



38<sup>th</sup> Euroheat & Power Congress  
14-16 May 2017, Glasgow, United Kingdom

# Towards an Energy Union

Eva Hoos, European Commission  
DG Energy, Renewable Energy



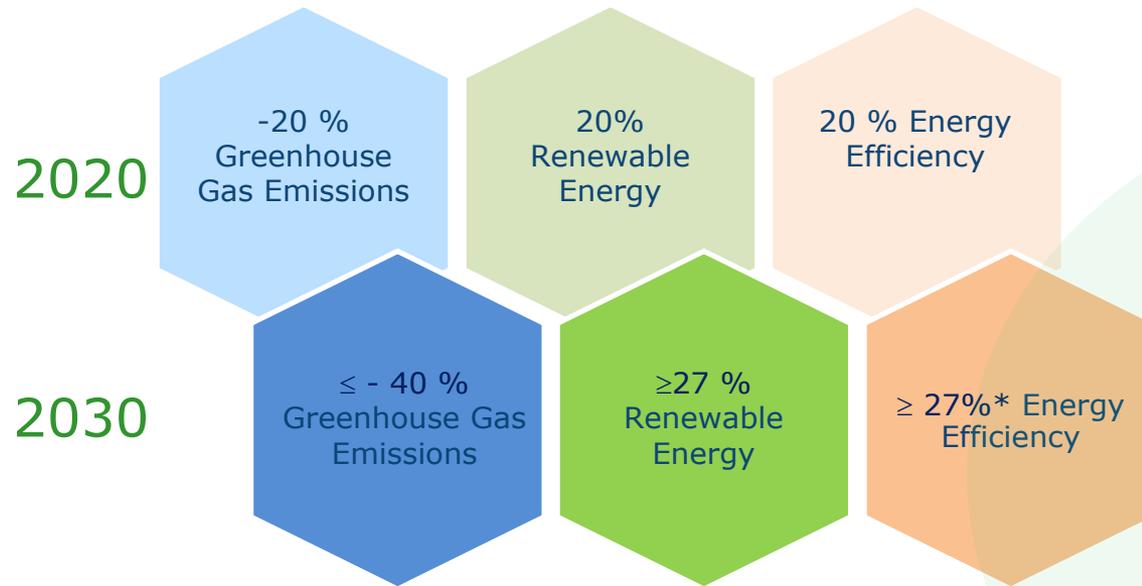
« *I want to reform and reorganise  
Europe's energy policy  
in a new European Energy Union.*

