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ClimaEast

Support to Climate Change Mitigation and Adaptation in Russia and ENP East countries

Implementing the Paris Agreement: Belarus NDC challenges from MRV to sectoral actions. The case of large emitters and land use/forestry and bioenergy

Overview of bioenergy and LULUCF aspects of Paris Agreement implementation in the EU

Zsolt Lengyel, Team Leader & Key Expert

6-7 April 2017, Minsk

Content of presentation

- Sustainable bioenergy and LULUCF within the context of the EU NDC
- Existing and new rules & challenges
- Discussion

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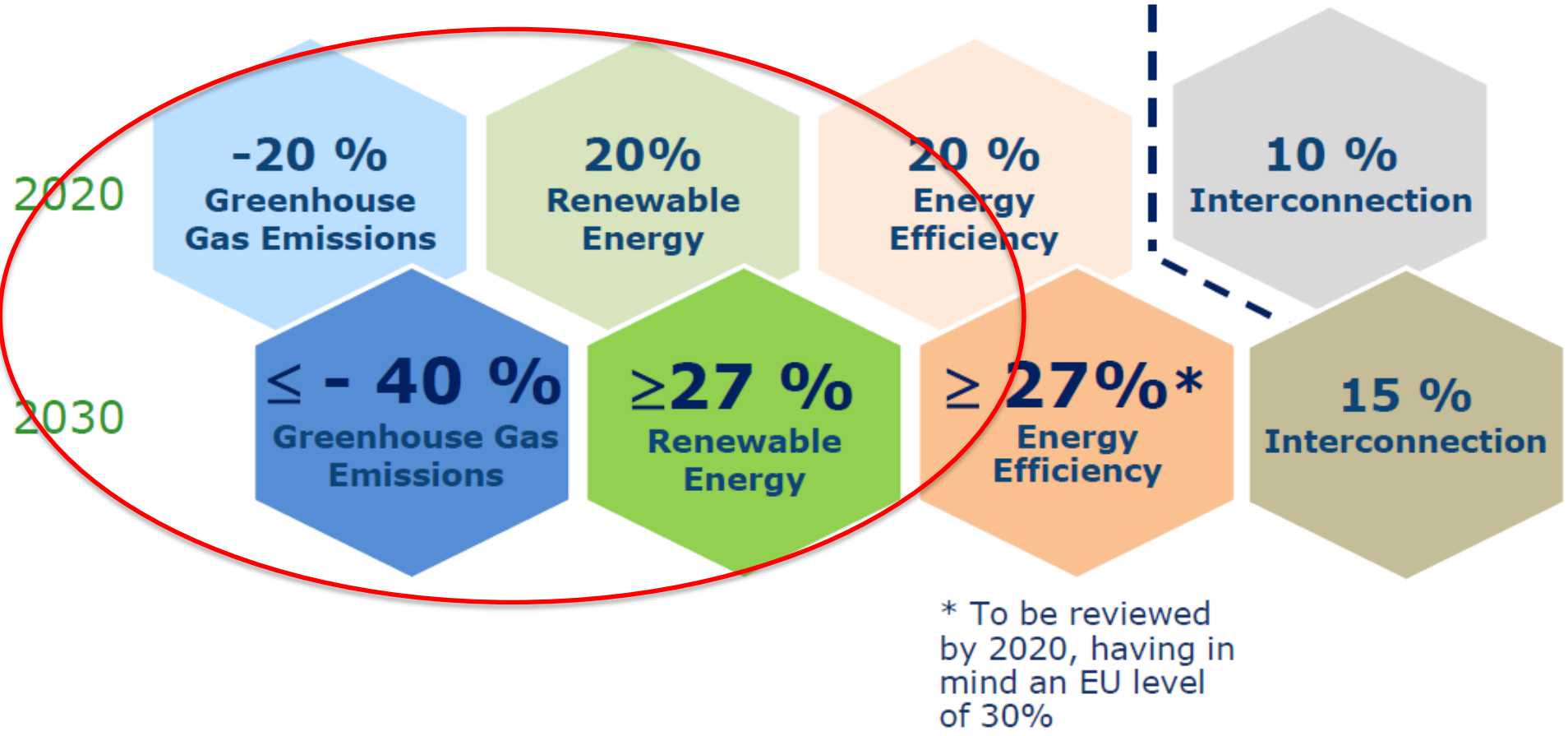
The 2030 EU Framework for Climate and Energy



