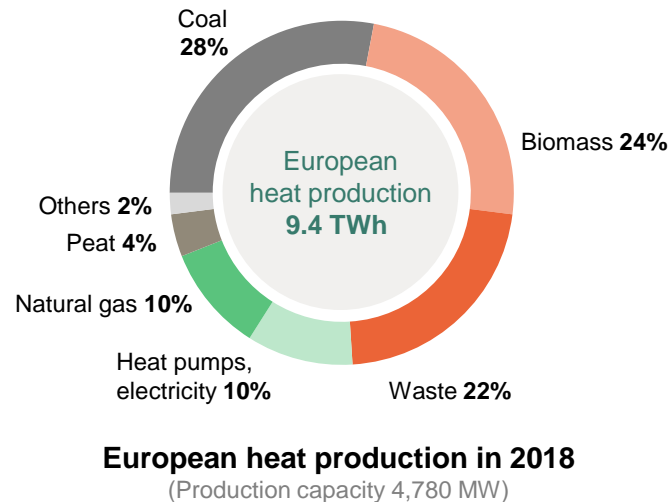
Flexible, smart and two way district heating network – enabler of carbon neutral energy system



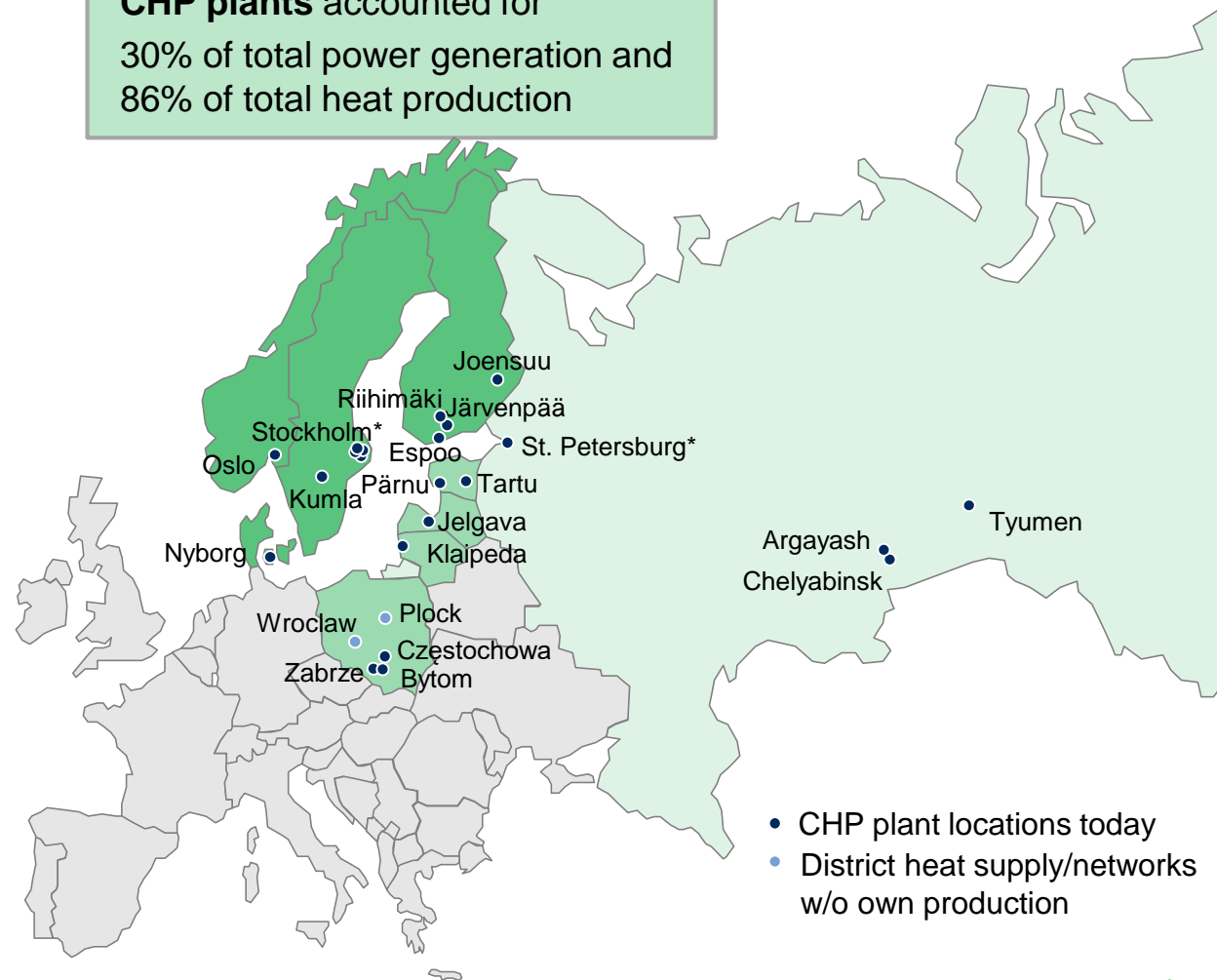
Significant Experience of Operating District Heating and CHP Assets Heating and CHP Operations in 2018