**Jean Claude Juncker**



## Introduction and Context

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



**Global Leadership**

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

# 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:



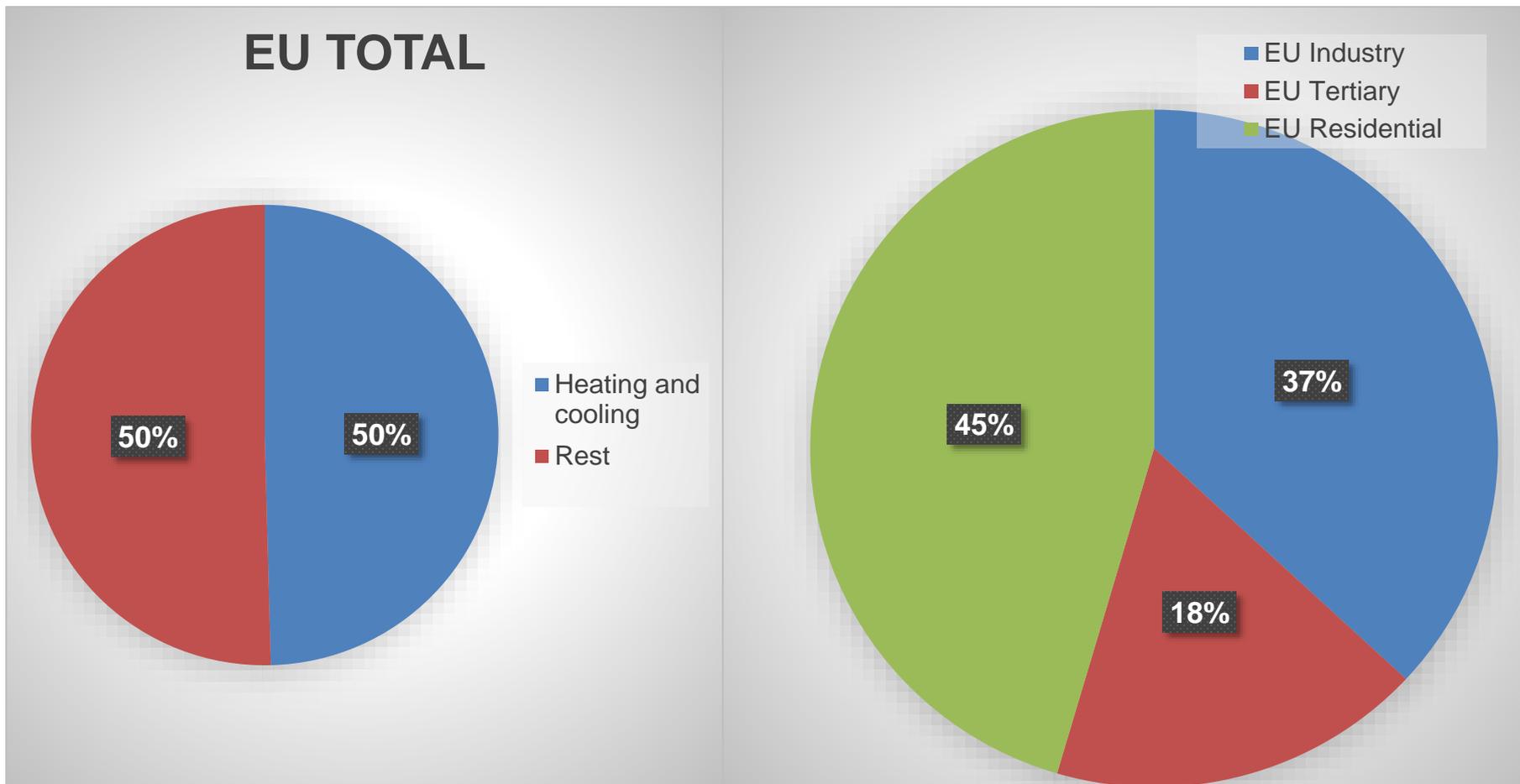
# EU Heating and Cooling Strategy

COM(2016) 51 final  
16 February 2016



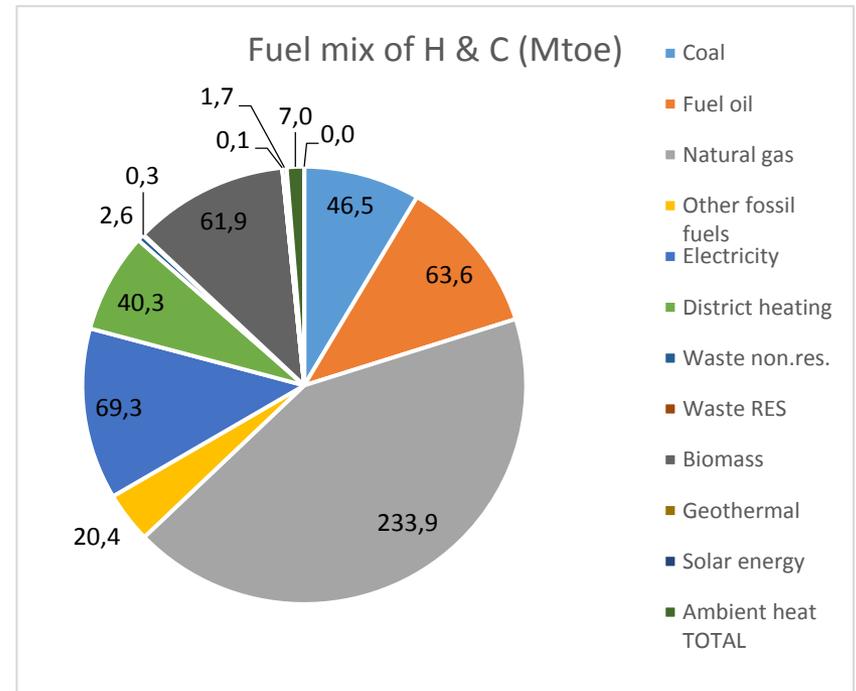
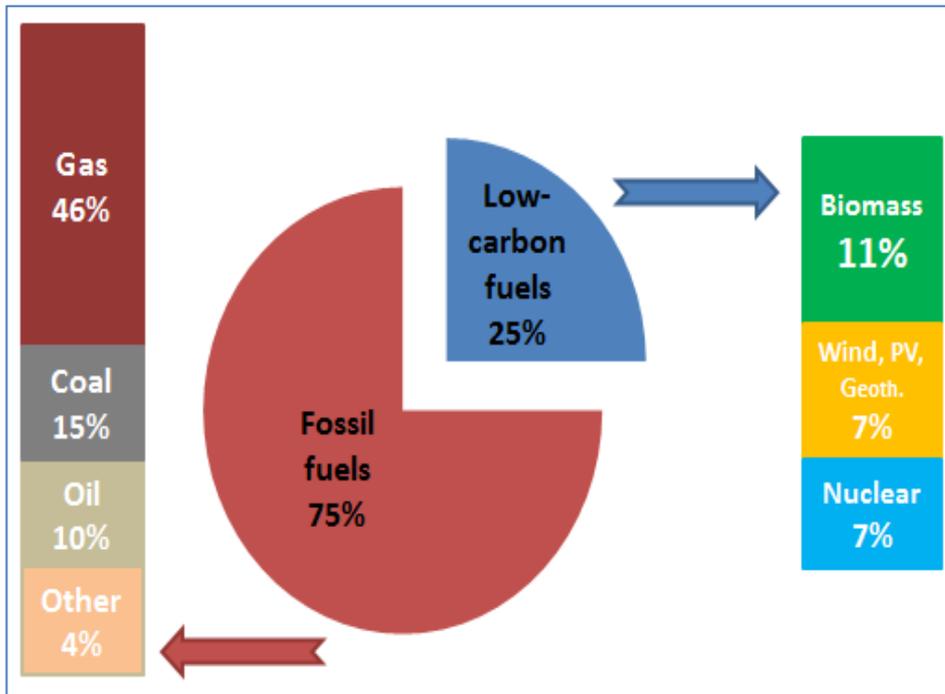
European  
Commission

