



Can the Nordic and Baltic countries do an even better job in renewable energy and energy efficiency?

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Tallinn, Nordic Baltic 8 Conference 2017

- **Founded in 1974** in the wake of the 1973 oil embargo with mission to promote member country energy security – autonomous agency of the **Organisation for Economic Cooperation and Development (OECD)**
- **29 Member countries:** in **Asia Pacific** (Australia, Japan, Republic of Korea and New Zealand), **North America**, (Canada and United States) and **Europe** (Austria, Belgium, Czech Rep, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey and United Kingdom)
- **Chile** and **Mexico** are in the process of accession to become members of the IEA
- **China, India, Indonesia, Morocco, Singapore** and **Thailand** are **Association Countries**
- **Headquarters:** Paris
- **Decision-making body: Governing Board**, which consists of member country representatives
- **Staff of around 250**, mainly energy experts and statisticians



Estonia (2013)

- Very sound to have diversified fuels for district heat and improving the heat generation efficiency
- But - while renewable energy is on track, progress on energy efficiency is less clear.

Finland (2013)

- Commendable efforts in improving energy efficiency, including periodically increasing targets.
- To be commended for its extensive use of renewable heat in industry, as well as in buildings.

Sweden (2013)

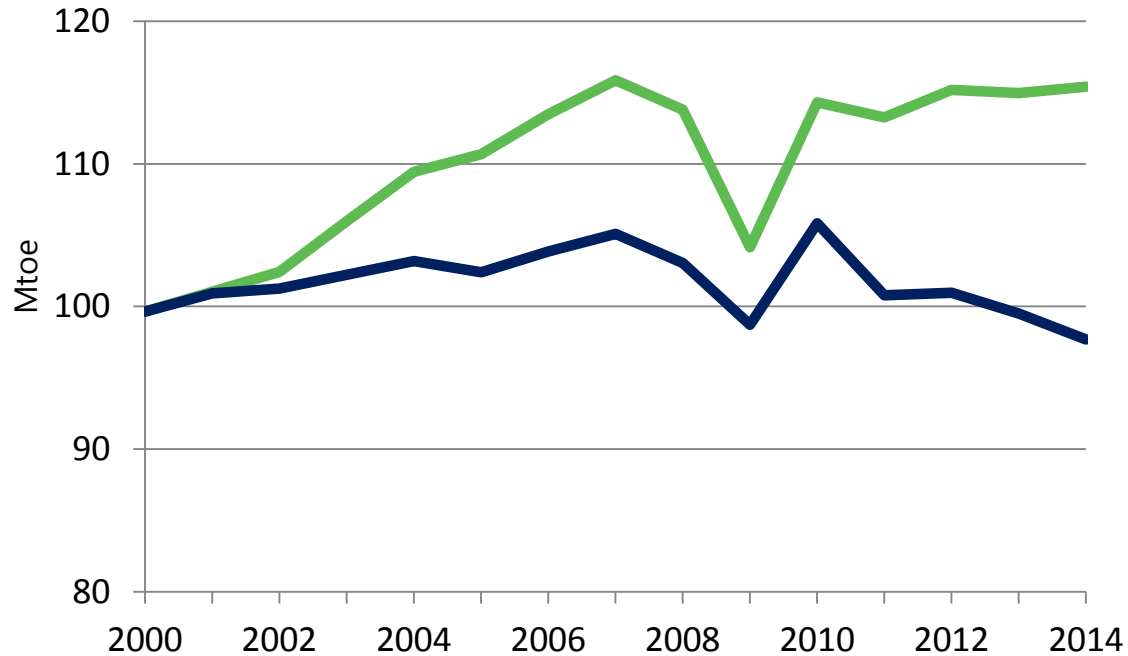
- In many ways, Sweden's energy efficiency policy is exemplary.
- Is among the countries in terms of high share of renewable energy in total energy supply



- **Detailed scenario-based analysis of how the Nordic countries can achieve a near carbon neutral energy system**
- **Nordic Carbon-Neutral Scenario achieves an 85% reduction of Nordic energy-related CO2 by 2050 (from 1990 levels) at lowest cost**
- **Takes place in the context of the IEA's global 2-degree scenario and uses the same models and assumptions**
- **Analysis carried out by 7 leading Nordic research institutes and the IEA; coordinated and supported by Nordic Energy Research**

Energy efficiency has impacted total final consumption

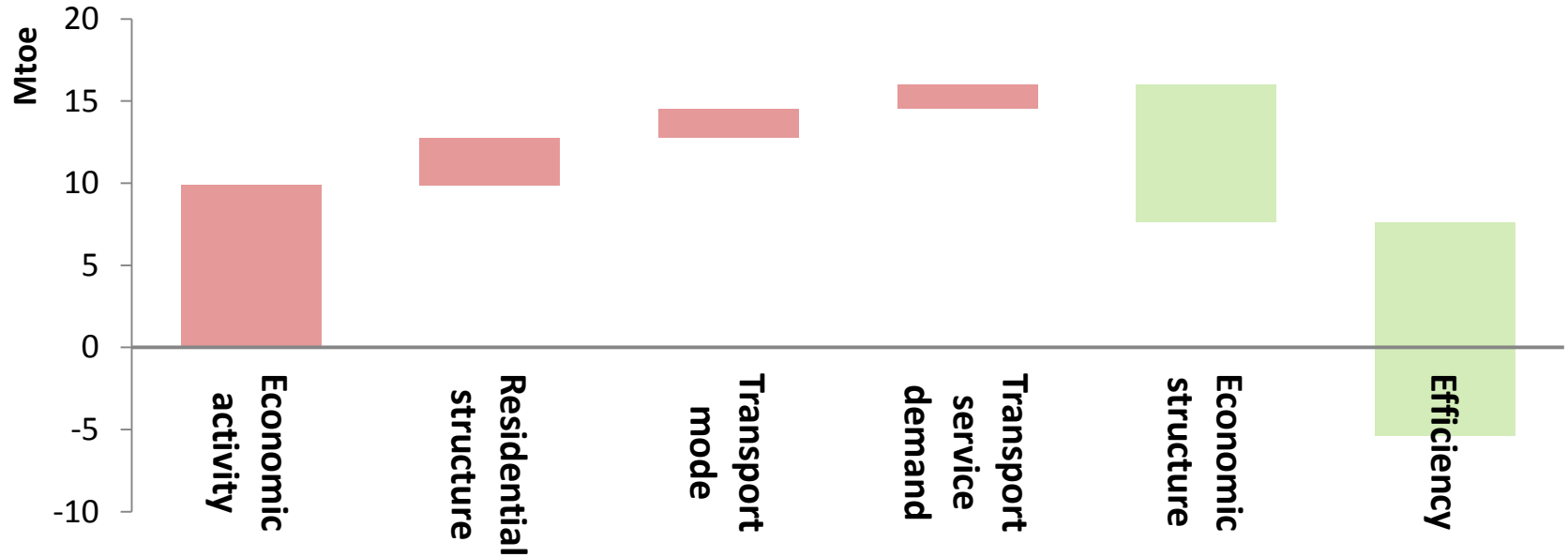
Total final consumption and energy savings from efficiency



Without efficiency progress, Nordic and Baltic countries' energy demand would be 18% higher

