



International
Energy Agency

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

*Dr. Ute Collier
Senior Programme Leader
International Energy Agency*

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www.iea.org

- **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.

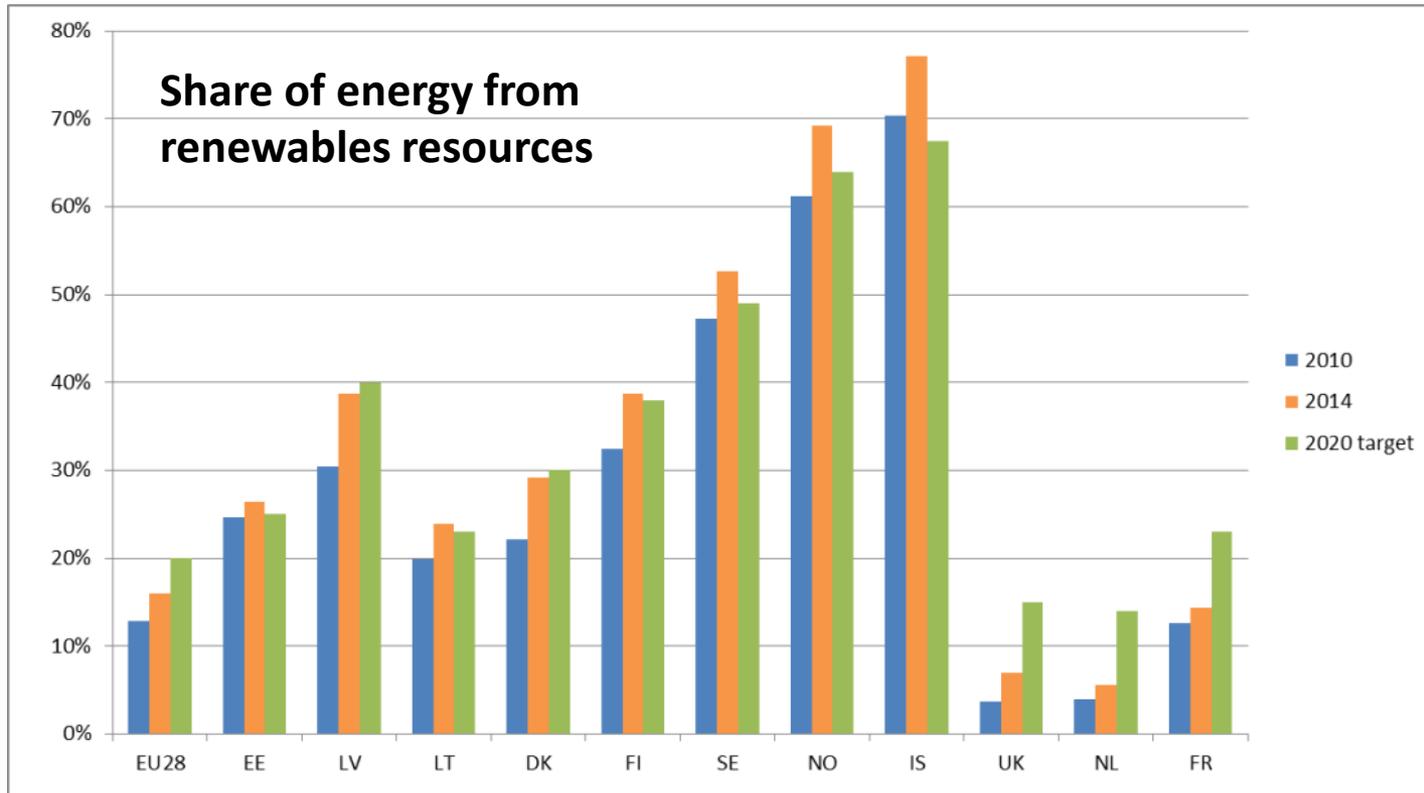
Finland (2013)

