Towards an Energy Union

Eva Hoos, European Commission
DG Energy, Renewable Energy
I want to reform and reorganise Europe’s energy policy in a new European Energy Union.

Jean Claude Juncker
Introduction and Context

October 2014: European Council Agreement on Climate and Energy objectives 2030

- 20% Greenhouse Gas Emissions
- 20% Renewable Energy
- 20% Energy Efficiency

≤ - 40% Greenhouse Gas Emissions
≥ 27% Renewable Energy
≥ 27%* Energy Efficiency

Commission's 10 Priorities – Ambition to Become Global Leader in Renewables

Global Leadership
The way towards:
The Energy Union

**Where we want to go:**
A secure, sustainable, competitive, affordable energy for every European

**What this means:**
Energy security, solidarity and trust
A fully integrated internal energy market
Energy efficiency first
Transition to a long-lasting low-carbon society
An Energy Union for Research, Innovation and Competitiveness

**How we want to reach it:**

- **5** Guiding Dimensions
- **15** Concrete Actions
- **43** Initiatives
EU Heating and Cooling Strategy

COM(2016) 51 final
16 February 2016
Heating and cooling is 50% of EU's final energy consumption.

Buildings consume approximately 60% of heating and cooling, while industry consumes most of the rest.
Heating and cooling: 50% (546 Mtoe) of EU final energy (2012)
Why an EU Strategy for heating and cooling?

- H & C the largest energy use (half the EU's final energy consumption) and will remain so on the long-term (by 2050)
- Fragmented, poorly understood sector – even basic data is missing
- Largely based on fossil fuels (18.6% is generated from RES)
- Largely inefficient: 75% of EU building stock is inefficient; industry has significant untapped potentials
- H & C key to achieve the EU energy and climate objectives and contribute to the Energy Union's goal
- EU instruments only address partial aspects; to harness the full potential a comprehensive strategy is needed.
Key focus

- **Buildings** (residential, tertiary) → renovation and deployment of efficient, sustainable supply (renewables, waste heat/cold)

- **Industry** (energy intensive sectors, all enterprises, SMEs) → energy efficiency and renewable energy, recovery of waste heat & cold

- **Synergies** (comprehensive integrated approach)
  - Linking energy savings with the deployment of sustainable (renewable-based, low carbon) supply
  - Linking heating & cooling with the electricity systems
  - Linking heating & cooling of buildings with industry for the use of waste heat and waste cold
Key Areas

- Cooling
- **District heating and district cooling**
- CHP as central to increase generation efficiency, linking H & C with electricity (flexibility), deploy renewables and alternative fuels, self-generation
- Thermal storage (buildings, heat networks)
- Smart buildings (demand response, storage, self-consumption)
- Waste heat and waste cold
- Integrated heat planning & mapping (building renovation and energy savings and the deployment of sustainable supply and of energy infrastructure are coordinated)
Percentage of the population served by district heating (2013)

Source: Commission services using data supplied by Euroheat and Power
Share of energy carriers in DHS in 2012

Source: Commission services using Fraunhofer and alia, Heating and cooling data mapping ... ENER/C2/2014/641
District Heat Primary Supply Sources in EU28 2012 (606 TWh)

Source: Commission services using Fraunhofer and alia, Heating and cooling data mapping ... ENER/C2/2014/641
CLEAN ENERGY FOR ALL – IMPLEMENTING THE ENERGY UNION STRATEGY

AN ENERGY UNION BASED ON 5 MUTUALLY SUPPORTIVE AND INTERLINKED DIMENSIONS

- Energy Efficiency first
- Energy security, solidarity and trust
- A fully integrated energy market
- Decarbonising the economy
- Research, Innovation and Competitiveness
ONE PACKAGE ➔ EIGHT INTERLINKED LEGISLATIVE PROPOSALS

Key components include cross-cutting issues addressed across these proposals

**Energy Union Governance**
(Regulation on the Governance of the Energy Union)

**Energy Efficiency**

**Renewables**
(Revised Renewable Energy Directive)

**Electricity Market Design**
(Electricity Directive, Electricity Regulation, ACER Regulation, Risk Preparedness Regulation)
Energy Efficiency: Updating to the 2030 framework

- Target
- EPBD
- EED
Energy Efficiency Directive: THE 30% ENERGY EFFICIENCY TARGET

What are the positive impacts compared to a 27% target?

