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Nordic Council of Ministers'  
Office in Estonia

## SUMMARY OF 'ENERGY UNION IMPLICATIONS AND IMPLEMENTATION IN THE NORDIC COUNTRIES AND BALTIC STATES' CONFERENCE HELD IN TALLINN ON 11 & 12 MAY 2016

*Irje Möldre, Bioenergy adviser, Private Forest Centre Foundation (Estonia)*

### **Building bridges to the future: SMART REGIONAL COOPERATION WILL EVOLVE FROM 'TRADE FAIRS AND BERRY PICKING' TO BINDED TARGETS IN THE EU ENERGY SECTOR IN THE COMING DECADE**

Christer Haglund, the director of the Nordic Council of Ministers' Office in Estonia, kept with tradition by opening the third energy conference to be held in Tallinn on 11 May. Mr Haglund said that for a better future, industry should switch to sustainable energy and renewables should be invested worldwide. It is important for the Nordics and Baltics to meet face to face and step by step achieve big goals. Estonian representative Ando Leppiman pointed out that although Estonia is supportive of the EU's energy streamline on climate and energy policy and considers the 2030 agreement to be very important, increasing the share of renewables must be cost-effective. Therefore, cooperation is moving towards smart decision-making in the region.

A marathon 23 presentations over seven hours and four discussion sessions were held in an atmosphere of optimism and with lots of questions from the audience. Representatives of companies, the European Commission and national, regional and international institutions presented overviews of renewables and energy efficiency-related concerns in the longer term.

Based on the conference it can be concluded that **regional cooperation, a stable framework and common goals and measures are the keys to energy optimisation in demand, resources and technology**. EU Member States – with their differences in potential, resources, legislation, taxes, policies, ambitions and even climate – need a new level of communication in order to set, bind and achieve energy targets in the longer term. For example, there are already 700-800 MW battery and storage solutions in Germany; both Germany and Denmark have involved the community and gained public acceptance of energy production; France has nuclear power; and the UK imports pellets because of a lack of biomass. Optimisation means less consumption, as well as digitalisation, the provision of the best services in a cost-effective way, a competitive day-time electricity market price, 3000 operators being taken into account and more. Estonia has already made a start on optimisation, setting itself goals and integrating measures for power, heat, fuel production, transportation and the energy use of buildings in its national development plan in the energy sector up to 2030<sup>1</sup>.

The presentations and discussions at the conference revealed the following.

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<sup>1</sup> Estonian National Development Plan for the Energy Sector, <https://www.mkm.ee/en/objectives-activities/energy-sector>

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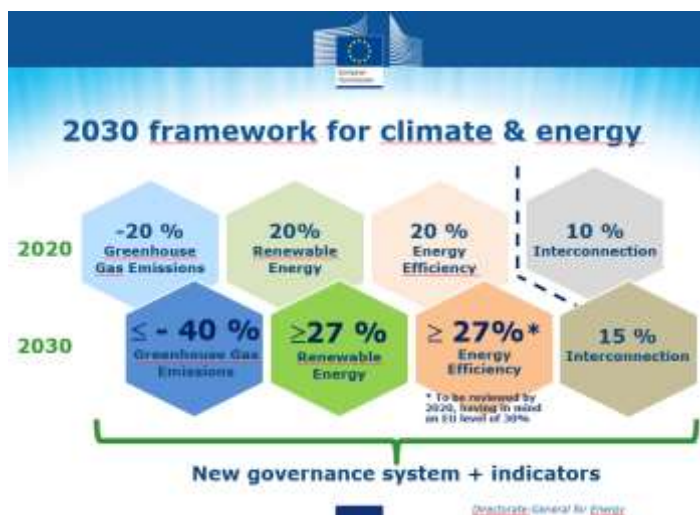
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1. **Targets for 2020 will be met by Member States. Governance in order to meet the 2030 targets covers binding target-setting** in renewables and energy efficiency directives as well as contributions by every Member State through the development and implementation of national plans in cooperation with one another. The European Commission is facilitating regional cooperation, coordination and dialogue with all stakeholders. **Decarbonisation, democratisation, digitalisation, disruption and diplomacy in energy will lead to the optimisation and modernisation of energy management.** Dynamic governance means flexibility; national policies; common approaches; integrated energy and climate planning obligations; a comprehensive plan for 2030; reporting on the achievement of targets and obligations; national plans developed jointly between Member States; and 2030 targets translated into country targets and government and infrastructure investment requirements. An enhanced role for carbon pricing, short-lived climate pollutants and the Arctic region will be key policy imperatives for the Nordic countries.