What has driven changes in energy demand

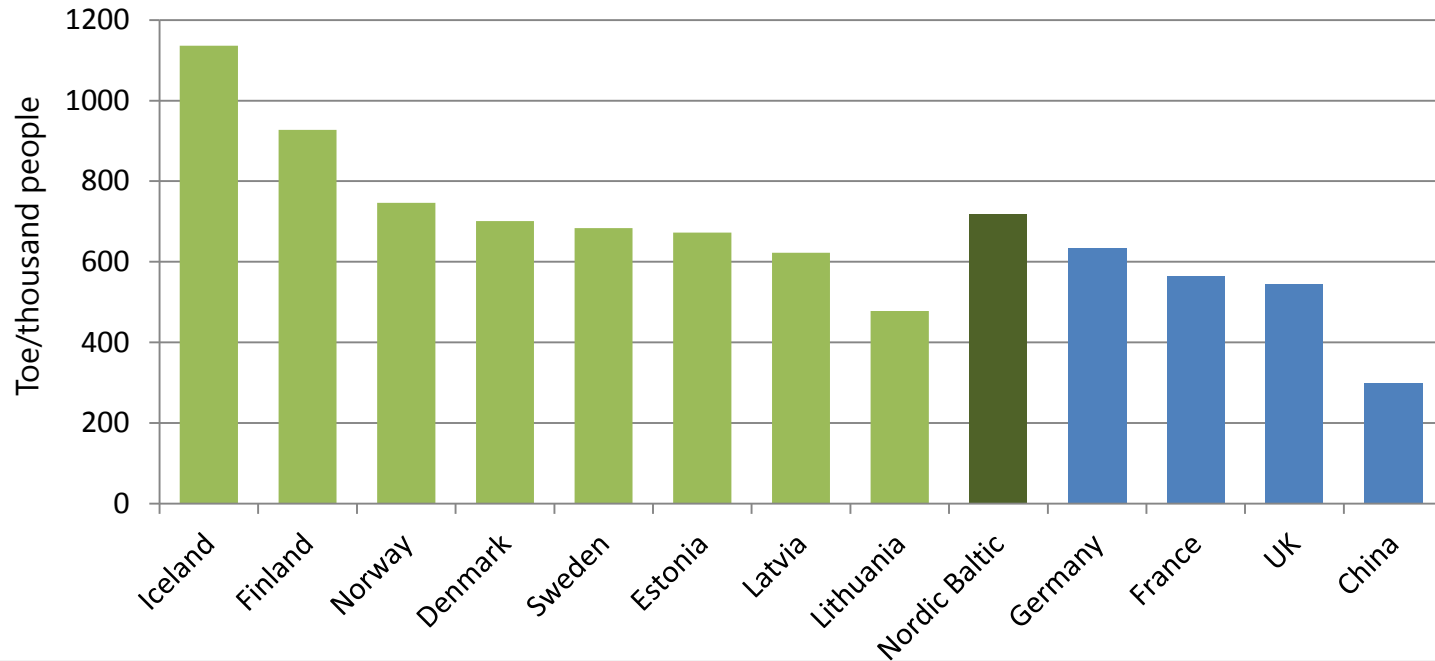
Breakdown of energy demand change in Nordic countries, 2000-15



Energy efficiency and structural changes are largest factors of energy demand drop.

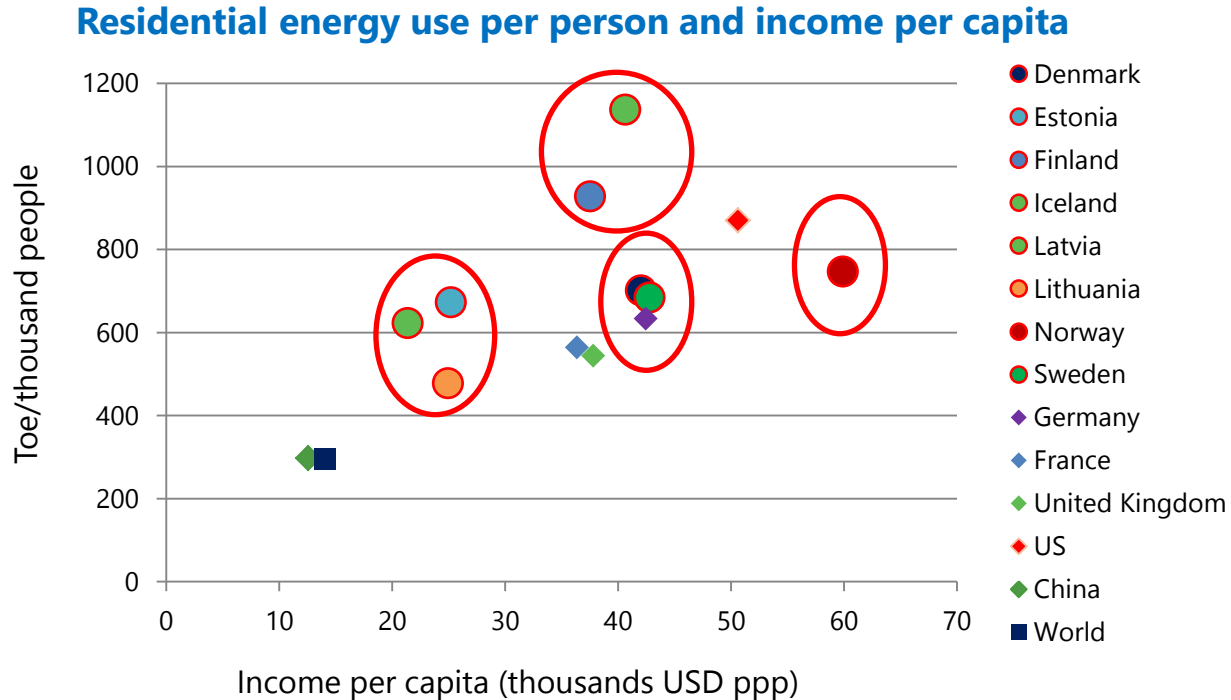
Residential energy use per person Nordic-Baltic countries

Residential energy use per person



Residential energy use per capita is slightly larger than major EU countries; This is mostly owing to climate, but income levels and other trends are also important

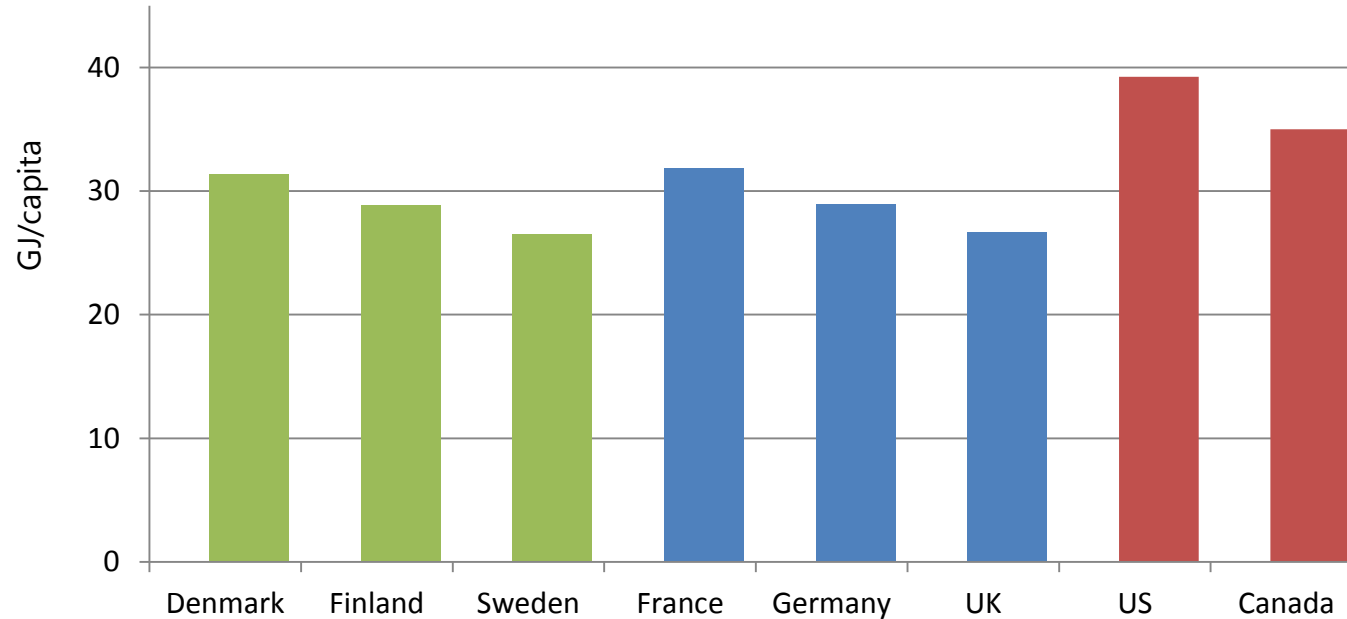
Residential energy use and income in Nordic-Baltic countries