Total heat sales, TWh	31.5
Finland	3.8
Sweden	0.3
Norway	1.6
Denmark	0.2
Baltic countries	1.4
Poland	3.5
Russia	20.7

* In jointly owned companies, heat sales, TWh	
Stockholm Exergi in Sweden	8
TGC-1 in Russia	29

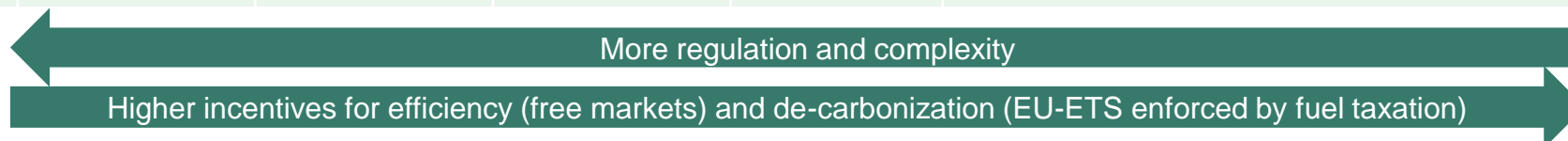


CHP plants accounted for 30% of total power generation and 86% of total heat production



Fortum's regulatory experience in DH regulatory schemes in Europe

DH PRICING REGIME	COST-PLUS METHODS				ALTERNATIVE-BASED	COMPETITION (AND COST) -BASED	
Countries	Latvia	Lithuania	Poland	Estonia	Norway	Finland	Sweden
DH networks and HOB plants' regulation	Cost-plus				DH price capped by alternative electrical heating	DH pricing based on prices of best-alternatives (heat pumps) and cost recouping	
Main heat regulation from CHP	Electricity as bi-product (cross-subsidy)	Virtual HOB cost method	Reference price caps based on all HOBs (4 fuels)	Virtual HOB cost method			
Unbundling requirements	DH production and networks are required to be unbundled to take separate pricing decisions (financial/accounting unbundling)				Not required; most systems are integrated but also much outsourced DH production		
Price decision authority	Regulator				DH company		
Pricing structure (capacity/energy)	2 components possible	2-component tariffs	3-component tariffs	1-component tariffs	2-component tariffs segmented for similar customer groups, seasonal prices		
Pricing frequency	Criteria to kick-off (as needed)	Yearly process (2-level)	Yearly statutory process	Criteria to kick-off new tariff	Decided by DH company (typically 1 or 2 times per year)		
Ex-post profit reviews	Regulator (not systematic)	Regulator (formal reporting)	Regulator (not systematic)	Regulator (not systematic)	Role of competition authority (CA)		
Third-party-access regulation	Open network access but not working in practice	Monthly wholesale auctioning	Similar with electricity and gas but not implemented in practice	Mandatory tendering for new capacity in production	Commercial (single-buyer seeks lowest cost heat sources when economical for the whole system)		
Duty of competition authority (CA)	No statutory role	No statutory role	No statutory role	No statutory role	Functioning of heating markets Case by case studies concerning price justification		



Future policies and changing business environment should drive regulation

Global megatrends¹

Urbanization

Accelerated digitalization

Competition for resources

Consequences of climate change

Pressure towards ecosystems

Diversifying approach to governance

Continued economic growth?