<table>
<thead>
<tr>
<th>SAVINGS</th>
<th>Reduced energy related costs e.g. for households and energy intensive industries</th>
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<tbody>
<tr>
<td></td>
<td>Less thermal generation capacities needed</td>
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<td>Reduction in pollution control costs &amp; health damage costs by €4.5 – 8.3 billion</td>
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<td>Security of supply: avoided cumulative fossil imports = €70 billion</td>
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<td>Decarbonisation is cheaper in the long run (2021-2050): €9 billion/year less</td>
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<table>
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<tr>
<th>2030 (b.a.u.)</th>
<th>27%</th>
<th>30%</th>
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<tr>
<td>158€ MWh</td>
<td>161€ MWh</td>
<td>157€ MWh</td>
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THE 30% ENERGY EFFICIENCY TARGET (Articles 1 and 3)

What are the positive impacts compared to a 27% target?

- Up to 400,000 more jobs in 2030
- Up to 0.4% increase of GDP in 2030 (~ 70 bn €)

What are the positive impacts of the whole 2030 Energy and Climate package compared to business as usual?

- Up to 900,000 more jobs in 2030
- Up to 1% increase of GDP in 2030 (~ 190 bn €)
<table>
<thead>
<tr>
<th>WHERE WE ARE TODAY</th>
<th>OTHER INSTITUTIONS' POSITIONS</th>
<th>WHAT WE SUGGEST</th>
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<tr>
<td><strong>2020 Framework:</strong></td>
<td><strong>Commission 2014:</strong></td>
<td><strong>2030 Framework:</strong></td>
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<td>Indicative national targets for 2020</td>
<td>30% indicative EU target for 2030</td>
<td>Indicative national contributions for 2030</td>
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<td>20% indicative EU target for 2020</td>
<td><strong>EUCO Conclusions 2014:</strong></td>
<td>30% binding EU target for 2030</td>
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<td>'at least 27% target for 2030 to be reviewed by 2020 having in mind a 30% target'</td>
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<td><strong>EP 2015 Resolution:</strong></td>
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<td>Binding 40% target</td>
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ENERGY SAVINGS (Article 7 EED)

Extending existing energy saving obligations beyond 2020 (1.5%/year)
- Attracting private investment for energy efficiency renovations

Strengthening the social dimension
- Lower energy bills for consumers and reduced energy demand
- Requiring MS to consider energy poverty in designing energy efficiency obligations schemes or alternative measures

Improving coherence with the EPBD
- Increasing buildings renovation rate
- Simplifying and streamlining
Contribute to deliver a **New Deal for Energy Consumers:**

- **Clarification** of the EED provisions on metering and billing for **thermal energy** (district heating/cooling, central supply of heat/cooling/hot water).

- Ensuring **access to clearer consumption information** and more frequent feedback for consumers in multiple-apartment buildings.

- New **meters to be remotely readable** by 2020, and existing meters to be adapted to be remotely readable by 2027 where this is cost effective.

1. Building renovation has to do more
   → Review of EPBD
   → Review of Art. 7 EED

2. Financing has a more important role to play
   → Smart Financing for Smart Buildings

3. Digital/ICT has a big potential to contribute
   a) Capture behavioral change potentials
   b) Contractually guaranteed energy savings as business model
   c) Capture demand response potentials

   → Development of a 'Smartness indicator for buildings'
   → Review of Art. 9-11 EED
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ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (EPBD)

SMARTER AND MORE SUSTAINABLE BUILDINGS FASTER

**Smart**

- To encourage the use of *ICT and smart technologies* ensuring buildings operate efficiently:
  - By introducing *building automation and control systems* as alternative to physical inspections;
  - By encouraging the roll out of the required *infrastructure for e-mobility* (with focus on *large commercial buildings* and excluding public buildings and SMEs);
  - By introducing a *smartness indicator* to assess the technological readiness of the building to interact with the occupants, the grid, while managing itself efficiently