\*having in mind > bearing in mind

2. **Energy efficiency policies should focus on measures at the national and EU levels, transparency, simplicity, reducing barriers, exchanging best practice, modernising demand, energy-neutral building stock, more sustainable transport systems and the switch from consumers to prosumers.** Energy consumption has been decoupled from economic growth: the economy is developing and reducing the energy it consumes per output. A functioning market and smart financing (aggregation, de-risking and market-based culture) are needed to increase energy security (since the EU is the biggest energy importer in the world) and non-energy benefits. The new EE directive should simplify the calculation method at the national level and avoid competition between EU and national measures. Capacity remuneration should be taken into account.

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3. **Best policy framework for investments in renewable energy is a long-term commitment to 2050** and there is support for new-generation technology, decentralisation and energy cooperatives, storage, efficient and smart energy systems (balancing, grids, appliances, cities, home automation systems et al.), energy-only market design, demand response, end-user participation in the market (currently regulated), flexibility, interconnections, carbon pricing, the decarbonisation of heating and cooling, emission-free infrastructure and full information for consumers and prosumers. Coordinated connections, synergies with other sectors and integrated solutions, public climate finance, stable markets, a specific market and regulatory framework, a crisis-solving adapted institutional framework and financial incentives lessen the risk inherent in investing in renewables. Reducing taxes for small and medium-sized projects, removing administrative and financial barriers and learning from US energy policy will form part of the best policy development of RES. Today distributions and taxes play a major role in price and the incentive is low for households to be on an energy market. The more prosumers there are, the more energy security a country has, leading to the survival of rural areas. Future consumers will trade energy with one another, prosumer to prosumer, including trading online.
4. **Renewables are rising globally, decoupling of GDP and CO<sub>2</sub> has taken place and there is a strong need for decarbonising technology.** The current global energy picture was revealed by Ute Collier from the International Energy Agency (IEA): low fossil fuel prices, fossil fuel subsidies, no or low carbon prices and decoupling of GDP and CO<sub>2</sub> around the world over the last two decades. **The forecast regarding the decrease in CO<sub>2</sub> emissions up to 2050 shows no scenarios resulting in a 4-degree temperature rise.** Renewables have been on the up globally for more than 10 years, but in the coming years should rise by a third. Around the world, the share of final renewable energy use for heat was 21% in 2008 and is expected to rise to 25% by 2020. In 2014 and 2015 on the 18 largest markets, the level of solar thermal reduction was 14%, while at the same time Denmark posted growth of 34%. Wind generation costs decreased by 25% between 2010 and 2014 and solar systems by up to 60%. This rapid reduction in the cost of renewables happened thanks to feed-in tariffs in Germany. **We cannot achieve climate targets without significant development and support for decarbonising technology.** Competitive markets play a role, as does specific policy framework, but we need more support for renewables in different stages. Hydropower has not required subsidies in many countries.

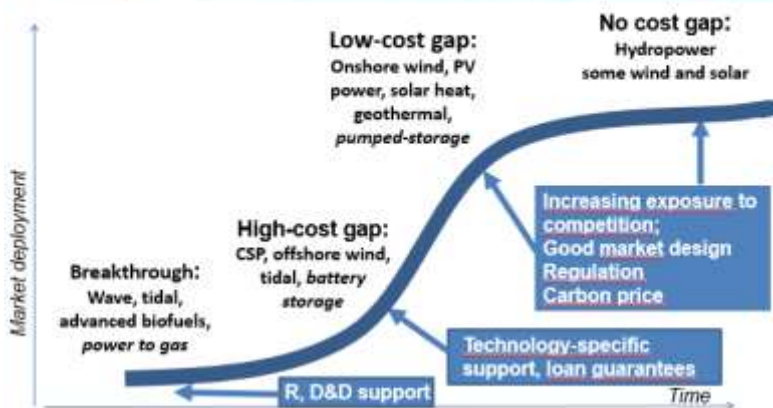
*Achieving climate goals will require the financing of a portfolio of various forms of technology which are at different levels of maturity:*

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Sound policies needed at all stages, including some financial support



Note: A new edition of ‘Nordic Energy Technology Perspectives’ will be released by the IEA on 23 May 2016.