Future EU energy policies to intensify²

De-carbonization of heating and cooling (RED II)

Primary energy savings (EED and EPBD)

EU-ETS and tax steering

Effective markets and customer protection

New energy systems

Security of supply (CRM)

Landfill and coal bans

Quality recycling and energy from non-recyclable waste

Next generation efficient district heating³

- Customer-centric
- Competitive
- Low carbon solutions (RES and excess heat sources)
- Digitalized new services
- Utilization of intermittent electricity in DHC systems
- Complexity of system optimization increases

Next generation regulation

- Policy linked
- Driving for effective and competitive markets
- Incentivizing
- Predictable and consistent
- Regulator's role to steer and monitor markets and customers
- Lighter-touch

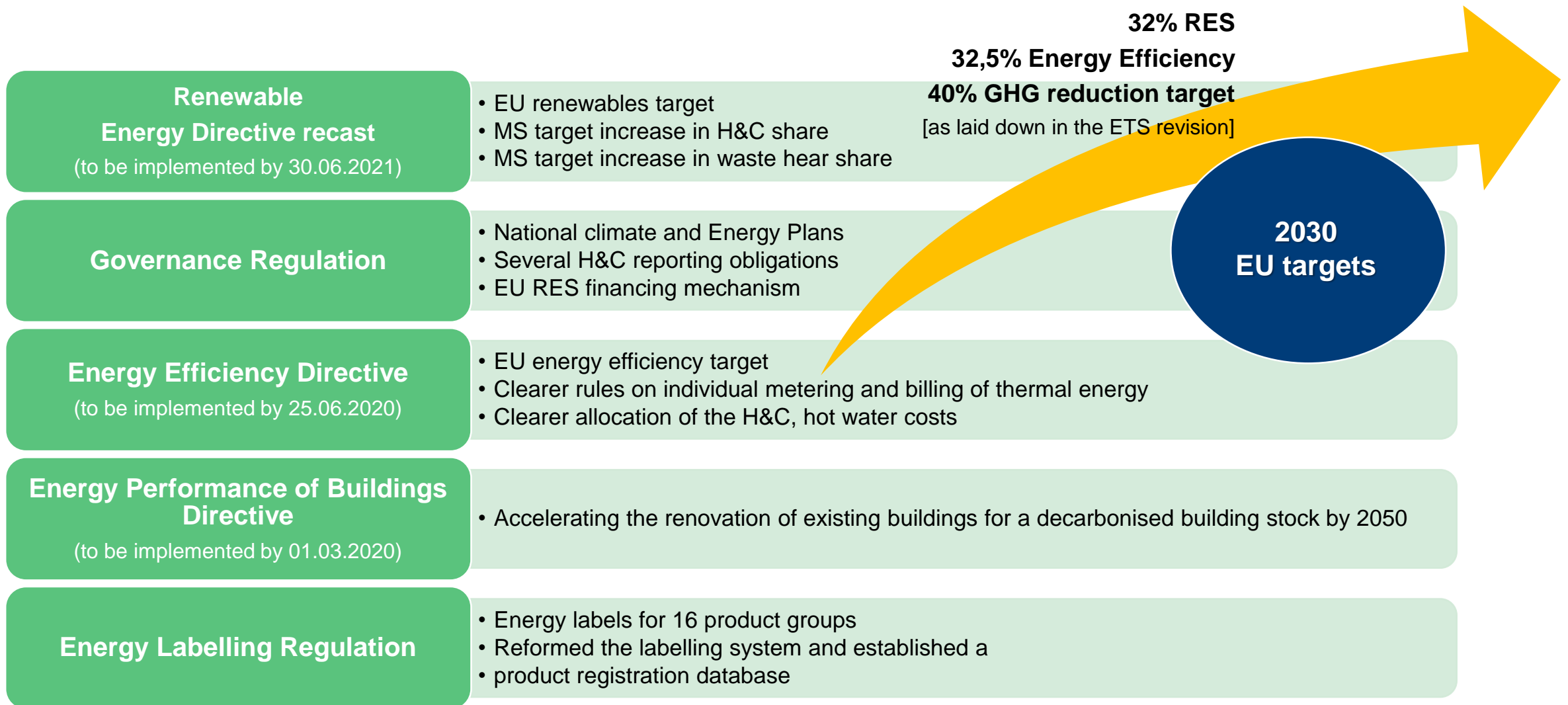
Sources:

¹ European Environment Agency (EEA)

