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Renewable energy in Estonia in the context of energy security

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EU perspectives

2020 targets – challenge of energy efficiency

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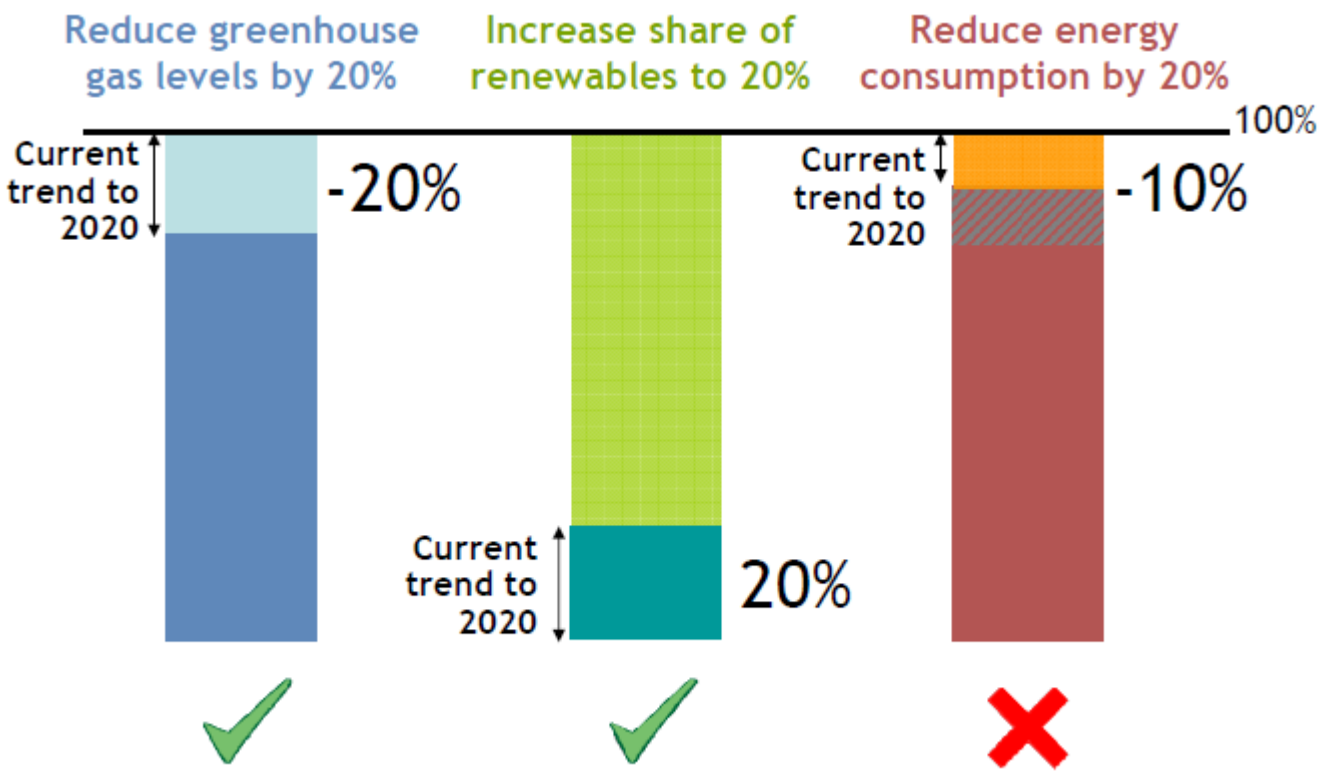

Source:http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/20110622_energy_efficiency_directive_slides_presentation_en.pdf