- 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

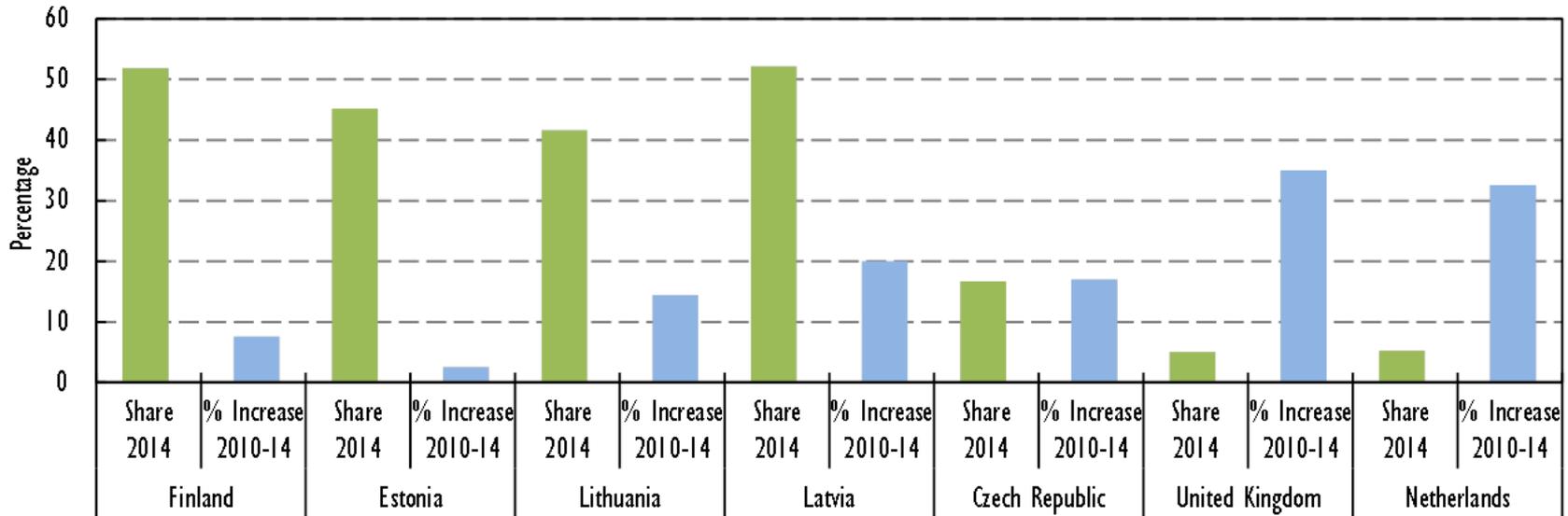


Source: Eurostat data

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

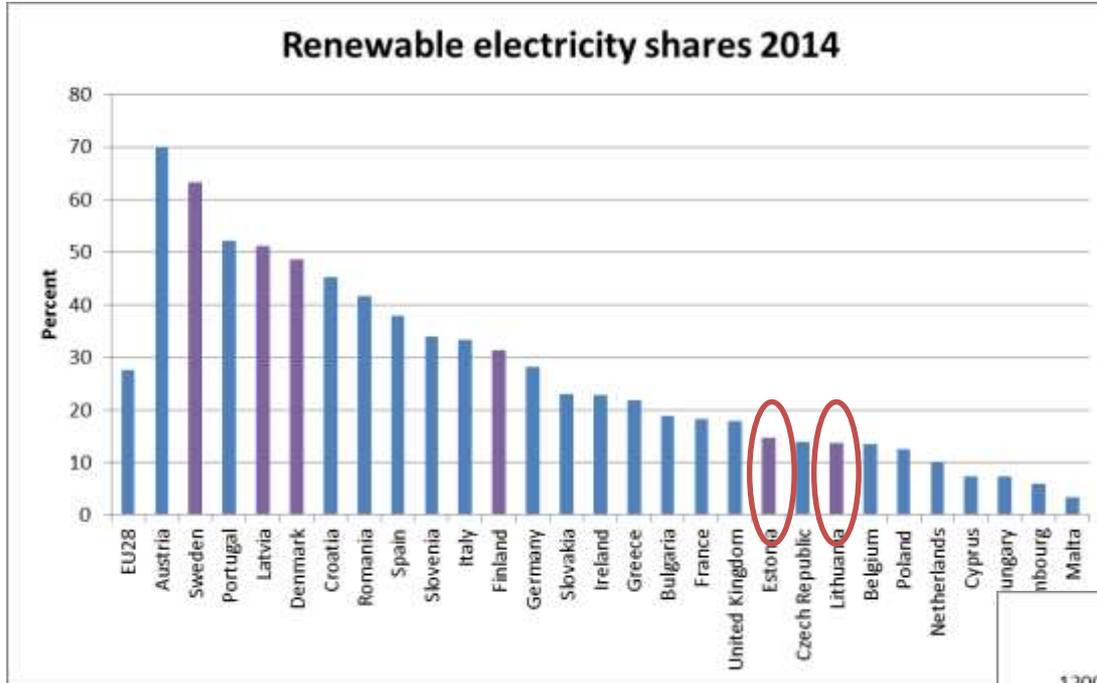
Renewable heating and cooling shares 2014 and % increase 2010-14