* To be reviewed by 2020, having in mind an EU level of 30%

EU policies affecting sustainability of bioenergy and LULUCF: the context (1)

- The Commission has adopted a legislative proposal on the distribution of effort between Member States in reducing national emissions of greenhouse gases outside sectors covered by the EU's emissions trading system (COM(2016)482) The use of bioenergy is one of the tools available to Member States to meet those objectives.
- The Commission has adopted a legislative proposal on reducing emissions of greenhouse gases in the EU's emissions trading system (ETS) (Revision of the ETS Directive,2015/148 (COD) The use of bioenergy is one of the tools available to ETS installations to comply with their obligations.

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EU policies affecting sustainability of bioenergy and LULUCF: the context (2)

- The Commission has also adopted a proposal for a regulation on emissions in the land use, land use change and forestry (LULUCF) sector (COM(2016)479) which ensures that emissions from this sector are fully included in the EU's 2030 climate commitments, and makes the link between the use of wood for energy and forestry carbon stocks in the EU.
- The Commission is preparing in parallel an initiative to promote sources of renewable energy in relation to the EU's target of 27 % of renewable energy by 2030. The current initiative can affect the use of bioenergy in the renewable energy mix, on the one hand by setting out sustainability restrictions, and on the other hand by giving more certainty to operators and acceptance to the public.

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EU policies affecting sustainability of bioenergy and LULUCF: the context (3)

- The European strategy for low-emission mobility (COM(2016)501) provides analysis and scenarios regarding the use of bioenergy in the transport sector in the coming decades.
- The initiative on the future design of electricity markets, in conjunction with the reviewed renewables directive, will address the generation of electricity with the aim of reforming the markets in order to maximise the revenues and reduce the need for public intervention.
- The Commission has adopted an action plan for the circular economy, which encourages resource and energy efficiency, including through the cascading use of bio-based materials, such as wood.

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EU policies affecting sustainability of bioenergy and LULUCF: the context (4)

- Bioenergy represents a significant part in the renewable energy mix in Europe. Traditionally, it has been used mostly for heat, but its use for transport and electricity production increased in the early 2000s, following the adoption of the 2001 Renewable Electricity Directive and the 2003 Biofuels Directive.
- This increase was further driven by the adoption of the 2009 Renewable Energy Directive, which sets out national renewable energy targets for each Member State.