Colder climates in Nordic-Baltic countries results in slightly higher residential energy use per capita at similar income levels

Accounting for the difference in weather conditions

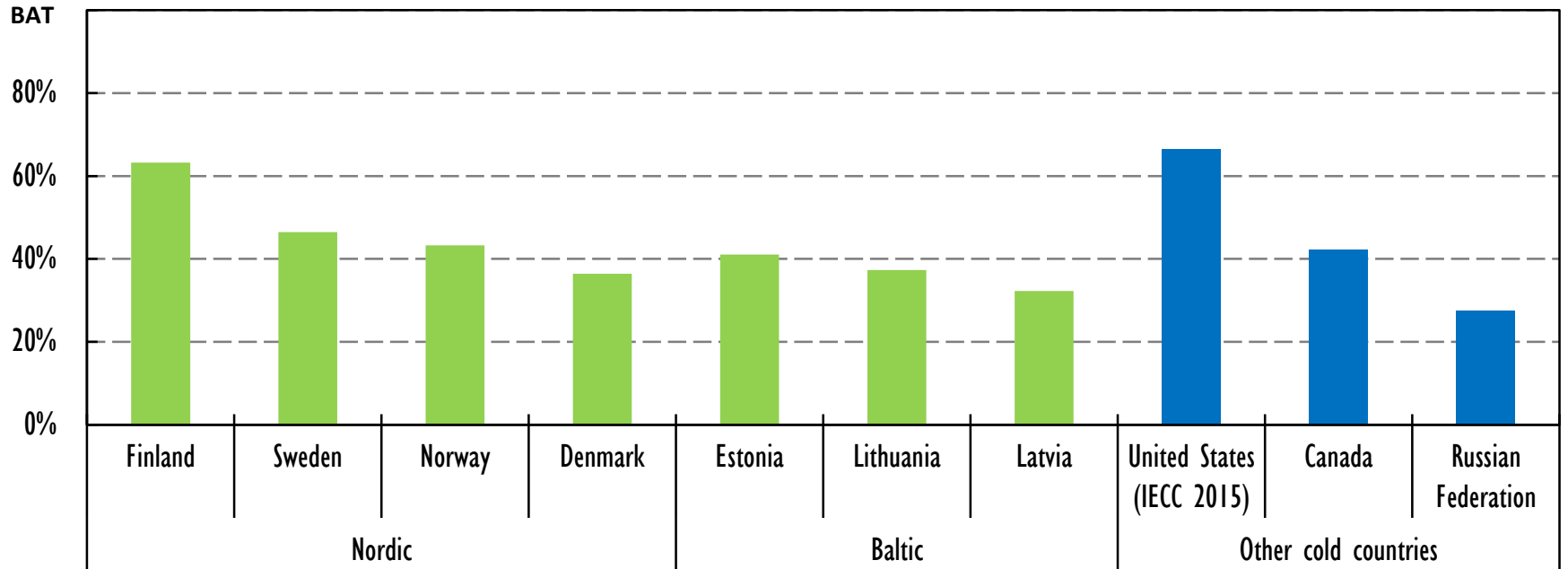
Weather adjusted residential energy use per person



Weather adjusted residential energy use per capita is similar to major EU economies and considerably lower than the US and Canada.

Strength of residential building envelope standards

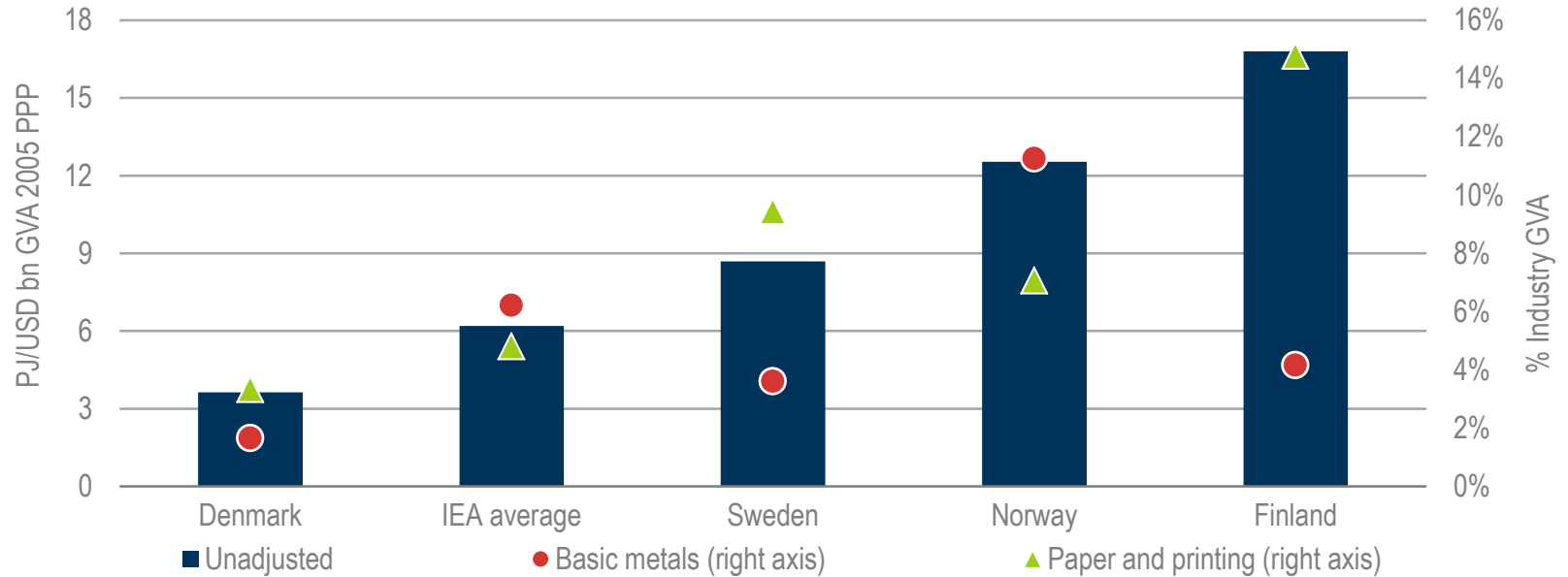
Proximity of residential building envelope standards to best available technology



