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Energy Agency

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***Renewable energy and energy efficiency  
performance in Nordic and Baltic countries –  
lessons for 2030***

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- **Founded in 1974 – OECD agency**
- **29 member countries**
- **1 new applicant - Mexico**
- **3 associate countries:**
  - **China, Indonesia, Thailand**
- **240 staff in Paris secretariat**



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# Nordic Energy Technology Perspectives

Pathways to a Carbon Neutral Energy Future



**2016 edition launch Stockholm  
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# IEA assessments of Nordic & Baltic countries' policies – generally very positive



## Estonia (2013)

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

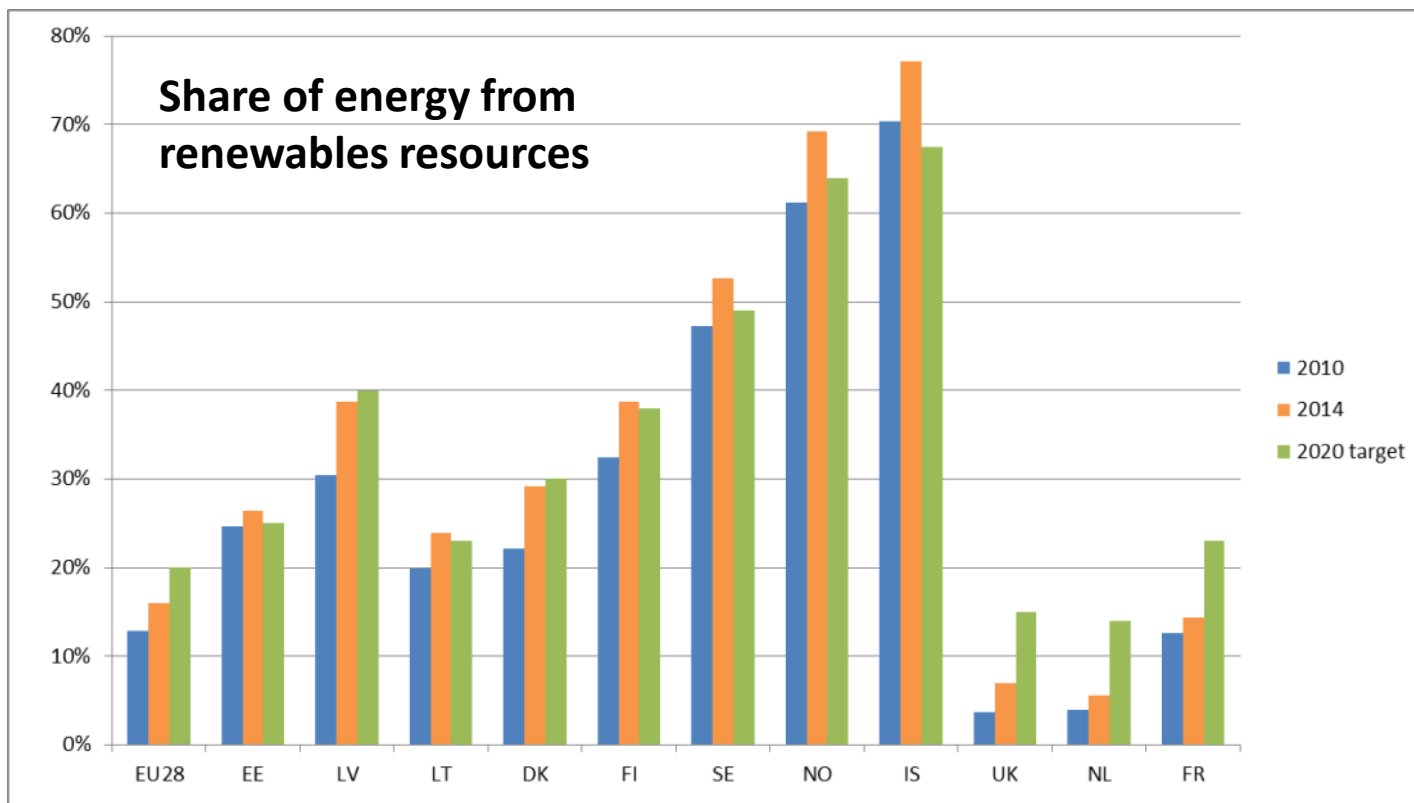
## Finland (2013)