## Heating and cooling is 50% of EU's final energy consumption



**Buildings consumes  $\approx$  60% of heating and cooling, 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



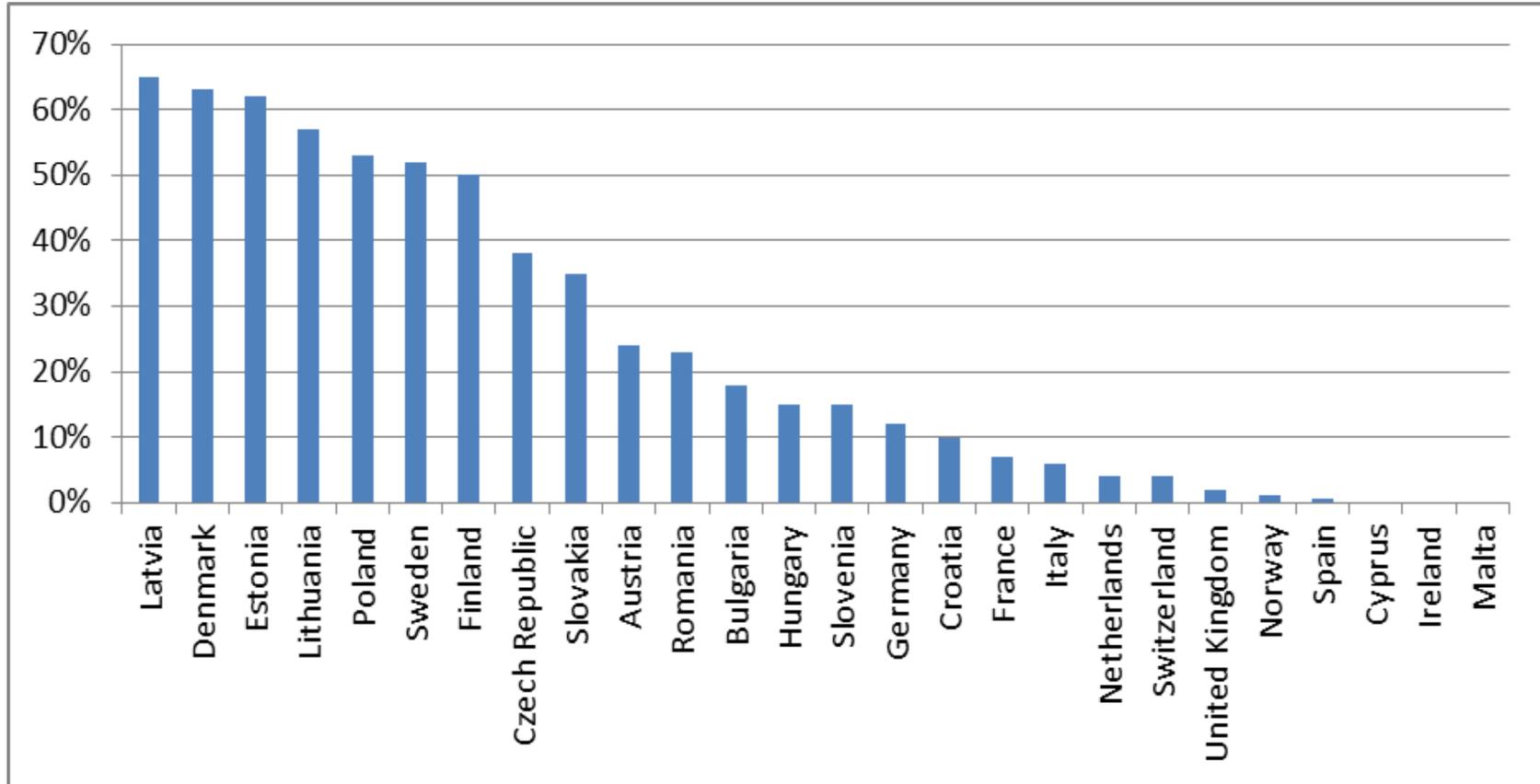