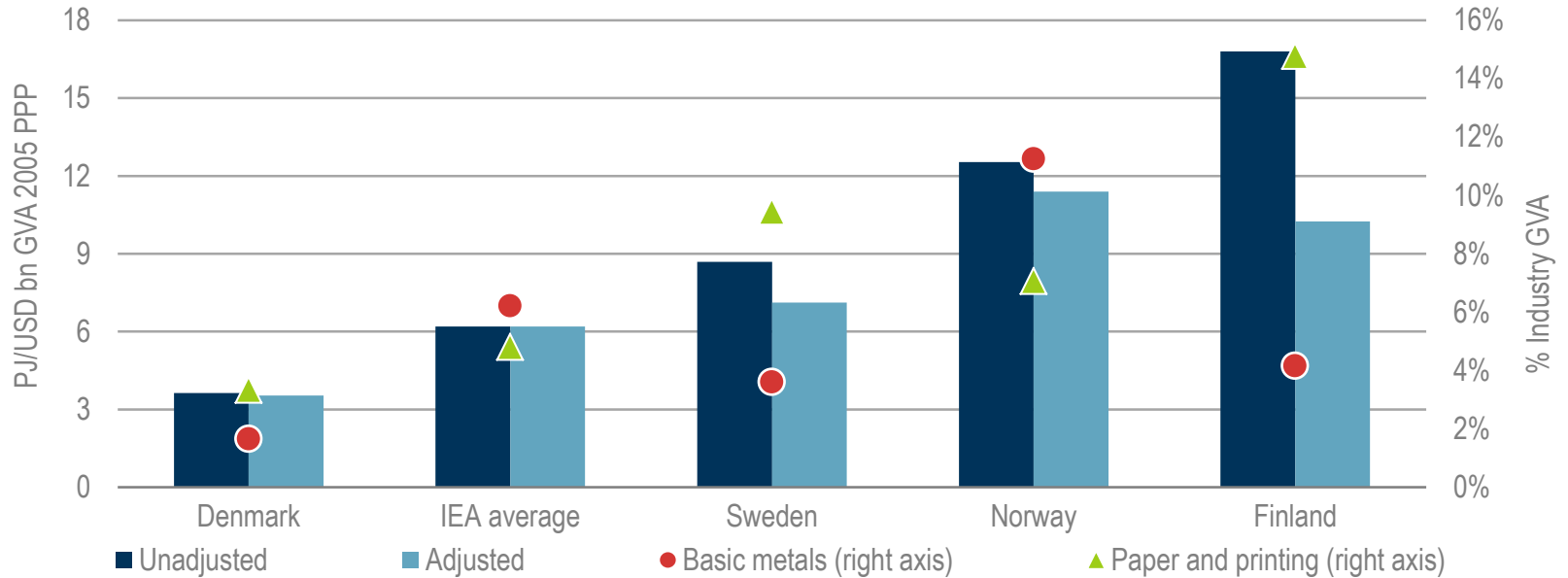
Strict building codes are driving out the cold, though zero-energy level requires another jump

Industrial energy intensity in Nordic countries

Industrial energy intensity, 2014



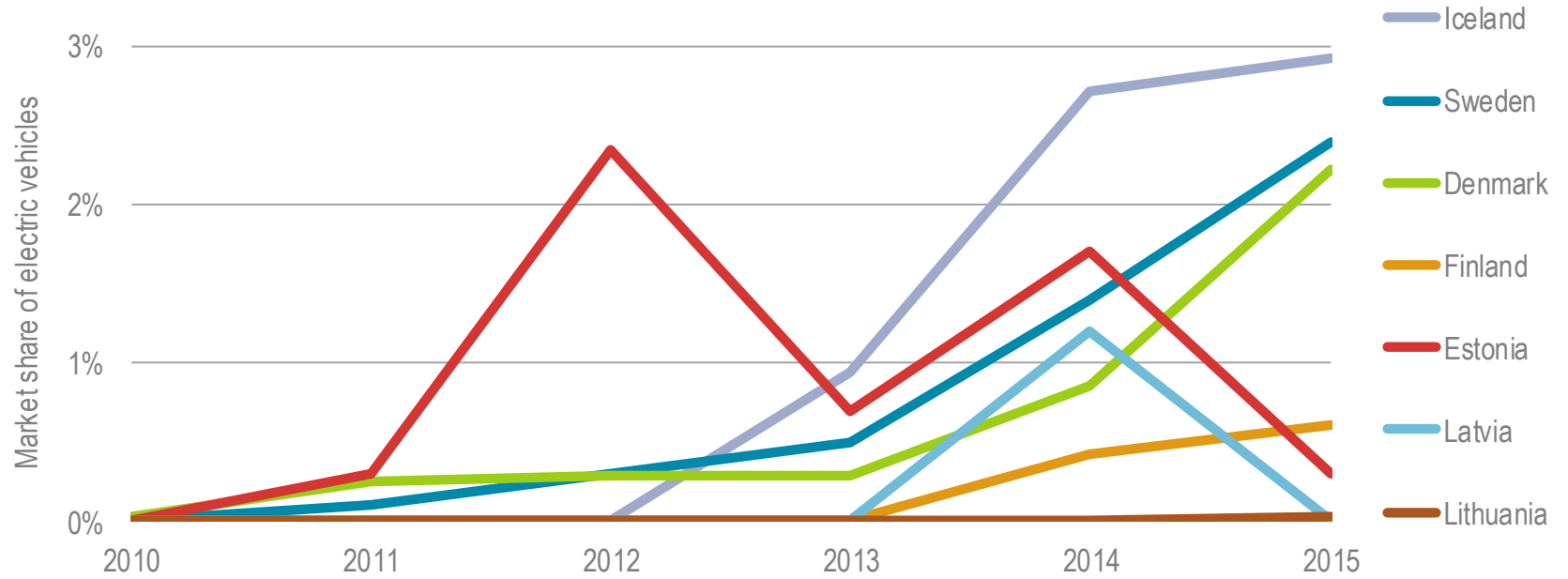
Industrial energy intensity in Nordic countries, 2014



Industrial energy efficiency in Nordic countries influenced by energy intensive sub-sectors