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

## Sweden (2013)

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

# Good performance in Nordic and Baltic states against EU renewables targets

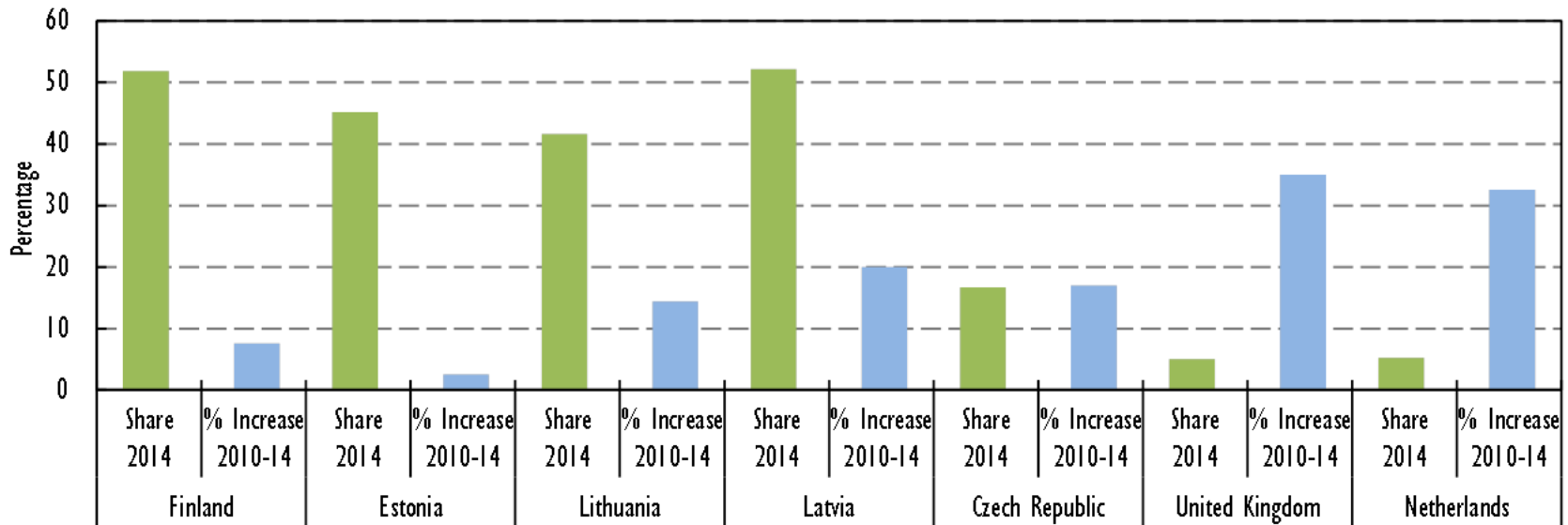


Source: Eurostat data

EU Renewable Energy Directive, especially binding targets, has been the key driver of deployment. However, growth has been more modest in countries with already high shares (e.g. Nordics & Baltics), compared to member states with low shares

# Renewable heat is driving force behind compliance with EU targets in Nordic & Baltic countries

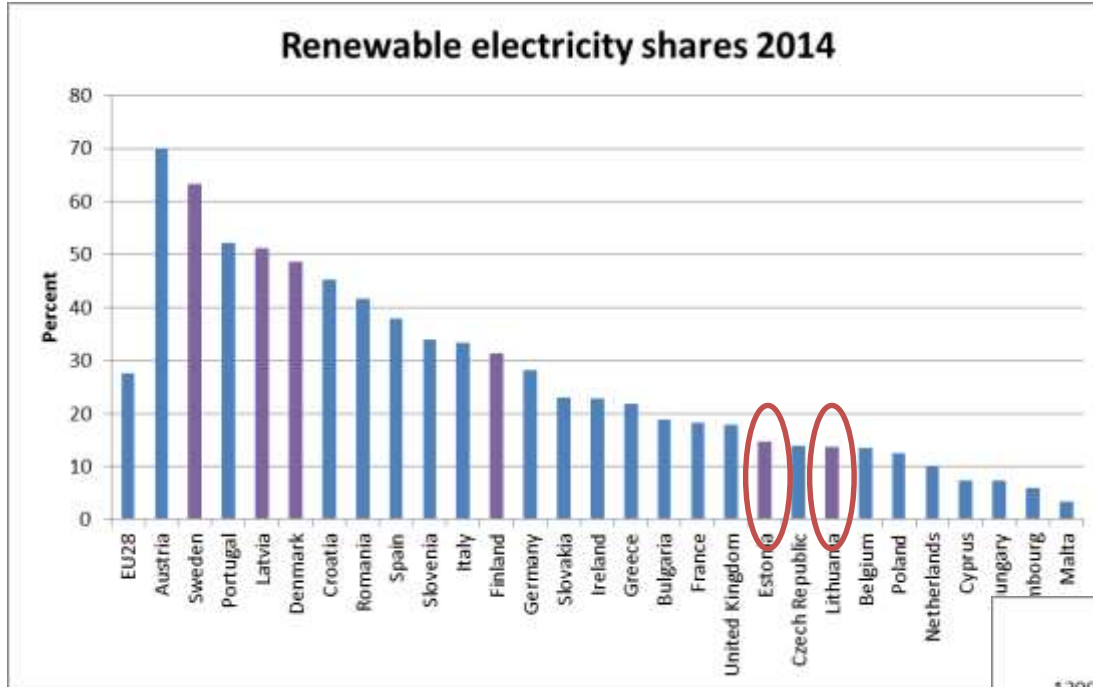
## Renewable heating and cooling shares 2014 and % increase 2010-14