Source: Eurostat

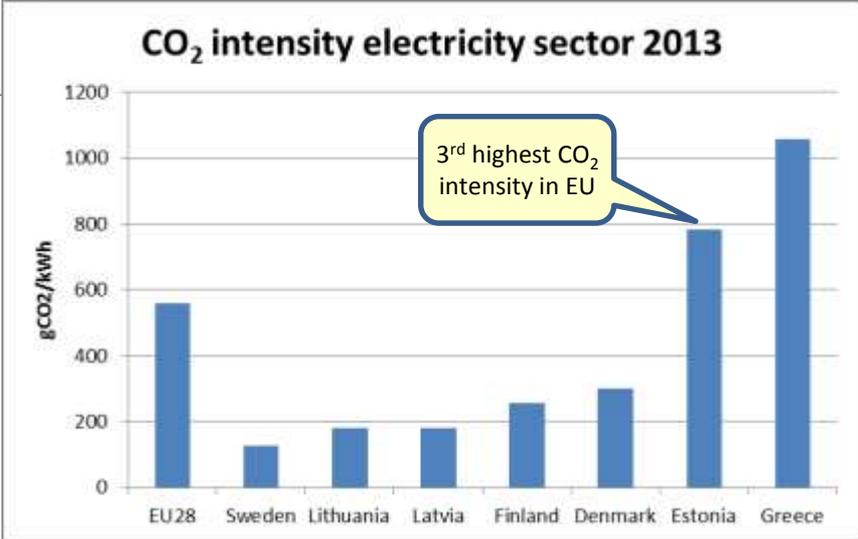
- EU targets important but good domestic biomass resource and geopolitical considerations (i.e. cut dependence on Russian gas) probably most important driver
- High penetration of district heating can facilitate move to renewable heat
- In other EU countries, RE Directive compliance primarily through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