**Simple**

- By streamlining *outdated or cumbersome provisions* that have not delivered the expected output
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SMART FINANCE FOR SMART BUILDINGS (EPBD)

LINKING REGULATORY MEASURES WITH FINANCIAL SUPPORT

More effective use of public funds
- Building on EFSI II blending with ESIF funds

Assistance and aggregation
- Creating national energy efficiency platforms in Member States
- Providing reinforced technical support by the EU

De-risking
- Increasing transparency
- Understanding the risks and benefits for financiers and investors
NEW ELECTRICITY MARKET DESIGN

- **Electricity Regulation (RECAST)**
  - Contains majority of new wholesale rules

- **Electricity Directive (RECAST)**
  - Contains majority of new retail provisions

- **ACER Regulation (RECAST)**
  - ACER tasks and procedure

- **Regulation on Risk preparedness (NEW)**
  - Member States put in place appropriate tools to prevent, prepare for and manage electricity crisis situations
WHY DO WE NEED NEW ELECTRICITY MARKET DESIGN?

THE ENERGY SYSTEM OF TOMORROW WILL LOOK DIFFERENTLY

2030
50% of electricity to come from renewables

2050
Electricity completely carbon free

Today
Increasingly decentralized power generation

2021-2030
Investment needs 47 bn/Year (47% network)

Technological and political developments require an overhaul of the market rules
Boost wholesale market flexibility and provide clear price signals to facilitate the continuing penetration of renewable energies and ensure investments.

Enable active consumer participation and ensure that consumers are protected and benefit from progress in energy technologies.

Promote regional cooperation and provide a true European dimension to security of supply.
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HOW?

1. Stengthened role
2. Regulatory oversight
3. Better information
4. Protection
5. Empowerment
6. Information sharing & transparency
7. Common principles
8. Level-playing field
9. Flexibility
10. Liquid, integrated markets
11. Wholesale market upgrade
12. EU Risk preparedness
13. Fair deal for consumers
14. Increased cooperation
15. Regional operation centres
16. Flexibility
17. Sharing generation adequacy

New Electricity Market Design

ACER - Agency for the Cooperation of Energy Regulators
Strengthened role
Regulatory oversight
WHOLESALE MARKET UPGRADE
Evolution, not revolution

Competitive energy markets are at the heart of a competitive economy

- **Enhancing system flexibility:**
  - INTEGRATION OF RENEWABLES
  - MARKET-DRIVEN INVESTMENTS

- **Strengthened short-term markets**
  - Increase **cross-border trading opportunities** over shorter timeframes (intraday and balancing markets)
  - **Reward flexibility** for generation, demand-response and storage
  - Allow **prices to show real value** of electricity in terms of time and location (scarcity pricing)
  - **Market principles** from Network Codes/Guidelines to The Electricity Regulation

- **Level-playing field among sources**
  - Rules on **priority access and dispatch**
  - **Curtailment** rules
  - **Remuneration** on equal terms on market principles
  - Extended **balancing responsibilities**
  - Non-discriminatory charges for **distributed generation**
  - **No discrimination of cross-border trade**
    - Do not push **congestion** to the border
    - Commission decision on **bidding zones**

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BACKGROUND – UNLOCKING THE UNTAPPED DEMAND-RESPONSE POTENTIAL

160 GW
Theoretical demand response potential in 2030

100 GW
Theoretical demand response potential today

20 GW
Demand response activated today

- 16 Member States maintain some form of energy price regulation for households.
- In most Member States demand response is limited due to market entry barriers towards new service providers, such as independent aggregators (which aggregate individual flexibility).
- Unlike transmission system operators, distribution system operators cannot manage their network in a flexible manner to reduce costs for the consumer.

WAY FORWARD

- **Phase-out regulated prices**, only duly justified exemptions allowed.
- Ensure **fair market access for independent aggregators** and other new service providers.
- Allow **flexible management of distribution networks** through curtailment of renewables and demand response solutions.
- Set clear principles for DSOs to ensure neutrality.