Electric vehicles have started to make an appearance

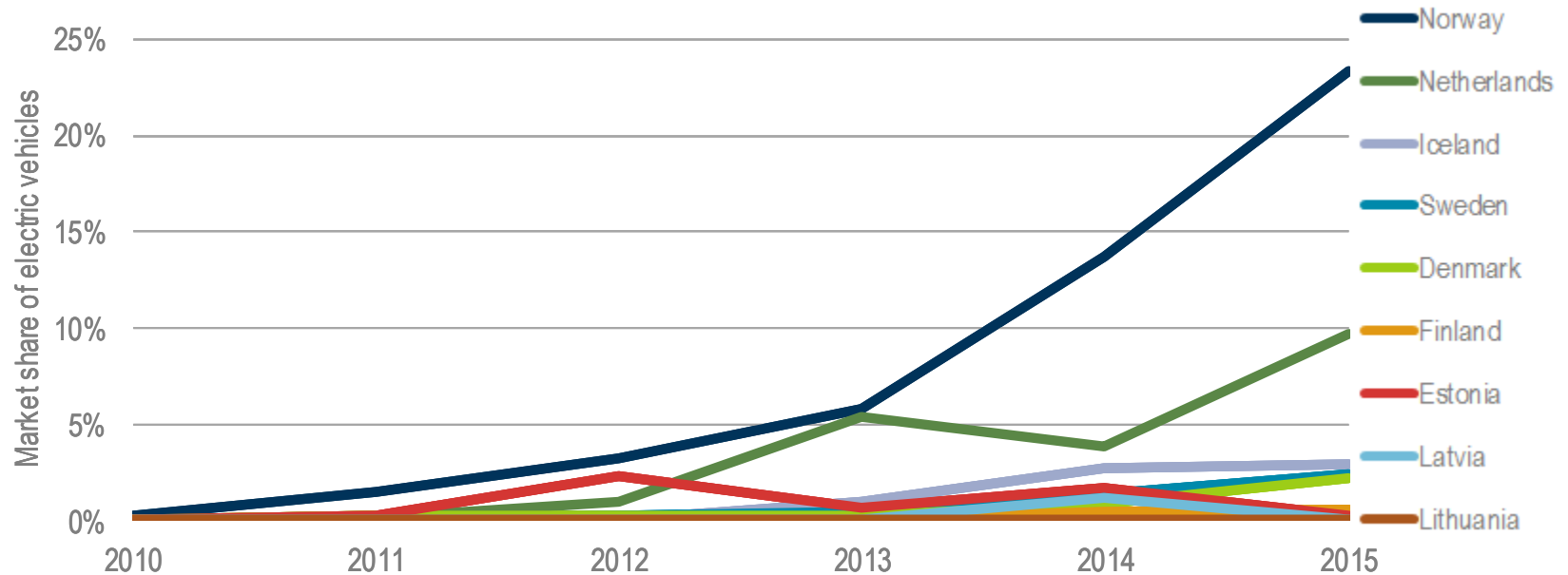
Market share of electric vehicles



Driven by policies, most countries have EV sales between 1-3%, except for...

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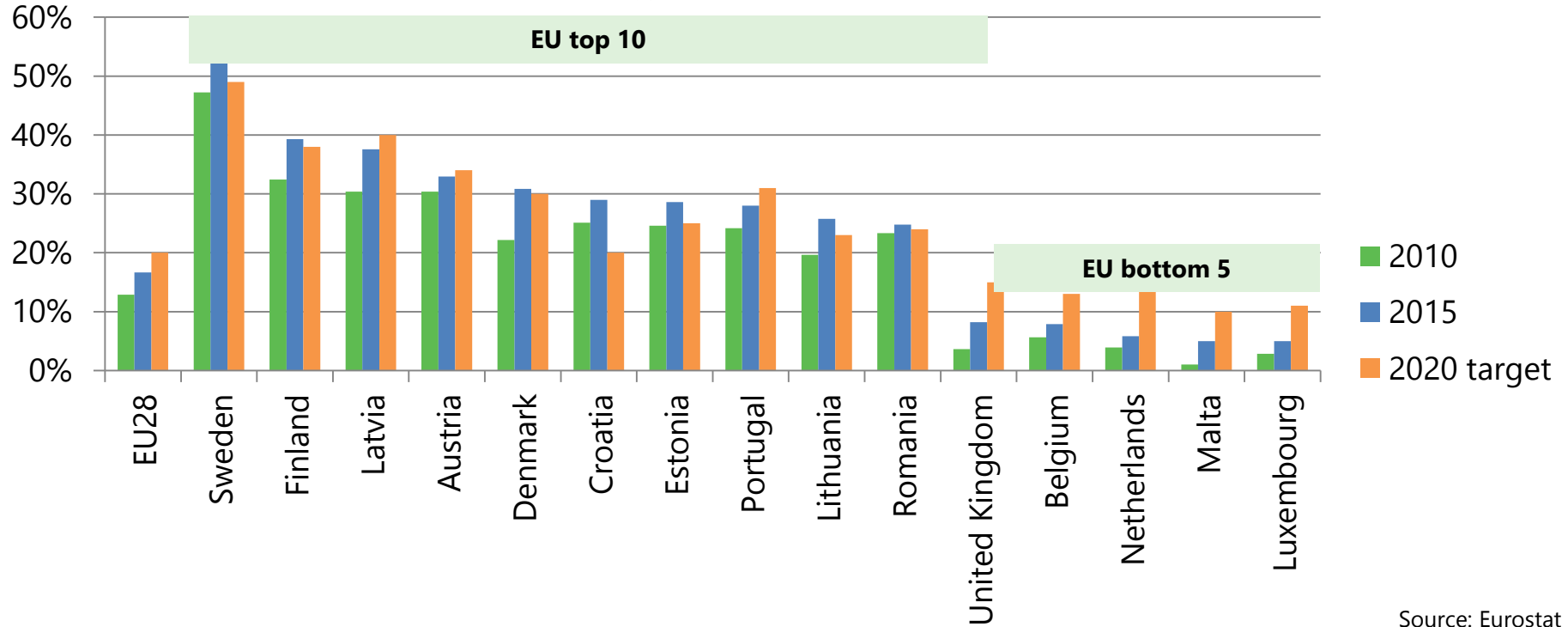
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Renewables - Nordics & Baltics are leading in the EU

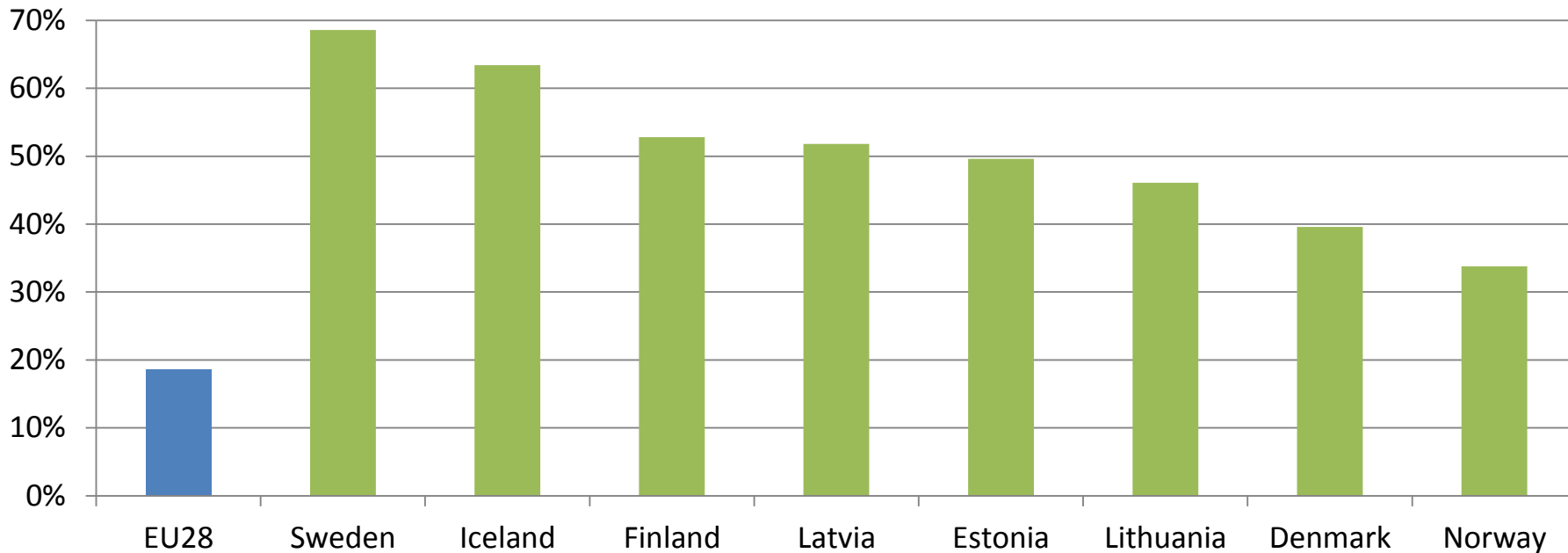
Share of energy from renewables resources



Source: Eurostat

EU 2020 RED has been an important driver for renewables deployment in the EU but less certainty for 2030, as no binding national targets.