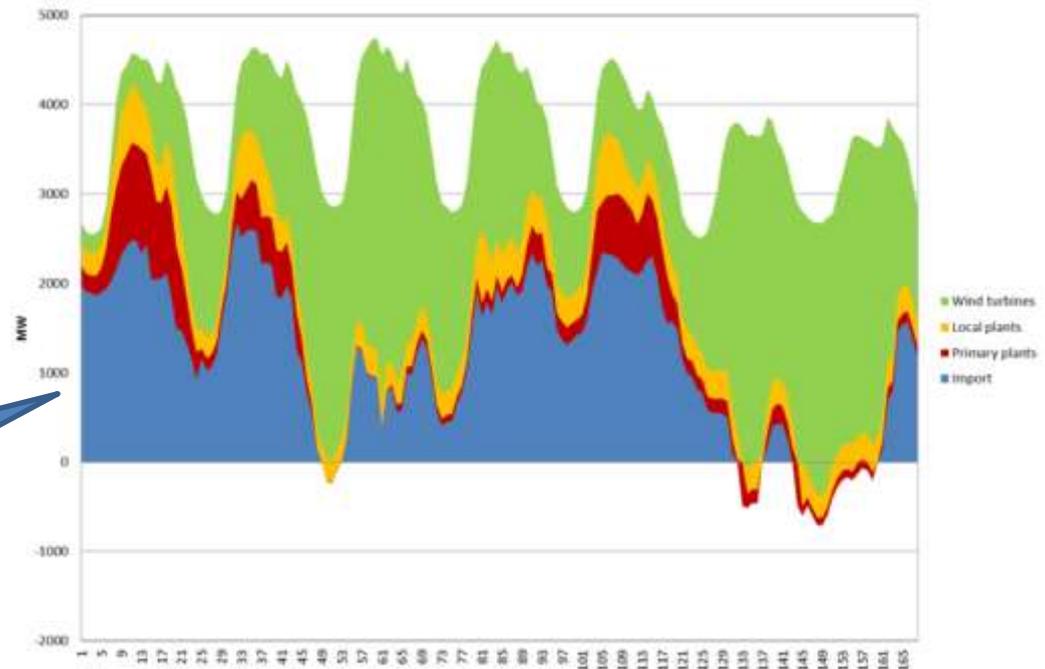
Denmark – best practice for integration of high shares of variable renewables (wind 40%), including use of district heating system for balancing



Some lessons from Denmark - world leader in deploying variable renewables

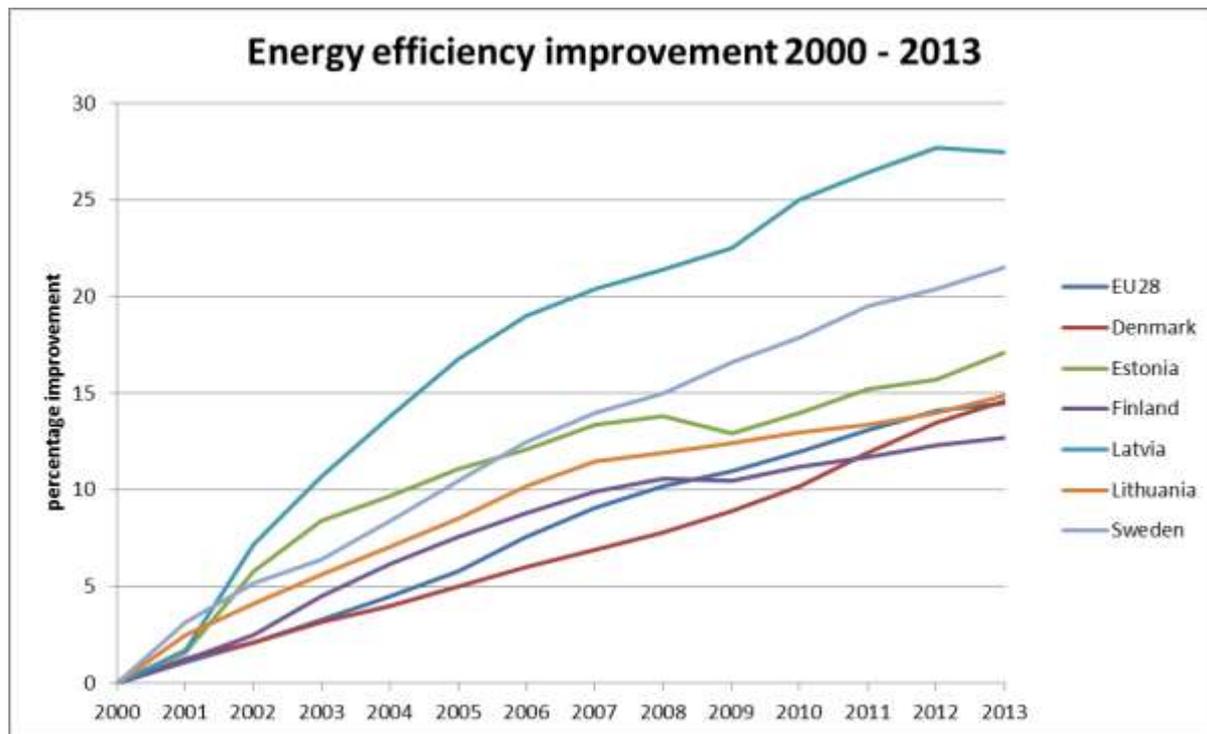
- Target of 50% renewables in electricity by 2020, primarily wind
- District heating provides flexibility – CHP plants, electric boilers, heat pumps
- Demand-side response for load management
- Good interconnection (Swe, Nor, Ger)
- System-friendly windpower