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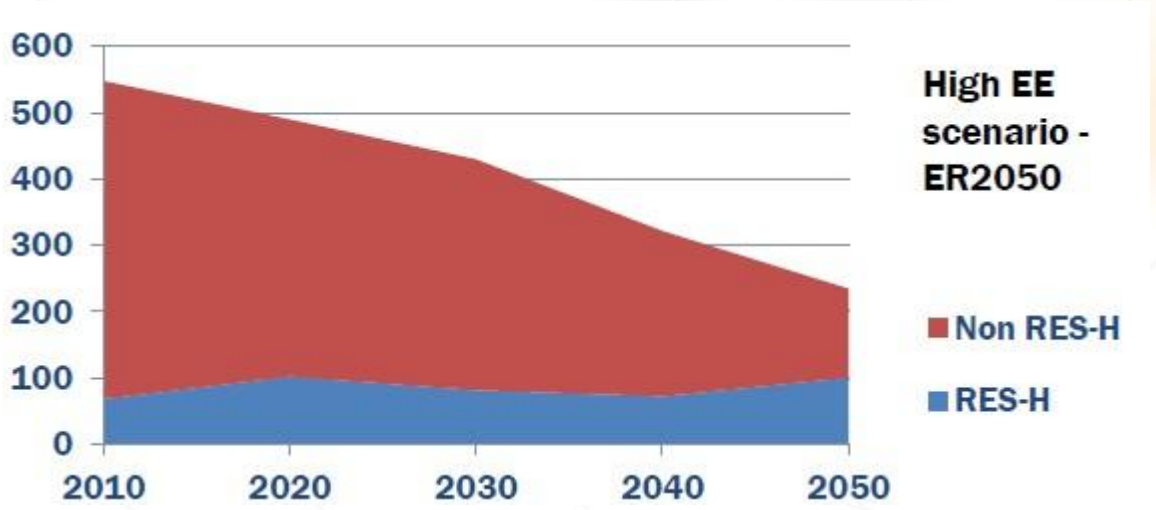
Outlook

- 2030: the 27% renewables target proposed by the European Commission and adopted by the Council is insufficient to provide a signal especially for the renewable heating and cooling sector, where 39% of natural gas in the EU is consumed



- 27% renewables in 2030 = stagnation for renewable heating and cooling
  - From 21% in 2020 to 25% in 2030
- Only a higher target will have a real impact!

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The effect on natural gas imports

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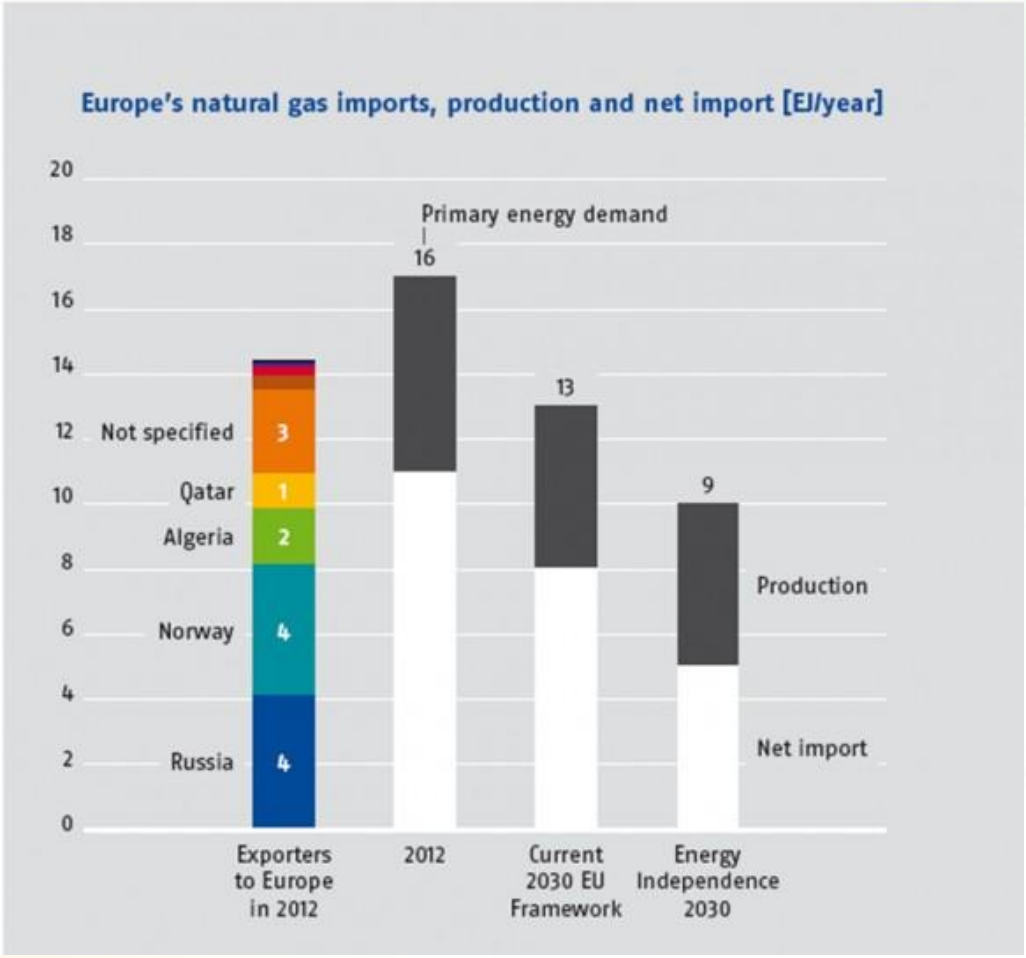