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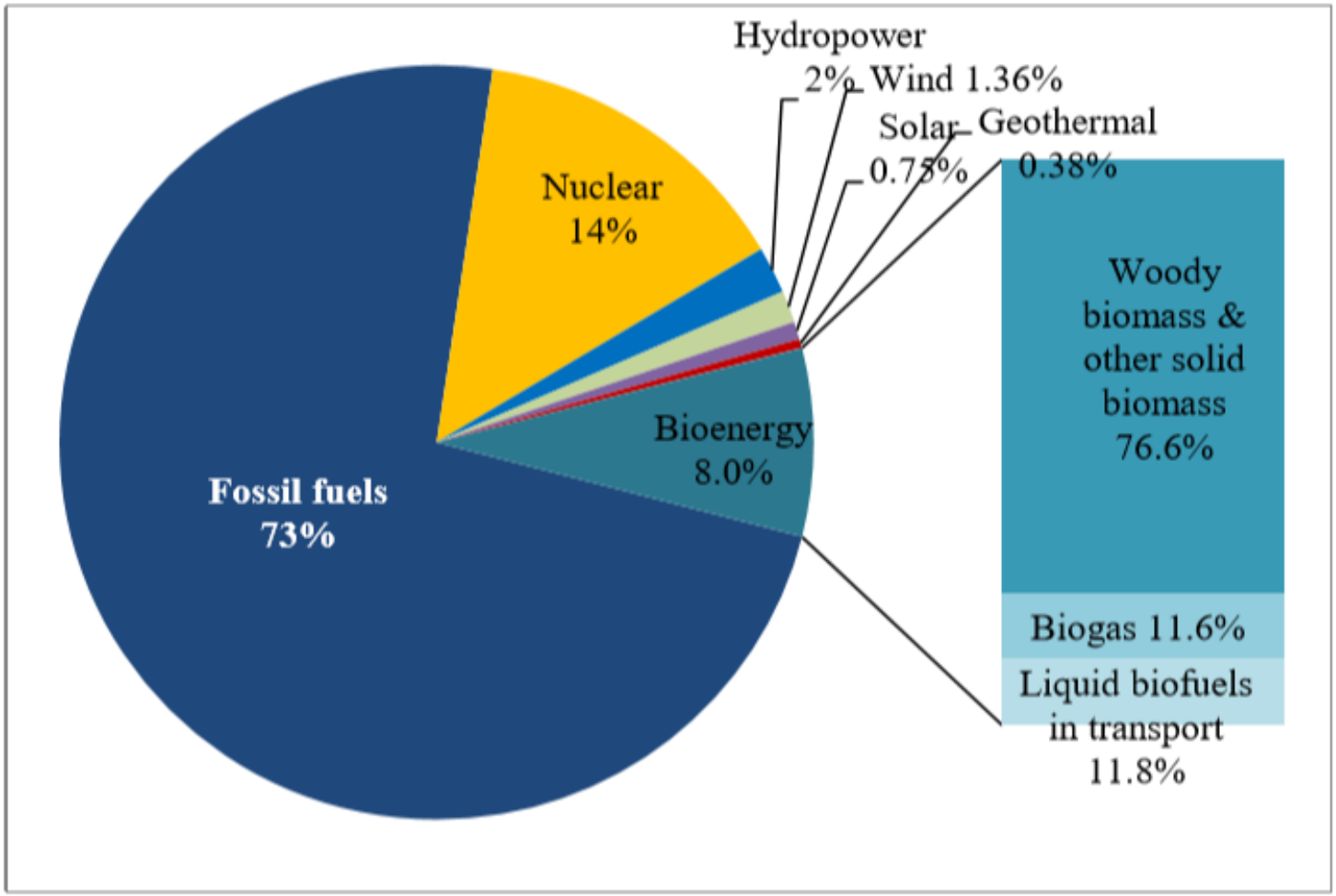
EU policies affecting sustainability of bioenergy and LULUCF: the context (5)