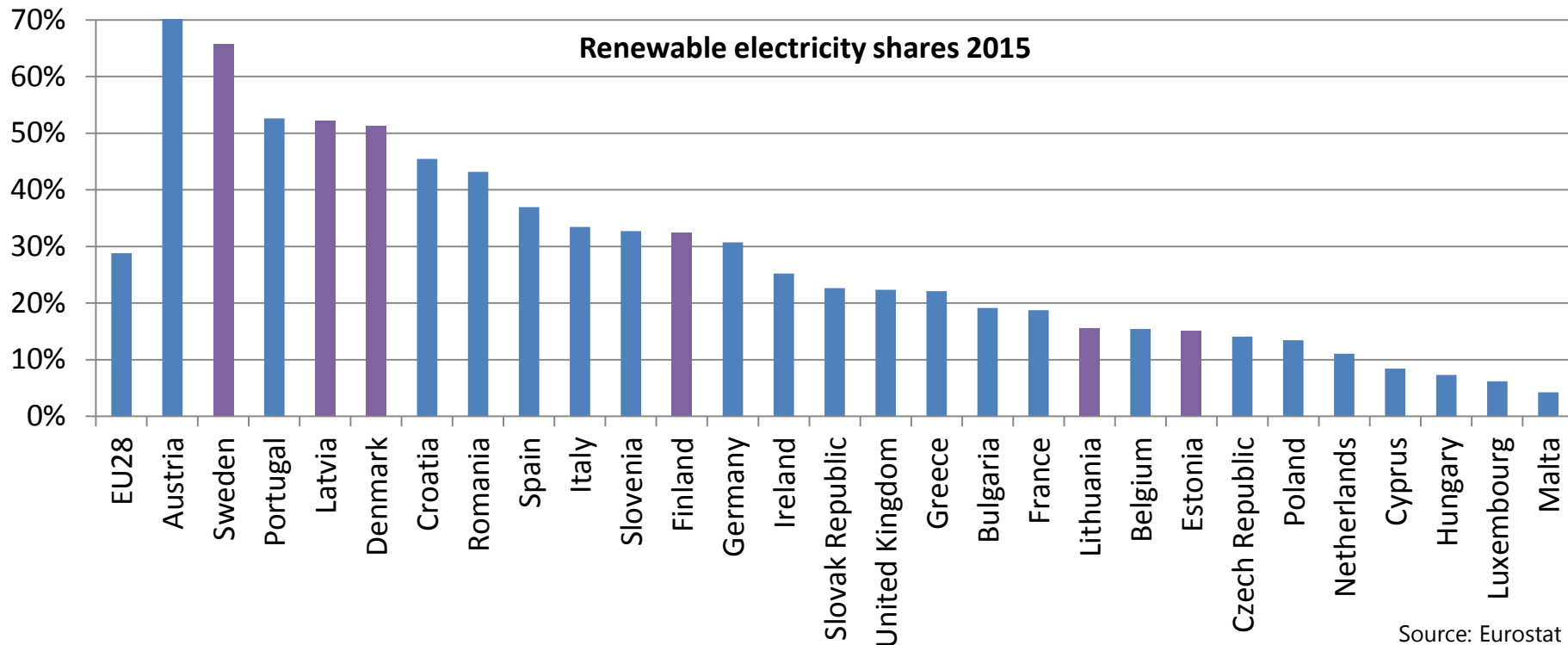
Renewable Heating and Cooling Shares 2015



Source: Eurostat

Further heat decarbonisation will need a mix of renewable heat, electrification (heat pumps) and waste heat, with solutions very location-specific

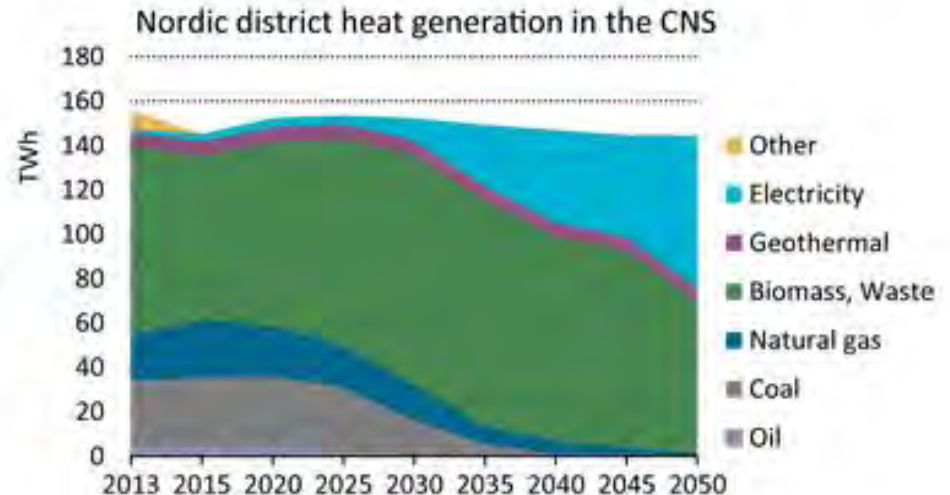
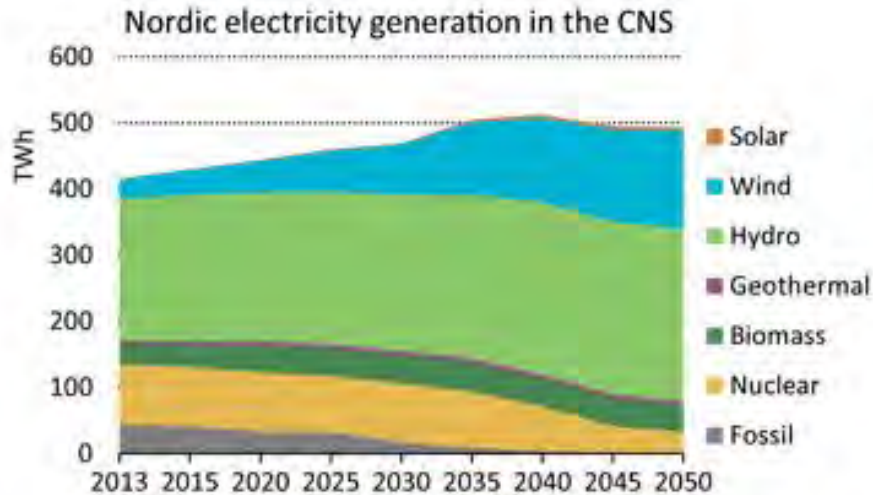
More effort needed on renewable electricity



Source: Eurostat

Good wind potential (both onshore and off-shore) provides future opportunities.