By ramping up cost-effective investments in renewable energy and energy efficiency the European Union can cut its dependency on natural gas imports in half

- 58% of natural gas consumption in buildings cõuld be displaced between now and 2030 (equates to 23% of all natural gas consumed in the EU in 2012).
- In power generation 19% of total current natural gas consumption in the EU could be reduced, in industrial sector 5%..

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Regional outlook

Nordic-Baltic region could be the model region for RES take up

Nordic-Baltic region could be the model region in RES take up

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- From 10 GW to 40 GW installed wind energy combined with existing hydro
- Far-reaching programm for energy efficiency of buildings.
- Take up of RES in H&Ce.g. + Swedish 84% RES in H&C) - Finland (14% RES)
- Much more efficient new cars.
- Heavy investments in second-generation biofuels.
- A slow-down in Norwegian oil and gas production.
- A complete phase-out of shale (Estonia), peat (Finland and Sweden) and coal
- A significant, but limited investment in solar cells and wave power

Nordic-Baltic region could be the model region in RES take up

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Perfect pre-conditions for such transition:

- **Ample resource base in terms of hydro, wind, biomass**
- **Wealth and knowledge**
- **Existing infrastructure**
- **Already well-functioning integrated market**
- **High awareness**

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State of play in Estonia

Information about Estonia

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- Area: 45.227 km²
- Population: 1,315,819
- GDP per capita: $26,555
- Energy consumption: 32,4 TWh/a=2818ktoe/a
- Primary energy production: 69,7 TWh/a=5995ktoe
- Exports: 18,7 TWh/s=1610ktoe/a