- We should continue with the most humanitarian project of mankind:** the European Union as a unique attempt – and the best in history – for a better future for many nations together should move ahead. This<sup>2</sup> was the main message of Jean Arnold Vilnois, who has many years of experience working at the European Commission and who is currently an adviser at the Jacques Delors Institute. He noted that the Baltics have a common history but did not cooperate immediately on energy: other countries helped to get the Baltics working together. Regional cooperation is the key to mutual understanding, while money from the EU budget helps to implement projects. The 1957 agreement on the free circulation of goods, capital and services did not open up the energy market. Real cooperation on energy began in 2007 when the European Council, led by Angela Merkel, convinced all 27 Member States to aim for a climate policy. Before this only four Member States had renewable targets, and utilities were discounting renewables and efficiency. The main discussion was about maintaining a vertically integrated model which was locked within national borders, but infrastructure became a common carrier, putting renewable energy into the system. The Baltic States were 100% dependent on one source. Gas pipe lines worked in one direction – from east to west – and not the other way round. On 31

<sup>2</sup> “The European Union is the best humanitarian project in the history of mankind!” Quoted from a Canadian during European Day celebrations. Referred by Mr Vilnois.

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December 2008 Vladimir Putin cut off gas to Ukraine, leading to the 2010 EU regulation on gas supply being put into force. The closure of Ignalina raised the issue of the need for a Baltic energy market.

6. **Energy optimisation demands a holistic view, trust, cooperation and commitment.** Marten Vestrup from the European Commission presented the objectives of the EU energy policy:



The Energy Union Strategy consists of five mutual supportive and interlinked dimensions (energy security, solidarity and trust; a fully integrated, internal, EU-wide energy market; energy efficiency as an energy source in its own right; the transition to a low-carbon society; and research, innovation and competitiveness), 15 actions and 43 initiatives. The Energy Union Package for Energy Efficiency 2020 has 5+15 indicators to measure the progress of implementation in Member States. Rūta Baltāuse from the European Commission stressed that the 2020 targets are legally binding and must be reached. Member States are revising their national action plans. Statistical transfer will be enforced by 2022. The Commission is maintaining a dialogue with all stakeholders to facilitate regional cooperation. **It is pushing regional cooperation through coordination, the removal of barriers, the creation of a framework and the exchange of best practice.** Cooperation depends on markets, technology potential and the challenges facing Member States. Proper market design is needed: the end user is not yet participating in the market, and consumers should know what they are consuming (prices, the energy mix needed to enable an integrated solution and full information for consumers). Mrs Baltāuse kindly asked

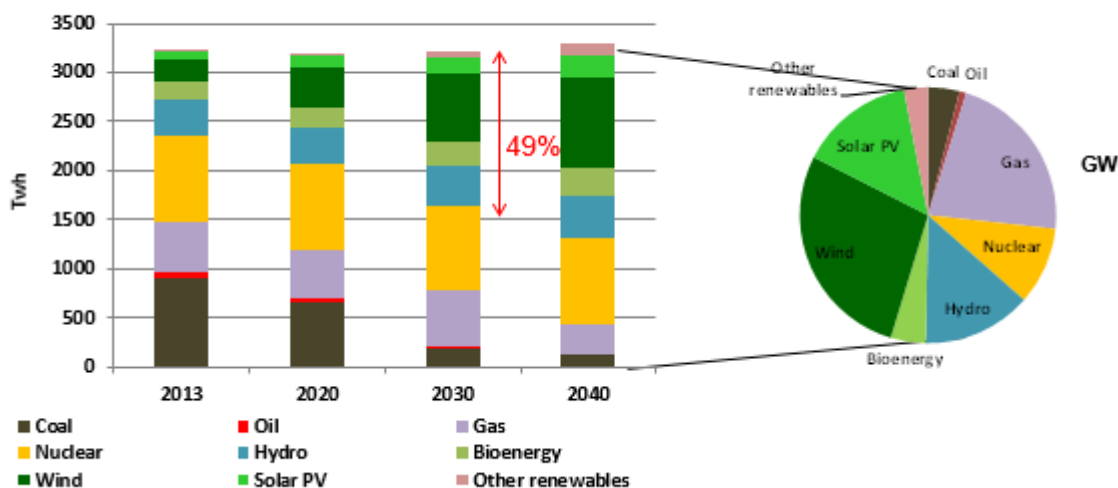
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that the word 'support' be used instead of 'subsidy'. Mrs Collier claimed that **there is a lack of mandatory EU 2030 targets for both renewables and energy efficiency which would integrate the power, heat and transport sectors and improve building stock energy efficiency.** She showed that the Baltic States and Nordic countries are among the leading performers in the EU on renewables and energy efficiency. The World Energy Outlook (WEO) 450 ppm CO<sub>2</sub> scenario<sup>3</sup> shows the power generation and capacity mix the EU needs to keep the temperature rise below 2 degrees: by doubling renewable power capacity by 2040. However, the competitiveness of renewables still depends on the appropriate regulatory framework and market design.