Future options for Nordic renewables

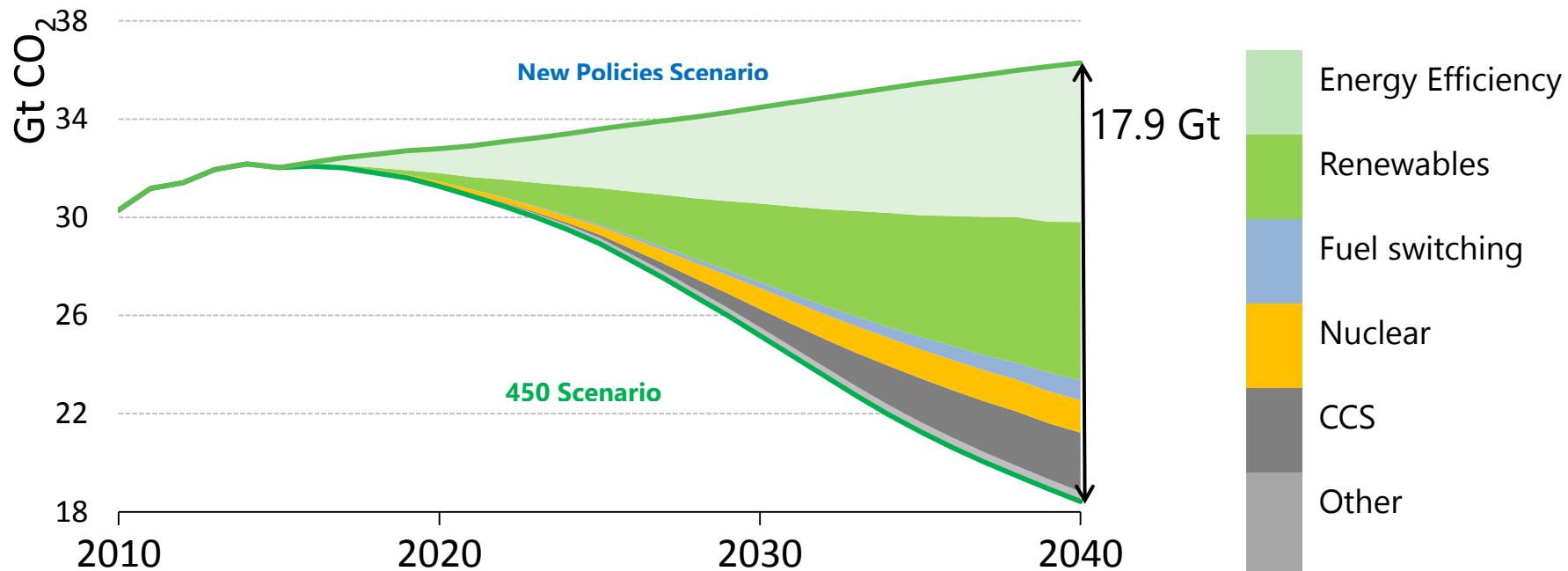


Source: Nordic ETP

More wind, increased coupling of electricity and heat & more exports through interconnectors.



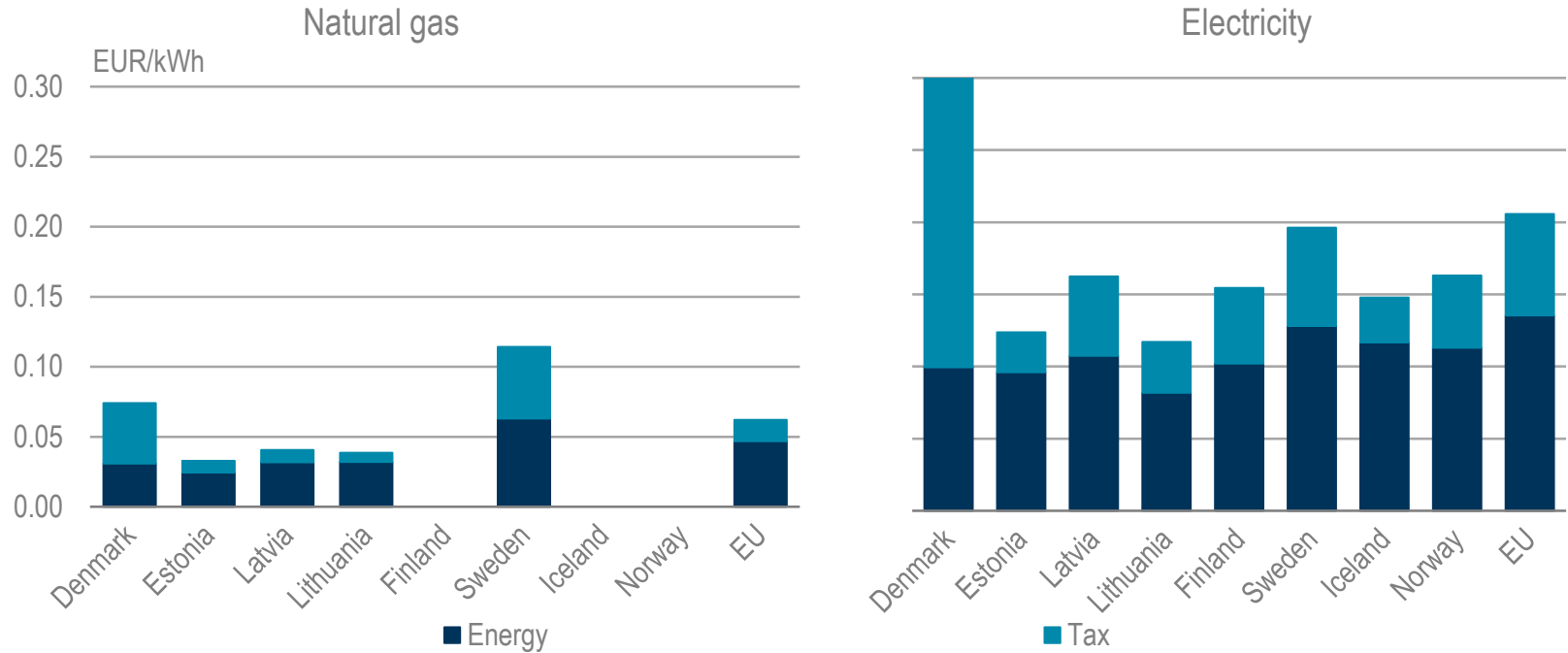
Energy Efficiency and Renewables key to future energy systems



Globally, renewables and energy efficiency are projected to do more than two thirds of the heavy lifting when it comes to reaching climate change targets