Competition within the retail energy market is key for unlocking efficient consumer behaviour and keeping the cost of the energy transition at check.
Capacity savings due to a European capacity adequacy assessment

- Development of a European adequacy assessment \(\rightarrow\) mandatory use for CMs
- Common capacity mechanisms principles in line with the Sector Inquiry to ensure least-distortive design \(\rightarrow 550\) gr CO2/kWh threshold
- Regional Operation Centres (ROCs) \(\rightarrow\) building on SO-GL (RSCs), additional tasks (e.g. sizing of reserve capacity, CL participation), some decision-making power
ADAPT RENEWABLES TO 2030 – At least 27% RES TARGET

Baseline of 2020 targets
- 2020 targets lapse
- Make 2020 national targets the basis for further increases in RES through to 2030

EU trajectory 2021 - 2030 for achievement of the EU RES target
- Linear trajectory at EU level towards the 2030 target
- Non-linear trajectory at EU level towards the 2030 target

Gap filling mechanism (ambition gap)
- Require Member States to revise ambition of national plans until the 2030 target is met (under Governance Reg)
- Increase the ambition of EU wide measures in legislation
- New EU wide measures to increase ambition
- Introduce national binding targets

Gap filling mechanism (delivery gap)
- Require MS below their pledge level to revise their plan (under Governance Reg)
- Increase the ambition of national measures in legislation
- New EU wide measures to increase ambition
- Introduce national binding targets
PROPOSAL: Achieving at least 27% RES EU-Wide

Flexible Gap filler
If gap, MS decide on measures incl. voluntary contribution to financing platform

Planning, reporting and monitoring

Enabling framework incl. enhanced use of funds

Sector specific measures
(transport, H&C, support schemes, self-consumers...)

2020 targets as the baseline

Governance
RED II

2019 2021 2023 2030
New Renewable Energy Directive

- Art 1-2: Updated objectives and definitions
- Art 3: Binding Union target
- Art 4-6: Electricity and support
- Art 7-14: Target calculation and joint projects
- Art 15-18: Admin procedures and training
- Art 19-22: Consumers: GOs and self-consumers
- Art 23-24: Heating and Cooling
- Art 25: Transport mandate
- Art 26-28: Bioenergy sustainability
- Art 29-34: Implementing measures, delegation, repeal
RES-E: Where are we and where do we need to go?

**RES-E share of total electricity**
PROPOSAL: A Stable Framework for Renewable Electricity

**Support schemes**
- Support to be market-responsive and cost effective (Article 4)
- Visibility for investors (3-year cycle) (Art 15(3))
- Gradual and partial opening to cross-border participation (Article 5)
- Stability of financial support (no retroactive changes) (Article 6)

**Administrative barriers**
- One-stop shops (Article 16)
- Time limits (Art 16, 17)
- Simple notification for small-scale participation (Article 17)
- Simple notification for repowering (Article 16)

**STATE AID RULES**
1. Guidelines
2. Case by case notifications to and assessment by DG COMP
Unlocking the Potential of Consumer Engagement

- Mobilise private capital
- Increase local acceptance
- Inform consumer choices
- Good sites are getting scarcer
- Drives 50% of rooftop PV
- Ready to pay a premium for RES?
PROPOSAL: Empowering Citizens and Communities

- **Renewable self-consumers** to be allowed to generate, store, sell and consume their own electricity (linked to art. 15 Electricity Directive)

- **Renewable self-consumers in multifamily houses** to be allowed to generate, store, sell and consume their electricity jointly

- **No disproportionate procedures** and charges that are not reflective

- **Specific provisions for energy communities** (linked to art. 15 Electricity Directive)

- **Improved Guarantees of Origin** for better consumer information (art. 19)
RES-H&C – What Is At Stake?

Why act at EU-level?

