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EU sustainability framework for bioenergy

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Share of energy from renewable sources in the EU Member States
(in % of gross final energy consumption)
EU CLIMATE AND ENERGY POLICY FRAMEWORK

2020
-20 % Greenhouse Gas Emissions
20% Renewable Energy 10% RES-T
20 % Energy Efficiency Savings

2030
≤ - 40 % Greenhouse Gas Emissions
≥27 % Renewable Energy
(≥ 27%) 30% Energy Efficiency

Global Leadership on renewables
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HOW DO WE GET THERE?

The right regulatory framework for post – 2020

- **Energy Union Governance**
- **Renewables** (Revised Renewable Energy Directive)
- **New Electricity Market Design** (including Risk Preparedness)
- **Energy prices and costs report**

+ Enabling Framework
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HOW DOES IT LOOK LIKE?
Bioenergy is the main EU renewable energy ...

**Gross inland energy consumption (2014, %)**

- Fossil fuels: 73%
- Bioenergy: 8.0%
- Nuclear: 14%
- Hydropower: 2%
- Wind: 1.36%
- Solar: 0.73%
- Geothermal: 0.38%

**Gross final bioenergy consumption (2014, %)**

- Bioheat: 73%
- Biopower: 14%
- Biomass in transport: 13%
- Derived heat: 15.8%

- Woody biomass & other solid biomass: 76.6%
- Biogas: 11.6%
- Liquid biofuels in transport: 11.8%

- Industry: 26.6%
- Residential: 50.1%
- Other: 7.5%
...And will continue to play a key role in the future

**EU Bioenergy Consumption**
(ktoe, 2005-2030)

**Solid biomass imports**
(ktoe, 2005-2030)

*Source: PRIMES EUCO scenarios*
## Bioenergy: benefits vs risks

<table>
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<tr>
<th>Benefits</th>
<th>Risks</th>
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<td>Sizeable contribution to the RES targets</td>
<td>Climate performance of certain biofuels and forest biomass pathways</td>
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<td>Energy security: mostly domestically sourced and affordable for consumers</td>
<td>ILUC impacts of biofuels from food and feed</td>
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<td>Storable renewable energy, grid balancing</td>
<td>Other environmental impacts: biodiversity, air quality, soil</td>
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<tr>
<td>Climate benefits compared to fossil fuels</td>
<td>Possible competition with other biomass using sectors</td>
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<td>Growth and jobs, in particular in rural areas</td>
<td>Low efficiency of biomass electricity conversion</td>
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EU sustainability criteria for biofuels (2009)

1. *Biofuels cannot come from land:*
   - With high carbon stock (peatland etc.)
   - High biodiversity (primary forest etc.)

2. *Biofuels need to save at least 35% compared to fossil fuels, increasing to 50% in 2018*

*But, indirect impacts not taken into account*
Addressing ILUC emissions of biofuels (2015)

2015 amendments to RES Directive (ILUC)

- 7% cap on the role of biofuels from food and feed towards 10% RES-T target
- Higher GHG saving requirement: 70%
- Promotion of advanced biofuels (0.5% indicative target in Member States)
Addressing biogenic carbon emissions

Key findings:

- **Majority of the forest bioenergy currently in EU can be considered to deliver GHG benefits even when taking into account biogenic emissions.**

- **Forest bioenergy impact in future strategies for GHG emissions reduction depends on the scale of demand and consumption.**

- **Forest management strategies (past, present and future) largely define forest bioenergy GHG performance.**
Revised EU bioenergy sustainability framework post-2020

✓ Cover all **biomass energy uses (biofuel, heat and power)**

✓ Avoid **deforestation**, forest **degradation**, and negative impacts on **biodiversity and carbon stocks**

✓ Address **ILUC concerns**

✓ Deliver **optimal greenhouse gas (GHG) savings** compared to fossil fuels

✓ Promote **efficient conversion into electricity**, in order to promote resource efficiency and avoid market distortions

✓ Ensure proportionality and cost-effectiveness by applying a **risk-based approach** for forest biomass and **de minimis thresholds** for bioheat and power plants
### Overview of EU bioenergy sustainability criteria (2016 legislative proposal)

#### 1a. AGRI BIOMASS
- **Land criteria:** feedstock based
  - No go areas:
    - ✓ with high carbon stocks and
    - ✓ high biodiversity values

#### 1b. FOREST BIOMASS (risk based)
- **Minimum requirement for:**
  - ✓ Forest regeneration
  - ✓ Biodiversity and soil protection
  - ✓ Long term productivity
  - ✓ LULUCF accounting