EU power generation in WEO 450 Scenario

EU capacity mix in 2040 WEO 450 Scenario



Source: WEO, 2015

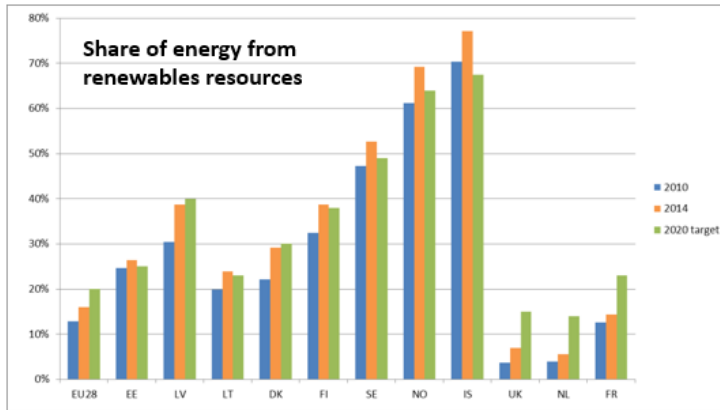
By 2014 some Member States had exceeded the 2020 renewables target, while others had a low share. Some countries have biomass, but in the Netherlands and other countries where there are gas boilers this is difficult to change.

Share of renewable energy in gross final energy consumption<sup>4</sup>:

<sup>3</sup> See <http://www.iea.org/publications/scenariosandprojections/>

<sup>4</sup> [http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020\\_31&plugin=1](http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_31&plugin=1)

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Source: Eurostat data

**Final energy consumption in EU in 2014:** heating and cooling 46%; transport 30%; electricity 24%; RES in heating and cooling 17% (2020: 21%), in transport 6% (2020: 10%) and in electricity 26% (2020: 34%) = **2014 RES from total energy consumption 15.3% (2020: 20%)**. Heating and cooling account for 50% of final energy consumption in the EU. Building, heating and cooling based mostly on fossil fuels dominate. **Electricity market integration:** 10% of connections by 2020, 15% by 2030. The 2020 target is likely to be met by countries.

**2016 will see:** a **heating and cooling strategy** in cooperation with stakeholders; an **updated regulation on gas supply** to improve resistance to supply disruptions through more regional cooperation between Member States; a **review of the energy efficiency directive and renewables directive** (achieving at least 27% RES at the EU level, the integration of renewable electricity into the market, the decarbonisation of heating and cooling, an increase in renewable energy use in transport, the empowering of consumers and the removal of administrative barriers), **biomass sustainability, market design**, and a **new holistic initiative on research and innovation**.

**7. The Nordic region is currently 25 years ahead when it comes to low CO2 emissions from electricity production, and through Nordic Green Growth initiative aims to be carbon-neutral by 2050.** Three decades ago marked the start of Nordic integration on the energy market, with a common certificate between Sweden and Norway, said Hannu Lipponen from the Finnish Ministry of Employment and the Economy. This led to success which has brought Norway and Sweden to 2<sup>nd</sup> and 3<sup>rd</sup> place on the Global Energy Architecture Performance Index 2016, just behind Switzerland. The Nordic Environment Finance Corporation (NEFCO) and other Nordic organisations are leading the decarbonisation movement with both tech-transfer and knowhow (innovative climate financing, new business models, policy developments et al.) in developing countries (especially in small and medium-sized projects driving innovation, investment and job creation and cost-effective environmental and climatic outcomes): policy development, capacity building and technology transfer to the mutual benefit of Nordic and developing countries (2004-2013: investments of 35

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mIn euros by Testing Ground Facility Investors). Clean technology and decarbonisation are driven by Swedish and Danish pension funds. 25 years of experience shows the importance of small and medium-sized projects, green growth, success stories and models in the region.