Energy prices in Nordic-Baltic countries

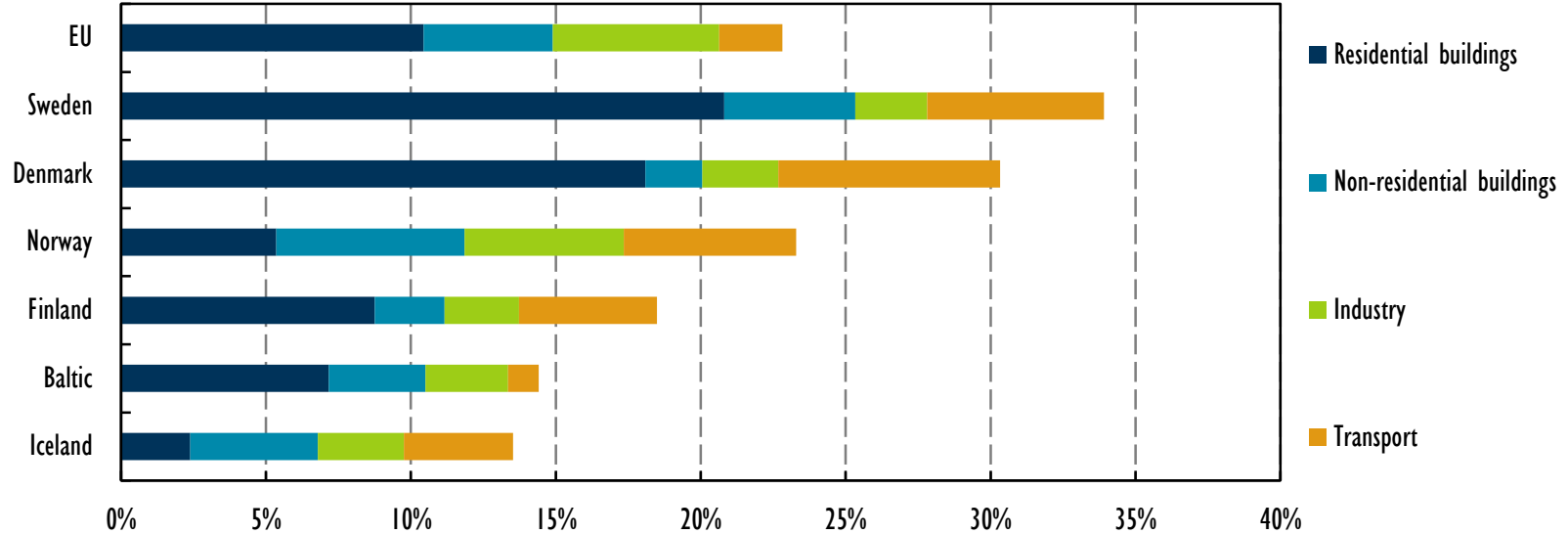
Household energy prices, 2016



Nordic energy prices higher than Baltic, mainly driven by tax differences

Coverage of mandatory efficiency regulations

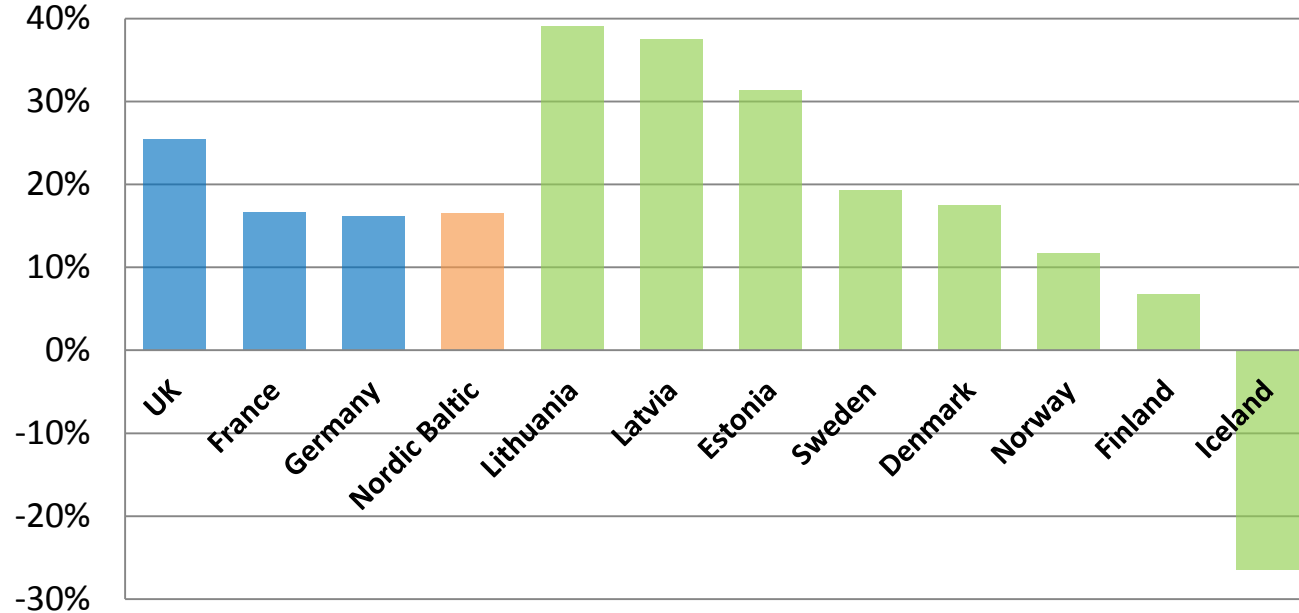
Share of total final consumption covered by mandatory energy efficiency policies



Most Nordic countries are above the EU average, Baltic countries and Iceland are catching up.

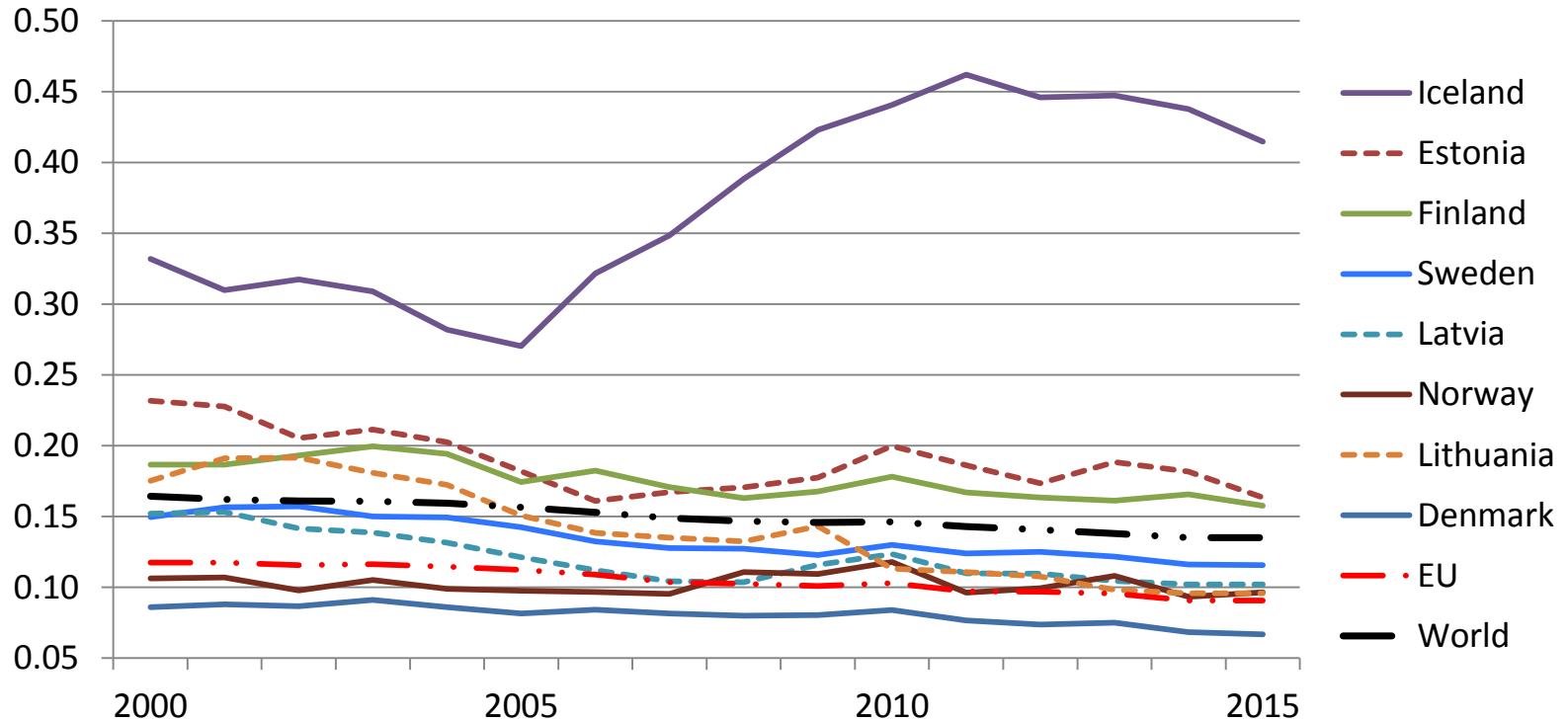
Efficiency improvements vary across countries

Energy efficiency improvement in Nordic-Baltic countries, 2000-15



Average efficiency progress is similar to major EU countries, though it varies largely by country. Small Baltic countries seemed to improve faster than large Nordic countries .

Energy intensity of Nordic & Baltic countries



Nordic Baltic countries intensity has improved 17% on average since 2000, but their average intensity is 25% higher than EU level