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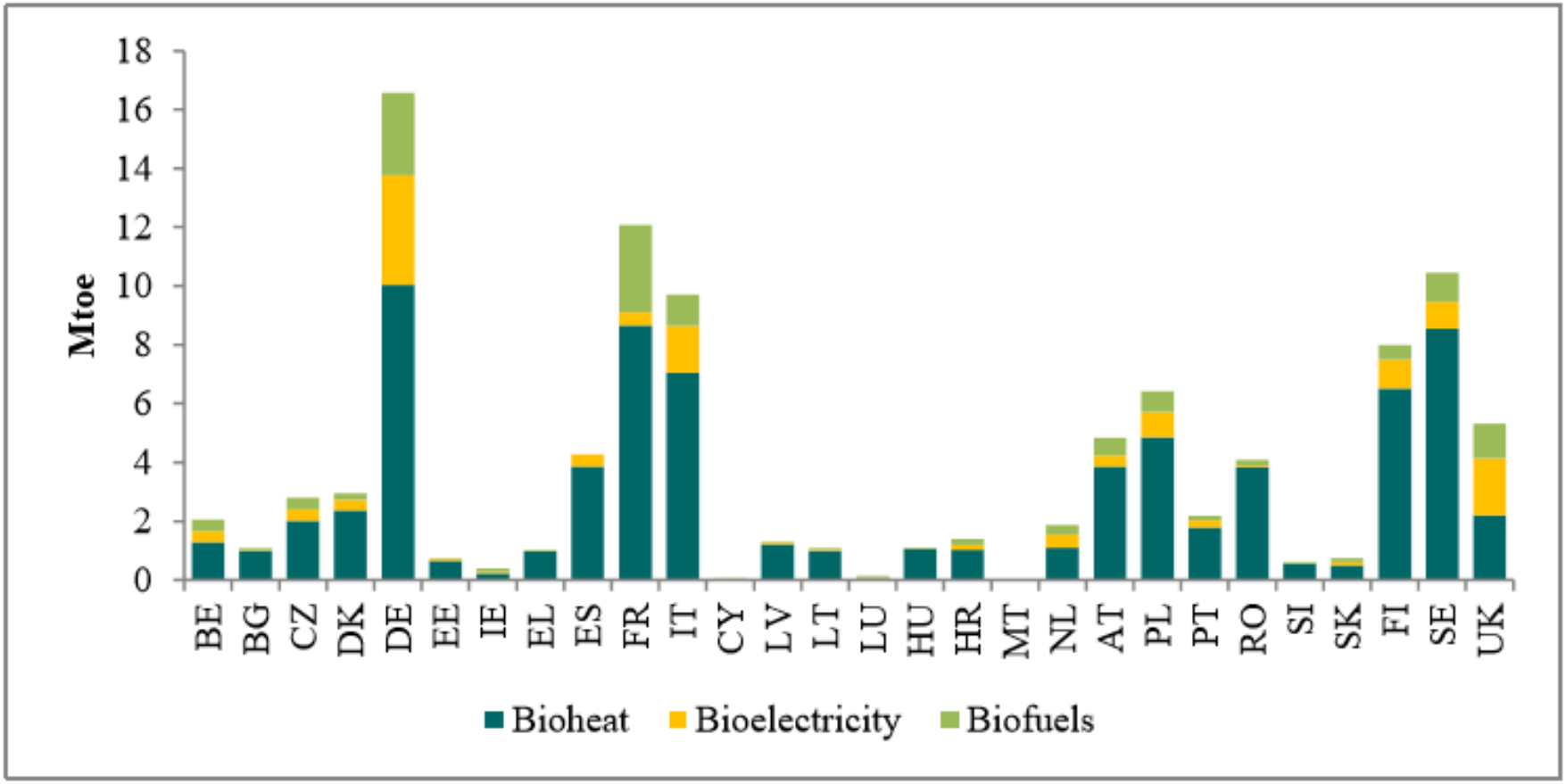
EU policies affecting sustainability of bioenergy and LULUCF: the context (6)



EU policies affecting sustainability of bioenergy and LULUCF: the context (7)

- Each Member States has prepared a National Renewable Energy Action Plan presenting how they intend to reach their national target, and in particular the planned mix of renewable energy technologies, including biomass.
- For renewables in transport, the policy was further complemented by the revised Fuel Quality Directive requiring a reduction in the greenhouse gas intensity of the EU fuel mix by at least 6% by 2020.
- Public support in different forms, including subsidies, has then been put in place to implement these plans.

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Sustainability of bioenergy and LULUCF: the challenges (1)

- The climate performance of bioenergy varies, and in particular biogenic CO2 emissions associated with an increased demand for forest-based biomass may lead to minimal or even negative greenhouse gas savings compared with fossil fuels.
- The production and use of biomass for energy can lead to adverse environmental impacts on biodiversity, soil and air quality.

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Sustainability of bioenergy and LULUCF: the challenges (2)

- The increasing combustion of large volumes of biomass in low-efficiency installations, driven by public support, can create additional pressure on resources, in particular in the case of electricity only plants.
- Increased administrative burden and related costs for operators induced by differing binding sustainability requirements across EU Member States.

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Sustainability of bioenergy and LULUCF: Climate impacts of bioenergy

- The greenhouse gas performance of bioenergy from a lifecycle perspective depends on the **emissions from the supply chain** of bioenergy (which include emissions from direct land use change, cultivation, transport, processing, as well as on **biogenic CO2 emissions**, which include the emissions from combustion of the biomass source and the CO2 absorbed due to plant regrowth.
- For agricultural biomass, supply chain emissions provide a good proxy for the lifecycle emissions (excluding indirect land use change). For forest biomass, on the other hand, biogenic CO2 emissions and removals — i.e. emissions and removals from the biological pools — need to be taken into account, and can have a critical role in the overall climate performance

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Sustainability of bioenergy and LULUCF: emissions from the supply chain (1)