- 8. Nordic countries have had interest to contribute to energy systems in the Baltics for some 20 years.** NEFCO has funded projects in Eastern Europe, working in the Baltic region for more than two decades on low carbon – for example, wind power in the Baltics developed by the company Nelja Energia - 4Energy (233 MW installed capacity, 66% Estonian and 33% Lithuanian, with 70 MW under construction). The **2009 Baltic Energy Market Interconnection Plan (BEMIP)** was agreed on; the 2015 New BEMIP MoU reinforces cooperation and broadens its scope; there are working groups on synchronisation and infrastructure; and more. At present, via Estlink and others, the **interconnectivity rate is more than 50% for the Baltic States.**

With the words “Cooperation is a key, not just a benefit”, Johan Vetlesen from the Norwegian Ministry of Petroleum and Energy closed the conference.

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Energy performance in the Nordic countries and Baltic States based on presentations

Points highlighted
<p><i>DENMARK Danish Energy Agency</i></p> <ul style="list-style-type: none"> <li>- 2013: Primary energy consumption increased</li> <li>- 2014: Almost 50% RES electricity share, target of 50% renewables in electricity by 2020, primarily wind</li> <li>- Good interconnection (Sweden, Norway, Germany) and system-friendly</li> <li>- Taxes on energy and CO<sub>2</sub> to reduce consumption, energy-intensive industry CO<sub>2</sub> packages in 1993 and 1996, involvement of energy utilities since 1993</li> <li>- Reduction in energy demand in buildings 35% over the last 35 years (almost 50% lower final consumption per m<sup>2</sup>), more efficient supply with district heating and more efficient boilers, 35% reduction in energy consumption in buildings in 2050</li> <li>- Danish energy policies are based on a political energy agreement (2012-2020); for a new agreement an 'energy commission' has been appointed</li> <li>- The goal is to become independent of fossil fuels by 2050</li> </ul>
<p><i>SWEDEN Ministry of Environment and Energy, Fortum</i></p> <ul style="list-style-type: none"> <li>- Energy intensity is half that of the 1980s</li> <li>- 1990-2013: 23% reduction in CO<sub>2</sub> emissions, 61% economic growth</li> <li>- 2013: Total primary energy supply 563 TWh – 1/3 oil, 1/3 nuclear fuel, 1/3 renewable energy</li> <li>- 2014: RES target of 54.8% for 2020 almost met – RES total 52.6%, RES in transport 19.2%, renewable electricity over 60%</li> <li>- 2015: Total electricity production of 159 TWh, record exports of 22 TWh (17 TWh to Finland, 4 TWh to Denmark), wind power production of over 16 TWh (compared to 1 TWh in 2006)</li> <li>- Energy tax on electricity and fuels for decades, CO<sub>2</sub> taxation since 1991, green certificate system for RE since 2003, emissions trading of CO<sub>2</sub> in EU Targeted Instruments, electricity certificate system (certificate price of 14 EUR/MWh per certificate, rapid increase in wind power due to certificate system)</li> <li>- Electricity certificate system in 2020: tax reduction for micro-generation of electricity, reduced percentage of investment support for solar power but increased budget for this purpose, support for storage for households with own electricity production, solar strategy being developed</li> <li>- 2020: 50% RE in total energy use, 10% RE in transport, 20% more efficient energy use, 40% reduction in greenhouse gas emissions (non-ETS), fossil fuels for heating to be phased out</li> <li>- 2030: Vehicle stock that independent of fossil fuels</li> <li>- 2050: Sustainable and resource-efficient energy system and no net emissions of greenhouse gases</li> <li>- Ambition: 100% renewable energy system in the longer term</li> </ul>
<p><i>FINLAND Ministry of Employment and the Economy, Helen OY (Helsinki energy company)</i></p>