• ≈ 50% energy consumption
• 18% RES today => 27% in 2030
• 68% of the EU's gas imports
• Risk of missing target if no action
EU-28 renewable heating and cooling production by source

source: EUROSTAT, Öko-Institut
Renewables need to be mainstreamed also in heating & cooling and transport.
Mainstreaming RES in heating and cooling supply

- Strengthened requirements on authorisation, permit granting, certification and training with improved implementation
- Universal RES H&C supply increase endeavour
- Strengthened consumer information and rights (GO, energy communities, District H&C)
- Predictability of support schemes

Opening local H&C markets to competition and integration of RES

- Increased access for RES energy, fuel, technology suppliers, installers and services suppliers, such as ESCOs
- Creating access rights to local H&C networks
- Requirement to designate authorities and reinforce regulatory oversight

RES integration in buildings & industry & energy infrastructures

- RES minimum requirements in new and renovated buildings in line with Energy Performance of Buildings Directive
- Strengthened requirements for including RES when planning, designing, building and renovating urban and energy infrastructures, industrial, residential and commercial areas for local, regional and national authorities
**NEW ARTICLES**

**Article 23**
- MS "shall endeavour to increase" the share of RES-HC by 1pp/year
- Flexibility on the measures
- Flexibility on implementing entities
- Possible combination with EED Art 7

**Article 24**
- Consumers' information on DHC energy performance and RES share
- Consumers can disconnect, if they can achieve a higher performance, or switch within the DHC system to RES/waste heat suppliers
- Opens DHC for RES/waste energy suppliers

**REVISES**

**Article 2 (definitions)**
- Introduction of ambient heat and waste heat

**Article 15 (reg. and codes)**
- Reinforcement of RES-HC in planning & building
- Minimum levels of RES in buildings + link with EPBD
- Easier technical requirements

**Article 20 (grid operation)**
- DHC deployment, RES integration

**Article 26 to 28**
- Bioenergy sustainability criteria
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RENEWABLES in TRANSPORT

Promoting advanced RES in transport
- No additional EU action
- Energy based incorporation obligation
- GHG emissions reduction obligation

Climate performance of food-based biofuels
- No additional EU action
- Gradual reduction of food-based biofuels by 2030
- Full phase out by 2030
- Focus on reduction on biofuels produced from vegetable oil, higher GHG criteria

Renewable fuels in aviation and shipping
- No additional EU action
- Specific support measure to promote consuming renewable fuels in for aviation and maritime

#EnergyUnion
PROPOSAL: Promoting Innovation in Transport
PROPOSAL: EU bioenergy sustainability framework (article 26)

- Sustainability criteria for same feedstock independent of final use
- End use performance criteria for biofuels, biomass and biogas

**Sustainability criteria**

- **agriculture biomass** – kept/streamlined existing sustainability criteria (e.g. no-go areas) (full harmonization)
- **forest biomass** – new risk-based criteria on biodiversity and carbon management (minimum requirement, Member States can go beyond)

**End-use performance criteria**

- **biofuels/bioliquid** - GHG savings increased to 70% for new installations
- **heat and electricity from biomass** (20 MW<sub>fuel</sub>) and **biogas** (0.5 MW<sub>el</sub>) - new GHG saving requirement: 80% for new plants in 2021 (85% in 2026)

**Cogeneration requirement** for all new bioelectricity plants (20 MW<sub>fuel</sub>), 3-year transition period + exceptions for security of supply.
Bioenergy – The issues

**Focus on solid biomass/biogas for heat and power** – major role for the EU climate & energy objectives.

Clear benefits in terms of energy security, growth and jobs, technology innovation, and climate action.

Emerging risks:
- **Climate performance** of forest biomass depending on future trends on forest management practices
- **Environmental impacts** (e.g. biodiversity, soil and air quality)
- **Low conversion efficiency** of biomass electricity
- **Potential internal market issues costs** due to diverging national sustainability schemes
## GOVERNANCE