Source: Eurostat

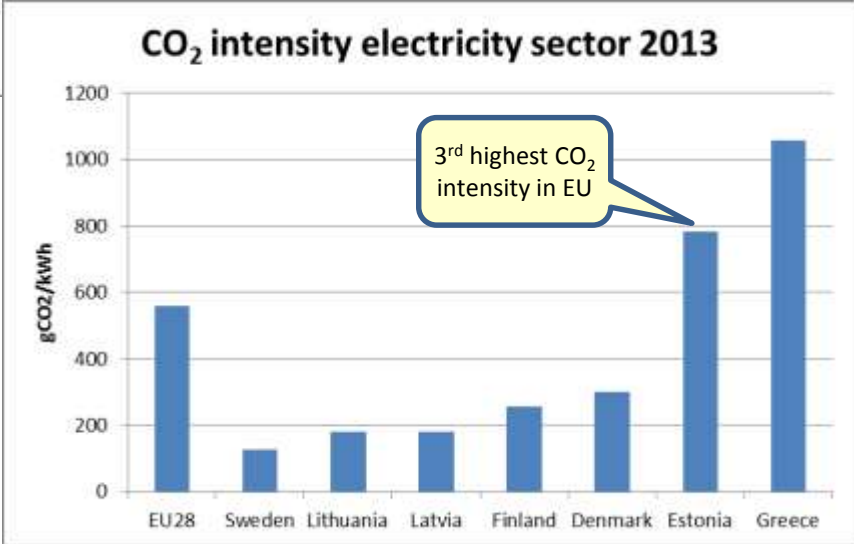
- EU targets important but good domestic biomass resource and geopolitical considerations (i.e. cut dependence on Russian gas) probably most important driver
- High penetration of district heating can facilitate move to renewable heat
- In other EU countries, RE Directive compliance primarily through electricity rather than heat

# Towards 2030 need to increase share of renewable electricity, especially in some member states



Good wind potential (both onshore and off-shore) in the Baltics

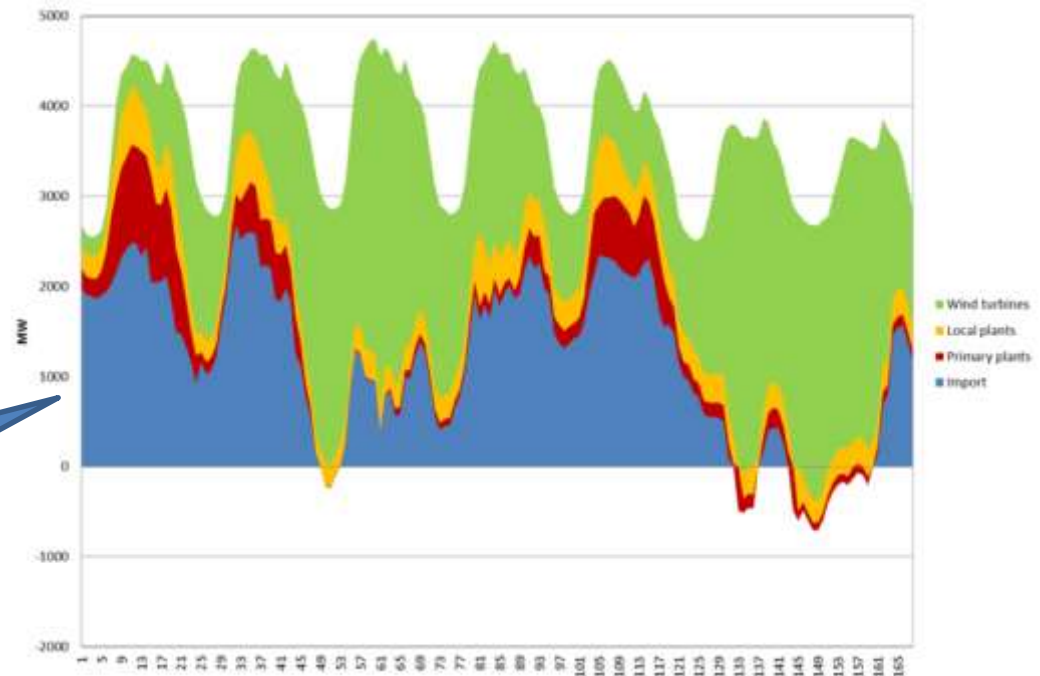
Denmark – best practice for integration of high shares of variable renewables (wind 40%), including use of district heating system for balancing