Electricity and heat consumption in Estonia, 2011

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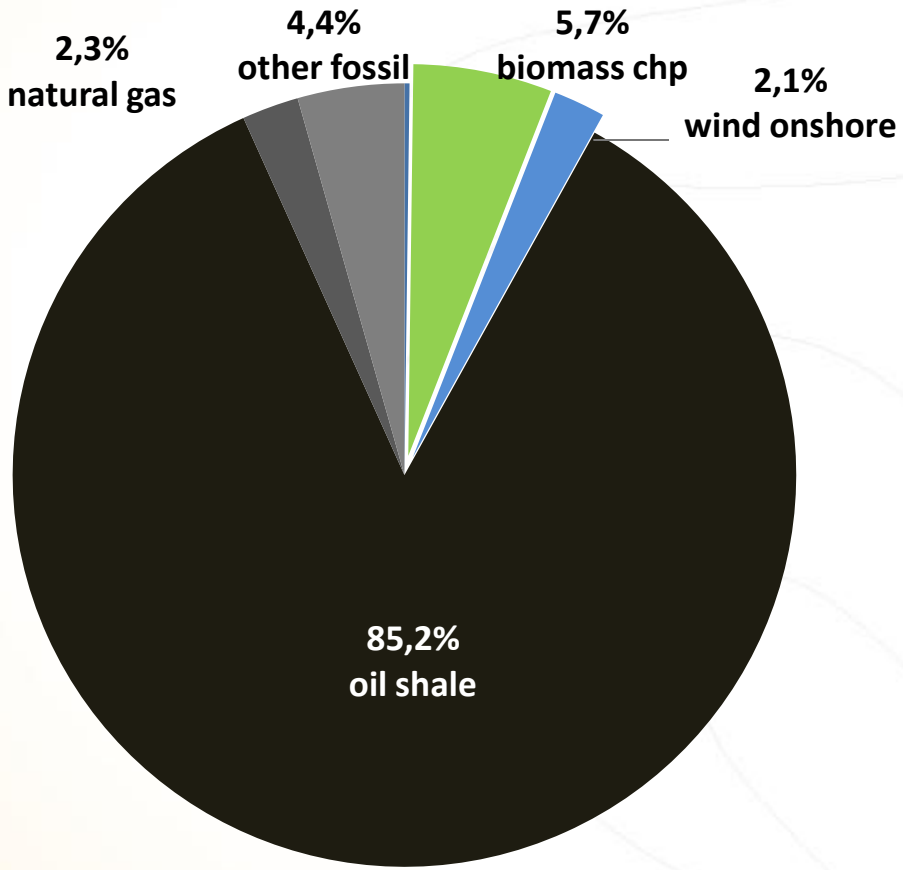
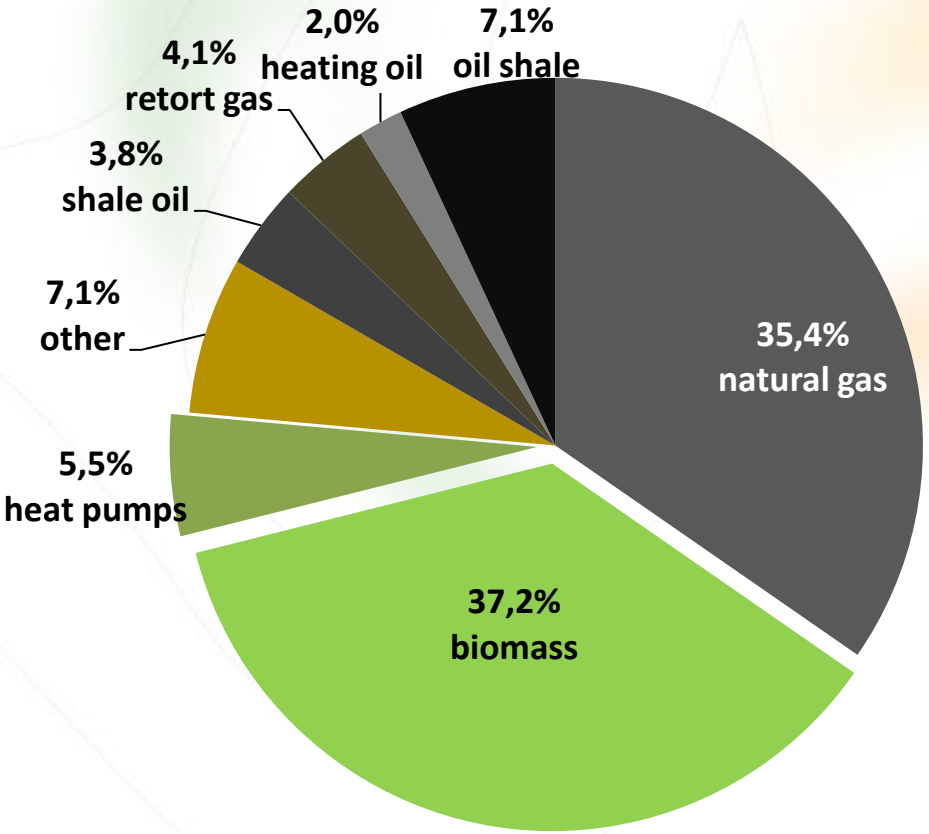
Electricity consumption by fuel (%)