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<tr>
<th>Measures</th>
<th>Legislative proposal</th>
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<tr>
<td>A <strong>single legislative act</strong> on Energy Union governance that replaces the relevant parts of the energy acquis and fully replaces the MMR (option S5)</td>
<td>Proposed Regulation on Energy Union Governance that fully integrates the Climate Monitoring Mechanism Regulation (MMR)</td>
</tr>
<tr>
<td><strong>Updates of National Plans every five years,</strong> and at Member States' discretion with regard to policies and measures and projections (NP5)</td>
<td>National Plans by January 2019 and every ten years thereafter (Art. 3) Update of National Plans by January 2024 and every ten years thereafter (Art. 13)</td>
</tr>
<tr>
<td><strong>Biennial</strong> comprehensive <strong>Progress Reports</strong> and limited Progress Reports every other two years (PR3)</td>
<td>Integrated Progress Reports by 15 March 2021 and <strong>every two years</strong> thereafter (Art. 15) and annual reports for specific issues</td>
</tr>
<tr>
<td><strong>Annual monitoring</strong> reports (M1)</td>
<td><strong>Assessment of progress</strong> by 31 October 2021 and every second year thereafter (Art. 25.1) and annual assessment for specific issues Annual <strong>State of the Energy Union report</strong> by 31 October (Art. 29)</td>
</tr>
<tr>
<td><strong>Iterative process on ambition and delivery</strong> of National Plans complemented by <strong>measures</strong> (IP4) <strong>Commission recommendations</strong> set in legislation, with a role for the Council and the European Parliament (IP6)</td>
<td><strong>Iterative process on ambition and delivery</strong> of National Plans complemented by EU and national measures (Art. 9, 27) <strong>Commission recommendations</strong> (Art. 9, 28)</td>
</tr>
<tr>
<td><strong>Mandatory consultations on draft and final National Plans</strong> (C3)</td>
<td><strong>Regional cooperation on draft National Plans and their implementation</strong> (Art. 11)</td>
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**CLEAN ENERGY FOR ALL EUROPEANS**
INTERLINKAGES WITH OTHER LEGISLATIVE PROPOSALS

- **Renewable Energy Directive**: Streamlining and integration of obligations and target achievement (gap filler for 2030 target)
- **Energy Efficiency Directive**: Streamlining and integration of obligations and target achievement (gap filler for 2030 target)
- **Market Design Initiative**: Streamlining and integration of obligations
- **Effort Sharing Regulation, Land use, Land use change and Forestry**: Streamlining of obligations and target achievement
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INTERLINKAGES (2)

STREAMLINING OF PLANNING OBLIGATIONS

National Renewable Energy Action Plan Template
Climate Action Planning & Reporting Obligations
National Energy Efficiency Action Plan Template
Energy Security
Internal energy market
Research & Innovation

Existing obligations
New elements and reflection of existing obligations
Streamlining of Obligations
Integrated National Energy and Climate Plans
INTERLINKAGES (3)

INTERLINKAGES WITH THE PARIS AGREEMENT

- Historically significant landmark agreement strengthening global response to climate change
- Energy Union provides broader framework within which EU can provide right enabling environment for the energy transition
- Paris Agreement sets out a 5-year ambition cycle which includes review processes to ensure the achievement of its goals
  - 'Facilitative dialogue' in 2018
  - 'Global stocktake' every five years starting from 2023 onwards
- Energy Union process needs to be synchronised with Paris Agreement in order to ensure its full implementation and EU readiness to participate fully
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PROPOSED TIMELINE

Draft Plans (2021-2030)
Draft update (of 2030 Plan)
Final Plans (2031-2040)

Progress report
Progress report
Progress report
Progress report
Progress report

Facilitative dialogue
NDCs
Global stocktake
NDCs
Global stocktake
NDCs

Commission assessment and recommendations
Measures to close gaps to 2030 targets
Regional cooperation
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Cross-cutting issues addressed in the Energy Union Governance Regulation

- Energy Efficiency Directive
- Renewable Energy Directive
- Electricity Regulation & Directive
- Risk Preparedness Regulation

Integrated PLANNING

Integrated REPORTING

EC MONITORING of collective progress

EC RECOMMENDATIONS & MEASURES for delivery

Regional cooperation

Progress reports on implementation of the integrated national energy and climate plans

State of the Energy Union

Development and implementation of the integrated national energy and climate plans
THANK YOU!