#### 2. GHG SAVINGS CRITERIA
- 70% for new biofuels/biogas for transport (all plants)
- 80% (85% in 2026) for biomass and biogas in heat and power (only for large plants with fuel capacity equal/above 20 MW)

#### 3. CHP REQUIREMENT for bioelectricity
- Applies to new bioelectricity plants (equal/above 20 MW); 3-year transition period after adoption of Directive + exceptions for national risks of security of electricity supply

#### 4. AIR QUALITY standards:
- Households biomass boiler (EU Ecodesign Regulation)
- Mid-size and large scale plants (EU Air quality Directives)
VERIFICATION OF COMPLIANCE - SUMMARY

Member States must require Economic Operators to:

- Use a **mass balance system** when reporting on sustainable bioenergy
- Arrange for an **independent audit** of the information they report

Economic operators can demonstrate compliance with the EU sustainability criteria through:

- **National schemes**, established by Member States, covering domestic production and use of biomass
- **International verification schemes**, recognized by the European Commission, covering biomass from all EU countries and third countries
Phasing down conventional crop based biofuels...
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...Promoting advanced renewable/low-carbon fuels in transport

[Graph showing the percentage of energy in all road and rail transport fuels from 2021 to 2030. The graph indicates an increasing trend with labels for 'Modern biofuels' and 'Modern biofuels produced from feedstock included in Annex IX part A'.]
THANK YOU!

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@Energy4Europe
#CleanEnergyEU
Sustainability criteria (1)

AGRICULTURE BIOMASS

(art 26.2-26.4)

- Based on **land criteria** from the current Renewable Energy Directive (art. 17) but

- **Peatland**: stricter protection (easier to verify)

- Highly biodiverse **grassland**: to be identified by competent authorities, minimum size (1 hectare)

- **Cross compliance**: removed requirement (already dealt with under the CAP)
Sustainability criteria (2)

FOREST BIOMASS - BIODIVERSITY

(art 26.5)

**Step A):** Operators demonstrate that biomass originates from a country that has legislation place which ensures:

i. **Legality** of wood harvesting

ii. Forest **regeneration**

iii. Protection of **biodiversity** rich areas

iv. Minimization of harvesting impacts on soil and biodiversity

v. Harvesting not exceeding **long-term production capacity**

**Step B):** if type A) evidence not available, operators demonstrate sustainability compliance at **forest holding level**

Review in 2023
Sustainability criteria (3)
FOREST BIOMASS – CARBON STOCKS
(art 26.5)

**Step A**. Operators demonstrate that biomass originates from a country that:

- i. is a Party to, and has ratified the Paris agreement
- ii. has submitted a Nationally Determined Contribution (NDC) to the UNFCCC, covering emissions and removals from agriculture, forestry and land use
- iii. has a national system in place for reporting GHG emissions and removals from land use

**Step B**. If type A) evidence not available, operators demonstrate that carbon stock and sink levels in forest are maintained at the forest holding level

Review in 2023
End-use performance criteria (1)

GHG EMISSION SAVINGS

(art 26.7 – 28, annex V and VI)

**Biofuels/bioliquids**
- at least 50% (operation before October 2015)
- 60% (operation after October 2015)
- 70% (operation after January 2021)

**Biomethane for transport**: 70%

**Biomass in heat and power**
- at least 80% (operation after 1 January 2021)
- 85% for those starting operation after 1 January 2026

*Updated GHG calculation methodology and default values*
End-use performance criteria (2)

CHP REQUIREMENT FOR BIOMASS ELECTRICITY

(art 26.8)

- Electricity from biomass must be produced in highly efficient CHP
  - to be accounted towards the EU RES target and be eligible for financial support
  - applicable to large scale installations (equal or above 20 MW) starting operations after 3 years from the date of adoption of the directive

- Possible exception for security of electricity supply risks
VERIFICATION OF COMPLIANCE
(Art 27)

Mass balance system:

- Clarified rules for biomethane injected into the gas grid
- Rules for mixing of fuels with differing energy content (co-digestion)

Voluntary schemes:

- Commission can set out implementing rules for voluntary schemes
- Allow Member States to control work of certification bodies
- Dropped provision regarding international agreements
SCOPE OF EU SUSTAINABILITY AND GHG SAVING CRITERIA

(art 26.1, recital 77)

Biofuels and bioliquids: all producers

Electricity and heating from biomass: installations with a fuel capacity equal or above to 20 MW

Members States may apply lower thresholds

HARMONIZATION

Biofuels and bioliquids: full EU harmonization

Biomass fuels (solid and gaseous biomass): partial harmonization, MS can place additional requirements