H&C consumption by fuel (%)



State of Play of RES in Estonia

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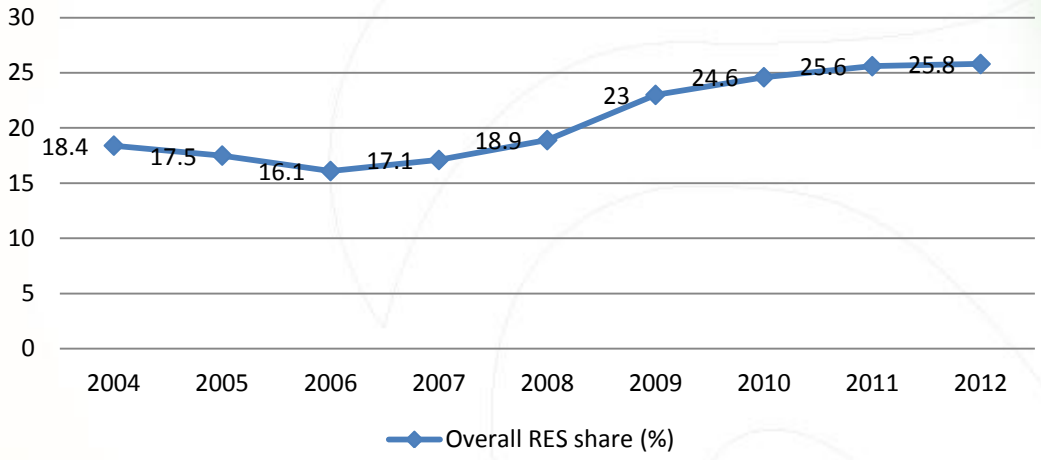
RES share in final energy consumption in Estonia, % 2004-2012



- Estonia first country to fulfil its 2020 RES directive target (25%)
- Biggest growth in RES-H&C sector, 2020 NREAP sectoral target was already exceeded in 2009
- RES-E growth above the trajectory, from 2% in 2008 to 12,3% in 2011
- RES-T still non-existent

State of Play of RES in Estonia

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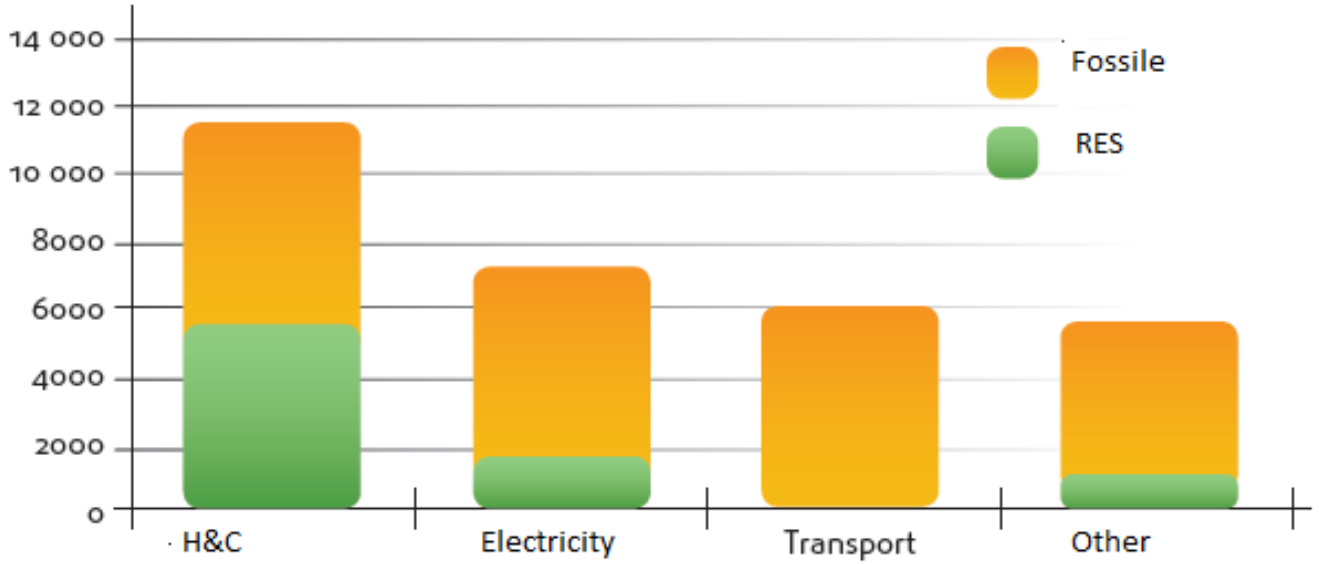
RES vs fossil share in in final energy consumption, In various sectors 2012 (GWh)