European  
Commission

# 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)



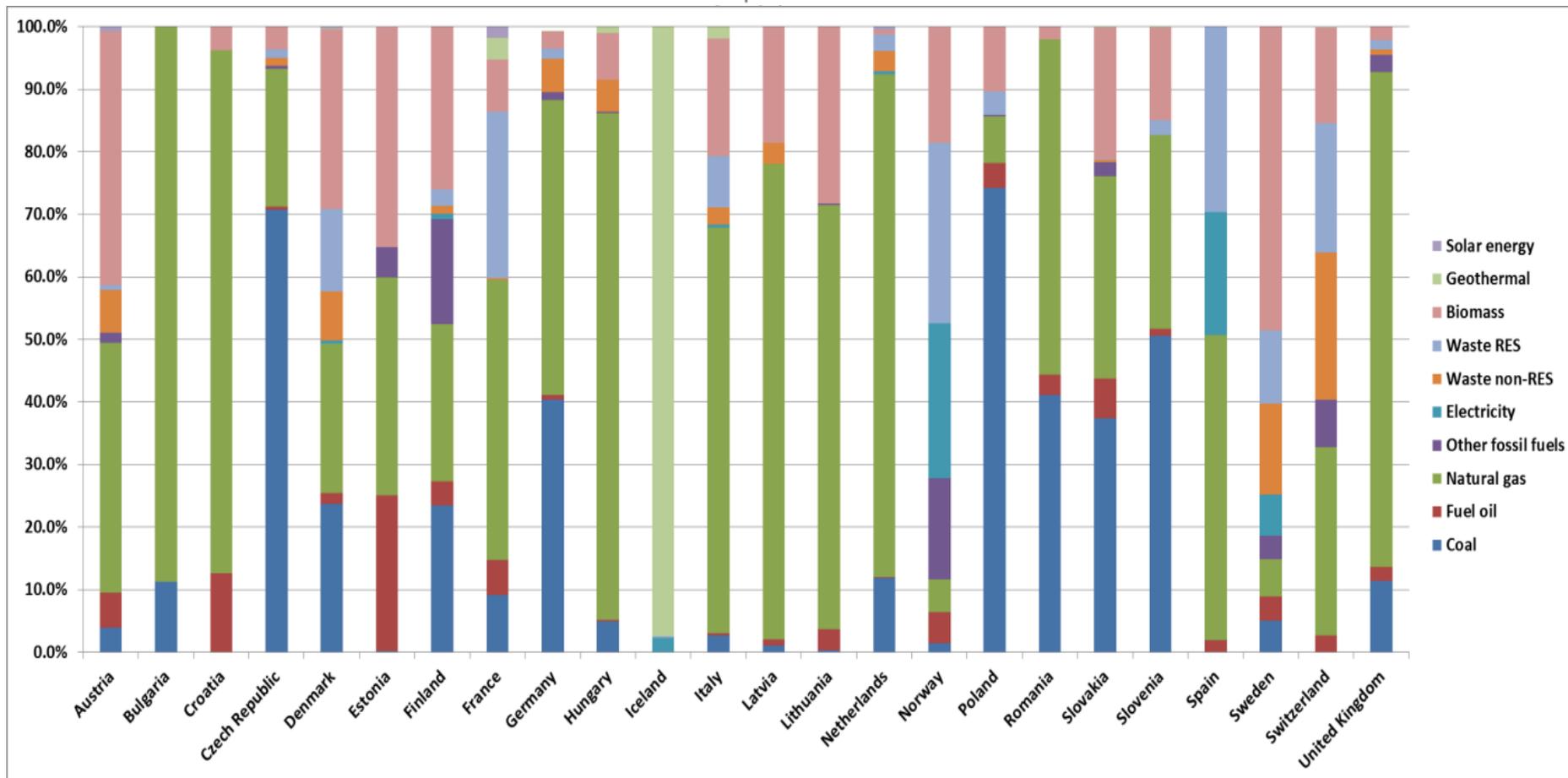
## Percentage of the population served by district heating (2013)