² European Union: Clean Energy and Circular Economy Packages

³ Fortum's business environment analysis

Recent EU legislative framework

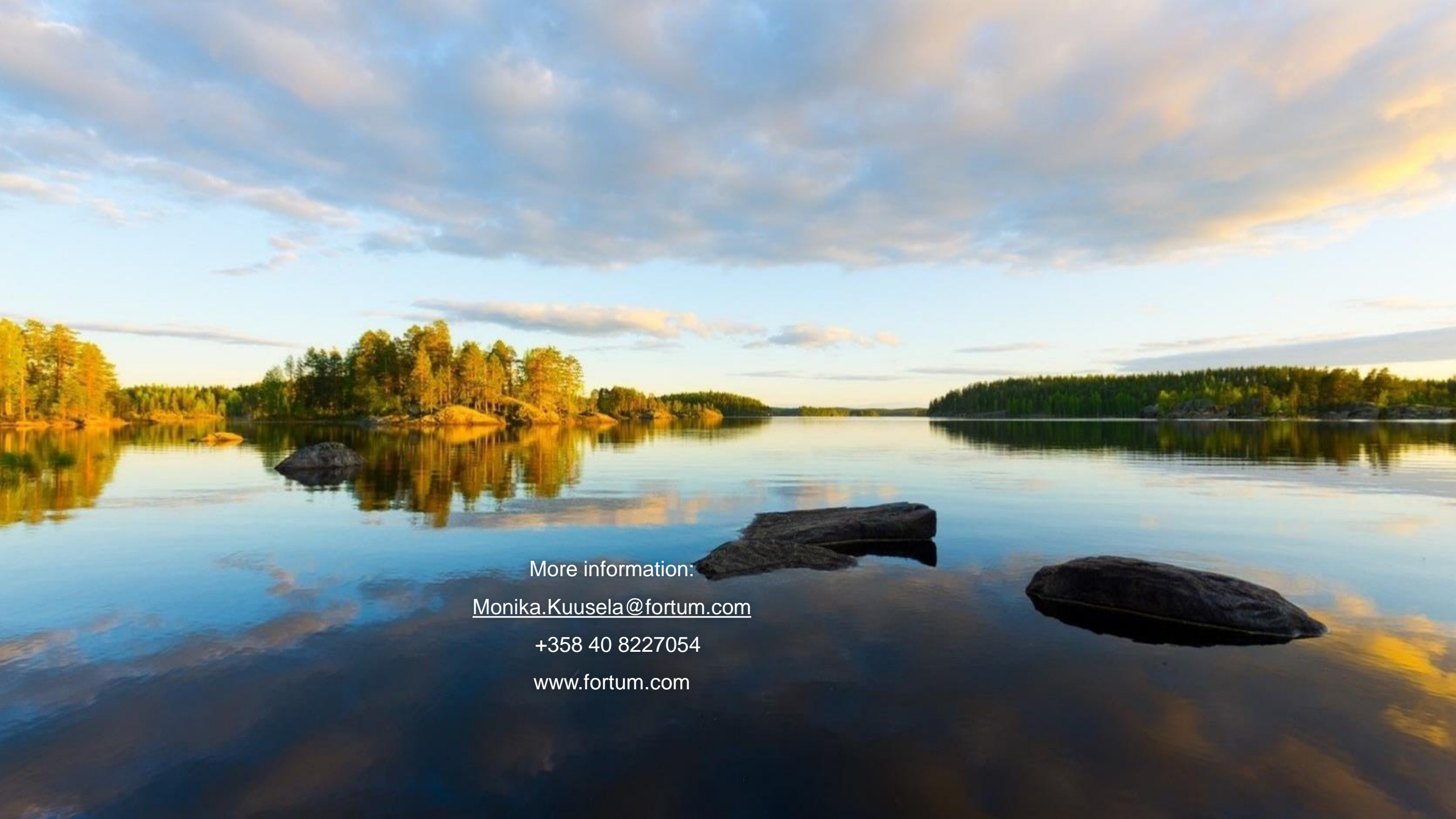


European heating and cooling sector can and should contribute to the EU decarbonisation target

Heat sector has a great potential to deliver on the decarbonisation goals and improve air quality:

- There is no district heat markets – only the **heat markets** exists
- Fair competition encourages the **development**
- Decarbonisation via **sector coupling** is possible only when including heat sector
- Effective and symmetric **incentives** schemes keeps the district heating competitive





More information:

Monika.Kuusela@fortum.com

+358 40 8227054

www.fortum.com