- RES-H&C 46%
- RES-E 12,5%
- RES-T negligent 0,2%

State of Play of RES-H&C in Estonia

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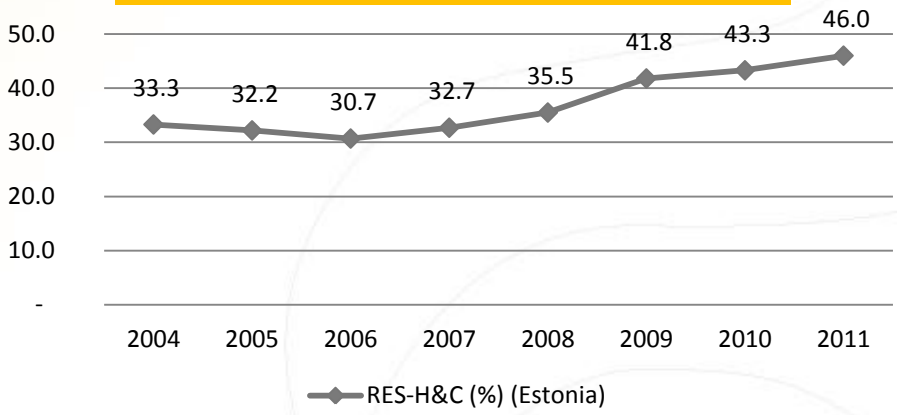
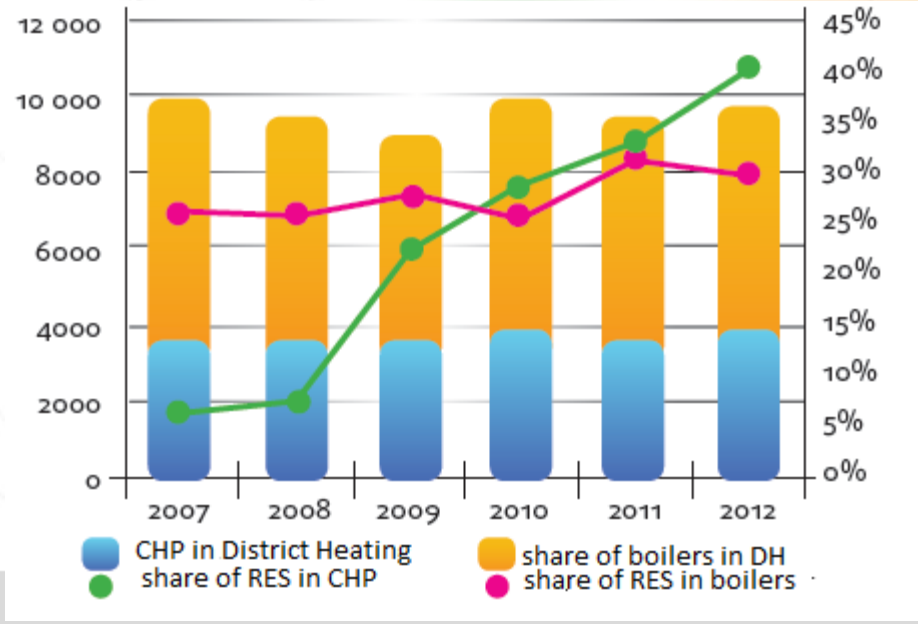
RES-H&C in Estonia, % 2004-2011