- A similar methodology (although non-binding) was developed by the Commission for **solid and gaseous biomass** used for heating and electricity production (COM(2010)11 final and SWD(2014)259) Supply chain emissions are compared against reference values for greenhouse gas emissions of fossil fuels (including both supply chain and combustion emissions) used for electricity and heating

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Sustainability of bioenergy and LULUCF: emissions from the supply chain (2)

- In the case of biofuels for **transport and of bioliquids**, a specific requirement is set out as part of the existing sustainability criteria in order to discourage the worst performing biofuels pathways in terms of supply chain emissions (RED & FQD) establishing methodology for calculating supply chain emissions as well as a binding minimum threshold for supply chain emission reduction compared to fossil fuels

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Sustainability of bioenergy and LULUCF: emissions from the supply chain (3)

- Supply chain emissions **vary significantly for agricultural feedstocks** (in some cases involving suboptimal technologies (such as biogas produced from energy crops with an open digestate storage), the greenhouse gas savings associated with the production of bioenergy from agricultural feedstocks are small or negative.
- For forest-based feedstocks, supply chain emissions are usually low compared to the fossil fuel emissions, for most of the pathways commonly used today (including imports of pellets from third countries)

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Sustainability of bioenergy and LULUCF: emissions from the supply chain (4)

- The supply chain emissions associated with bioenergy are generally - to the extent they occur domestically and do not involve international maritime transport - accounted for in national greenhouse gas inventories, primarily in the non-ETS sector (e.g. emissions from transport or cultivation).

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Sustainability of bioenergy and LULUCF: Biogenic greenhouse gas CO2 associated with forest-based biomass for energy (1)

- Forest biomass is part of a much longer carbon cycle. A forest stand typically takes between decades and a century to reach maturity. Recent studies have found that when greenhouse gas emissions and removals from combustion, decay and plant growth (so-called biogenic emissions from various biological pools) are also taken into account, the use of certain forest biomass feedstocks for energy purposes can lead to substantially reduced or even negative greenhouse gas savings compared to the use of fossil fuels in a given time period (e.g. 20 to 50 years or even up to centuries)

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Sustainability of bioenergy and LULUCF: Biogenic greenhouse gas CO2 associated with forest-based biomass for energy (2)

- An increase in use of forest biomass for energy may lead to limited greenhouse gas savings or to an increase in emissions.
- The issue of biogenic carbon from forest biomass is one the most debated among stakeholders.
- The industry and forest owners generally see forest biomass overall as supporting climate change mitigation, whereas NGOs point to biogenic carbon emissions as one of the main risks from using forest biomass for energy.

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Sustainability of bioenergy and LULUCF: the accounting challenge (1)

- Under international guidance of the IPCC for the preparation of national greenhouse gas inventories, CO2 emissions from biomass combustion are not reported in the energy sector ('zero rating').
- This is to avoid double counting, because it is assumed that these emissions are accounted as part of the emissions from the land use, land use change and forestry (LULUCF) sector in the same national inventory.
- This zero rating has often been misinterpreted as meaning that biomass combustion emissions are always compensated by regrowth ('carbon neutrality').

Sustainability of bioenergy and LULUCF: the accounting challenge (2)

- The proposed EU 2030 climate framework mirrors international rules: biomass combustion counts as zero emissions under the EU ETS and the Effort Sharing Regulation because, to the extent they lead to carbon stock changes on land, emissions would be accounted for under the LULUCF sector (COM(2016)479).
- Most of the domestic forest biomass harvest will come from the 'managed forest land' category, where emissions and sinks are accounted for by comparison to a projected reference level.

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Sustainability of bioenergy and LULUCF: the accounting challenge (3)

- Because the LULUCF sector is included in the EU's economy-wide objectives for greenhouse gas reduction by 2030, if emissions occur in the LULUCF sector from biomass used for energy, they would have to be compensated by emission reductions elsewhere in the economy.
- Hence, after 2020 biogenic emissions from the use of EU-produced forest-based feedstocks for energy will be accounted by Member States in their national LULUCF inventories and towards their 2030 commitments, while supply chain emissions occurring in the EU (cultivation, transport etc.) will be accounted under the EU ETS and the Effort Sharing sectors.

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