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- Finland's EU RES target is 38% renewable energy of final consumption in 2020, among highest in EU
- Biofuel share for transport fuels 20% in 2020 (⇔ EU: 10%)
- Finland has the most forests in the EU. Forest energy has a central role in renewable energy: the share of RES is highly dependent on by-products from the forest industry
- 2030: Share of renewables > 50%, self-sufficiency > 55%, renewable fuels in transport 40%
- Urban energy efficiency: CHP-CHC (combined heating and cooling) – DHC (district heating and cooling), combining heating and cooling, surplus heat and wastewater heat in CHC plant with heat pumps, global energy award for Helen OY in Helsinki last year, multi-scale production from wind to coal fire, providing comfort for living
- Future heating demand -17% and cooling demand +35% by 2050
- Negatives are subsidising and market disturbances leading to consequences, lack of holistic approach (customers, architects et al. involved), energy populism (energy easy to discuss, but most people do not understand it)
- Finland 100% smart metering, every seller buying prosumer electricity
- Finland has a carbon tax, with the energy tax CO<sub>2</sub> component part of it, but it has no strong impact on the energy market and investments are planned over the long term

**NORWAY** *Ministry of Petroleum and Energy, Energy Norway, Enfo AS*

- Norway is not a Member State but has an agreement with the Energy Union
- If it works, tax it; if it's still working, regulate it; and if it's not working, subsidise it!
- 67.5% RES, but not much wind
- Commercially available wind and solar solutions are coming, hydropower is taxed, most privately owned, solar and wind are not taxed but subsidised, differences are enormous, safety net for decarbonisation
- The sun lacks power where needed and is in surplus where it is not needed, balance is the key issue
- 40% reduction has to be made in transport, buildings are clean, renewables rise up to 83%, electric cars more effective than fossil fuels, subsidise only new investments, energy-only market, smart consumers, connectors, CO<sub>2</sub> for heating and cooling
- ETS price is a subsidy, not a pollution tax; if it rises by 20-30 EUR/t you need to look at national measures for CO<sub>2</sub>
- Hydropower needs updating, which costs money
- Better climate, security of supply, green growth
- RES is like hunting moose, EE is like picking berries
- 4-year goal for EE by agreement, 7000 major projects, Enfo AS, bottom-up innovation and market introduction, retreat from markets
- Enfo AS demands a response, energy management and consulting; first licence as an aggregator, working with LOS to expand services and market flexibility; greener, cheaper and better are all important
- Greenland measurements show we are lower than 2 degrees; 3% of the population has been on a plane around the world, but if 9% were to fly...?

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**Latvia** is on track to reach the 2020 RES target in end-consumption (38.7% in 2014), but is having problems reaching the 2020 RES target in transport (3.2% in 2014). 40% RES in 2020 from final use is the highest in the Baltic States. Renewable electricity share of over 50% in 2014. Switched to RES in heating, uses RES produced in Latvia and introduced the electricity NETO payment. Failures are incoherent policy planning (energy, environment, climate, agricultural and industry); insufficient evaluation of state support for RES; and insufficient political interest. Latvia should improve its system to make consumers more active in the use of renewables, solar (PV not supported) and geothermal. Digital competition state aid guidelines are needed. RES also means agriculture, energy-intensive industry and consumers. Biogas production is not economically viable at present. Latvia exports biomass.

**Estonia:** In 2004 there were 0 renewables, but now the RES target is 50% and EE more than 60% by 2030. The 2020 RES national target was met in 2014. Primary energy consumption does not have a target, the major player – the oil shale sector – is directly influenced by oil crises and depends on the future trends of energy targets. 2013 saw an increase in primary energy consumption and the 3<sup>rd</sup> highest CO<sub>2</sub> intensity in the EU as a result. The state development plan for 2030 states its targets as follows: transportation remaining level, measures to be implemented to achieve targets, existing mechanisms are incapable of achieving EE in buildings, key measures – taxation (fuel excise), energy management coordination act will help to implement targets, and in 2018 Estonia will implement the EE obligation scheme. Taxation measures for fuels, next year 10% increase in transport taxes, in housing renovation measures and requirements for new buildings and special planning to reduce energy consumption. 2016: the Norwegian smart grid systems and services company Enfo AS is planning the installation of an eFlex Energy Management System as a pilot project in Estonia, together with the Norwegian project developer Nordic Commodities AS and the Estonian energy service company Energiateenus AU.

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