- RES-H&C potential often underestimated
- Growth due to combination of various reasons: fuel prices, targeted support measures
- Good potential for further increase

H&C produced in CHP and boilers, share of biomass 2007-2012 (GWh)



Evolvement of portfolios in 2030 according to 100% of renewables

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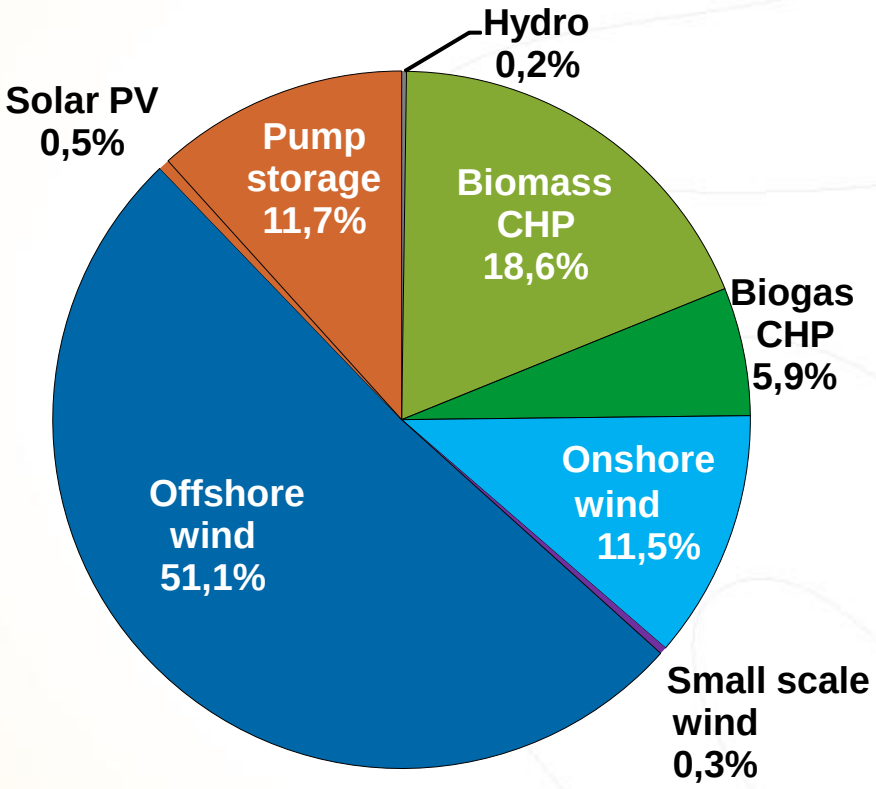
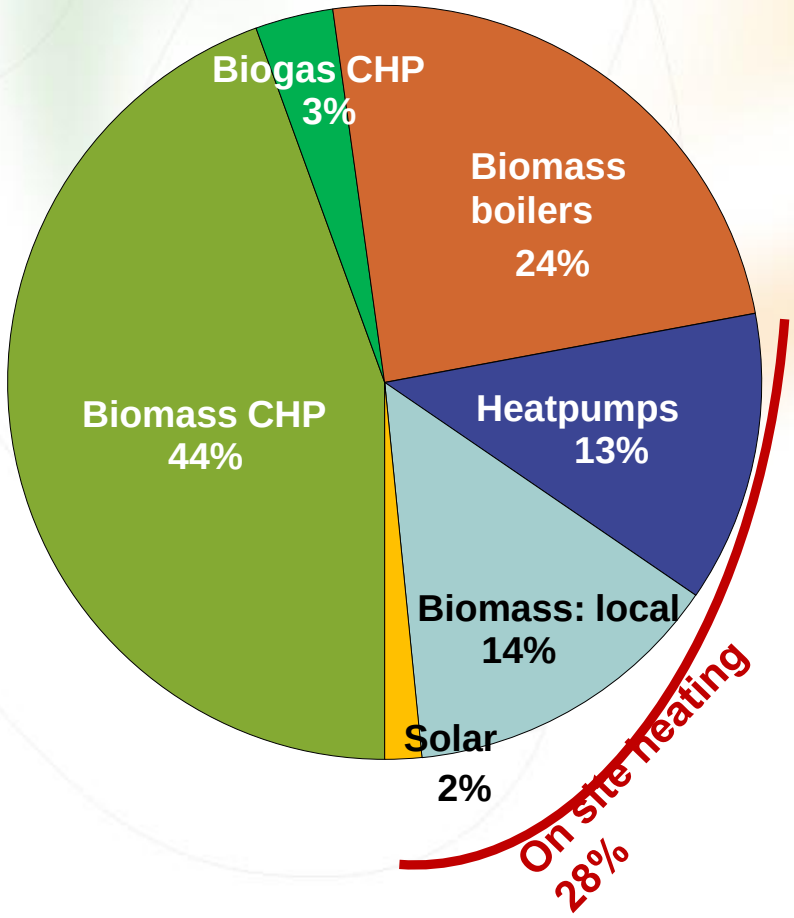
RE100 Electricity production by 2030