# Some lessons from Denmark - world leader in deploying variable renewables

- Target of 50% renewables in electricity by 2020, primarily wind
- District heating provides flexibility – CHP plants, electric boilers, heat pumps
- Demand-side response for load management
- Good interconnection (Swe, Nor, Ger)
- System-friendly windpower

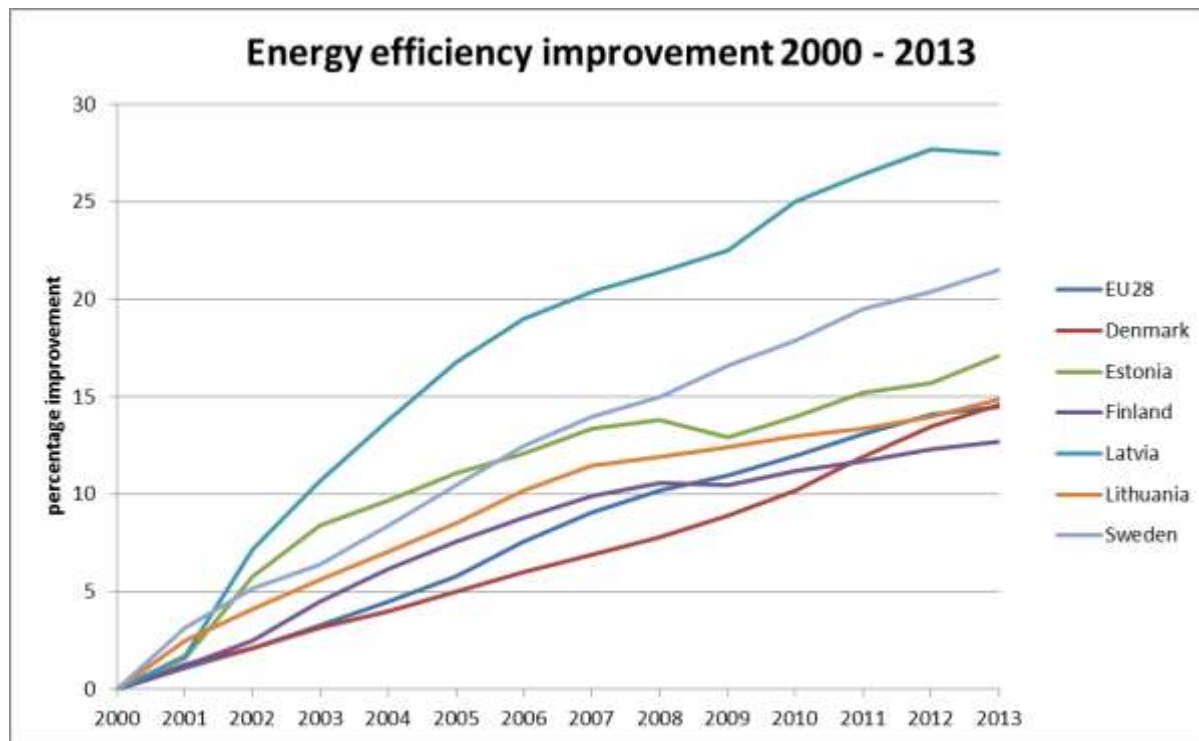
Hourly dispatch 31 August - 6 September 2015 – operation solely based on wind, small local plants and imports, no large-scale thermal plant