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

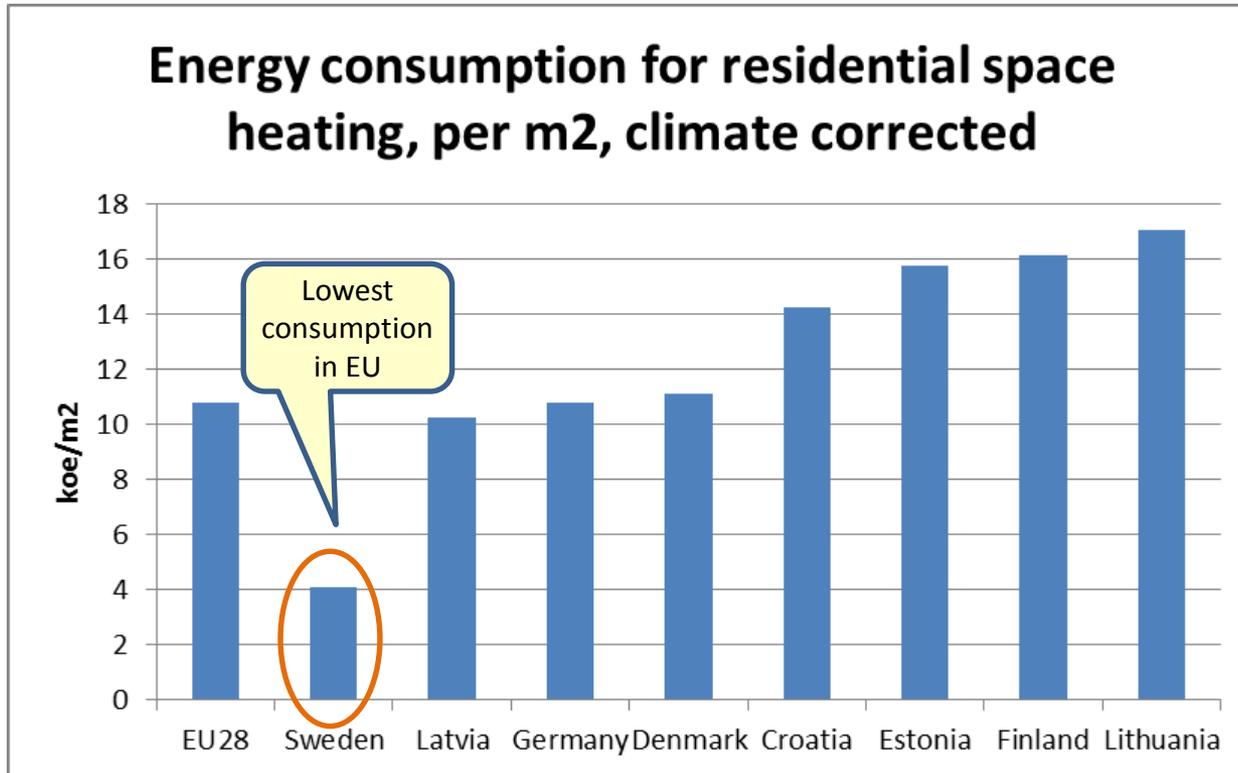


Based on 30 key energy efficiency indicators in industry, households, transport and services sectors

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?