RE100 heating production by 2030



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Energy security

Challenges for Estonia´s energy security

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- **Estonia not integrated into EU energy networks**
- Baltic electricity networks remain synchronized with Russia's Northwest Grid, absence of Lit-Pol interconnection
- No gas interconnection other than Russia and Baltics
- **Old power generation technology and inefficient transport sector**
- Reliance on old soviet power plants concentrated near Russian border
- Increasing fuel consumption in transport
- **too much reliance on natural gas from Russia**
- 100% dependence from Russia´s natural gas, worst performing in the stress tests of natural gas
- 1/3 of heat generated from natural gas, 3/4 of natural gas used in H&C
- lack of understanding of the problems from the EU partners

Measures to enhance energy security (1)

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- **Goal for the Baltic states incl Estonia to be integrated into EU energy networks**
- Clear goal for the EU and Estonian policy makers to integrate Baltic states into EU electricity system
- **Emphasis on new, decentralized power generation technology**
- Measures to promote decentralized power production and the ability to maintain grid stability even during the crises
    - Emphasis on decentralized power generation
    - Strong emphasis for the development of smart grids and innovative storage solutions
    - Nordic-Baltic cooperation to enhance joint electricity security

Measures to enhance energy security (2)

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- **Measures to reduce quickly the use of Russian gas in H&C**
  - Rapid take up of RES in district heating via regulative measures
  - Support for the on-site RES H&C take up for those households and offices reliant on gas and heating oil
  - Discouraging the use of natural gas in H&C
- **Measures to reduce oil consumption in transport**
  - More efficiency in transport via regulation
  - Support of public transport, intermodal switching, cycling, rethinking the planning

EU reduced reliance on natural gas from Russia

- Reinvigorated stress on energy efficiency and renewables at the EU level

SUMMARY

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Diverse production portfolio	▪ RES provides a diverse and dispersed energy production portoflio that is based on local resources and provides security of supply
Resources underused	▪ Local renewable resources underused all across the EU, especially in the H&C sector
Lagging energy efficiency	▪ Cost-efficient energy efficiency measures still untapped
Improving the trade balance	▪ More RES and EE reduces the need to import gas
Economic development	▪ Development of renewable energy sector will act as a growth engine to the economy

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Thank you!

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