Source: Energinet.dk, 2016



# Energy efficiency performance above or close to EU average across the region

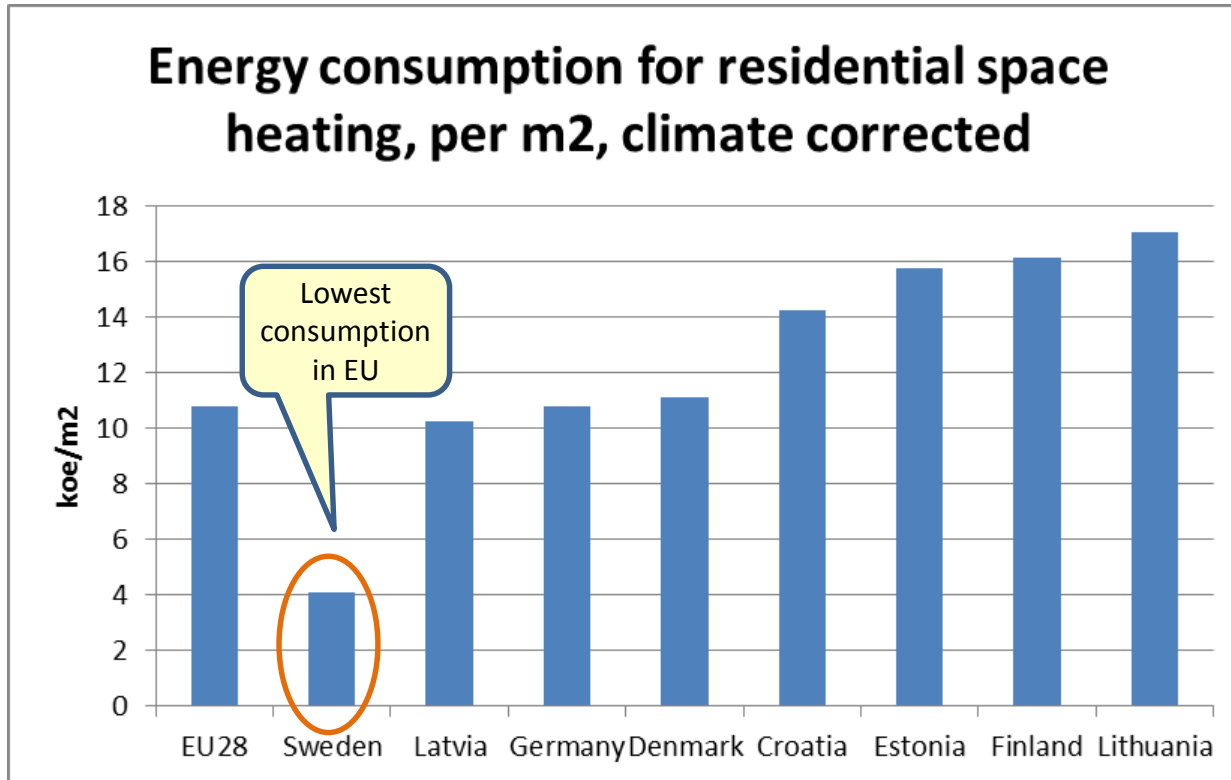


Based on 30 key energy efficiency indicators in industry, households, transport and services sectors

Source: Odysee database

- Unlike renewables no EU-wide binding targets
- But EU Directives important driver of efficiency improvements in appliances and cars

# Scope for energy efficiency improvements (e.g. buildings) remains large



Notes: 2013 data, except Estonia (2010)

Source: Odyssee database

- Need to improve buildings efficiency in most countries, especially retrofit
- Efficiency improvements also needed in transport and industry

# Policy challenges for 2030

- Lack of mandatory EU 2030 targets for both renewables and energy efficiency
- Required improvements are becoming more challenging:
  - Need better integration of power, heat and transport sectors to a) improve efficiency b) facilitate higher shares of variable renewables
  - Need to improve building stock energy efficiency retrofit rates
  - Improve both efficiency and increase renewable heat shares in district heating
- Cost of public support schemes - need for new business models?
- More effective carbon pricing
- Scope for regional cooperation & best practice exchange

# Conclusions



- Baltic and Nordic countries among the top performers in the EU on renewables and energy efficiency
- But significant challenges to further improve performance/deployment towards 2030
- How can EU 2030 targets be as transformative as the 2020 RED targets have been for renewables?