Source: Commission services using data supplied by Euroheat and Power

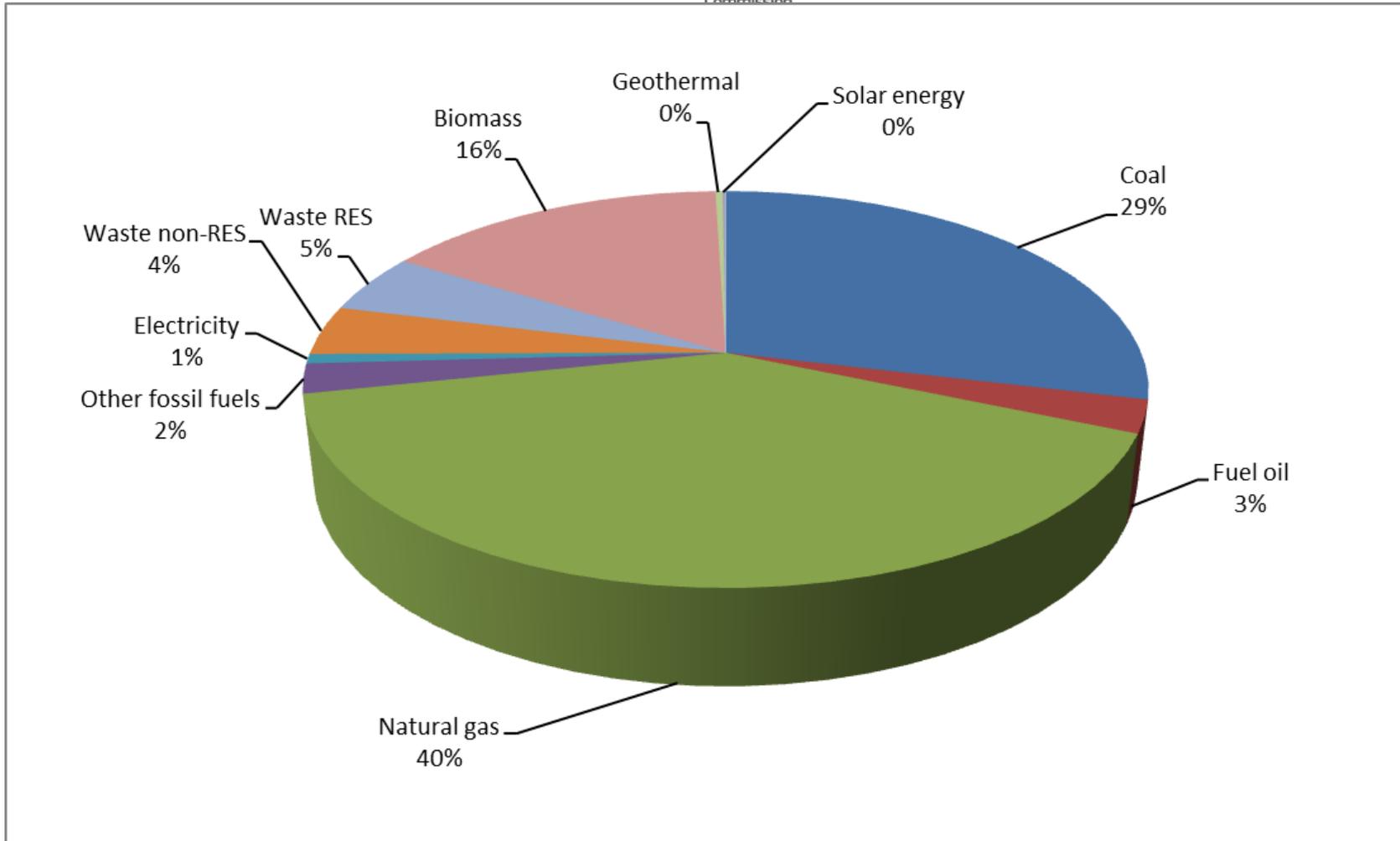


## Share of energy carrier in DTHS in 2012



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)

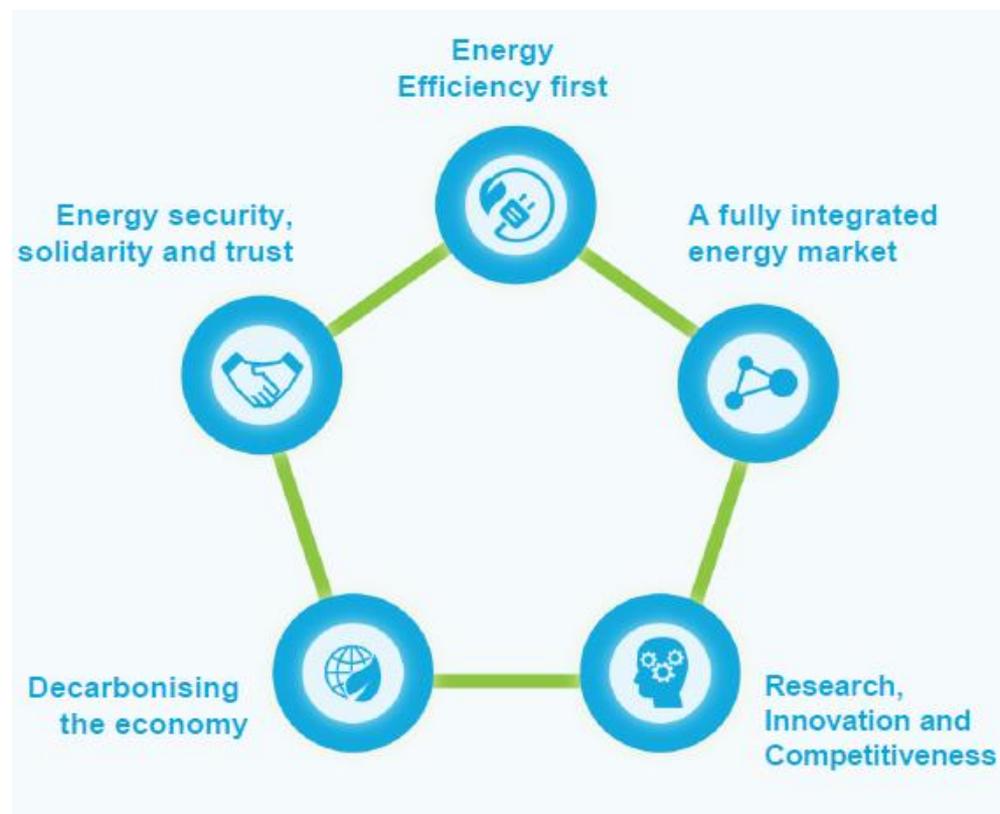


Source: Commission services using Fraunhofer and alia, Heating and cooling data mapping ... ENER/C2/2014/641

# CLEAN ENERGY FOR ALL EUROPEANS

CLEAN ENERGY FOR ALL – IMPLEMENTING THE ENERGY UNION STRATEGY

AN ENERGY UNION BASED ON 5 MUTUALLY SUPPORTIVE AND INTERLINKED DIMENSIONS



# CLEAN ENERGY FOR ALL EUROPEANS

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**

(Energy Efficiency Directive, European Performance of Buildings Directive)



## **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?



Reduced energy related costs e.g. for households and energy intensive industries

Less thermal generation capacities needed

Reduction in pollution control costs & health damage costs by €4.5 – 8.3 billion



Lower electricity price for households and energy intensive industries

Security of supply: avoided cumulative fossil imports = €70 billion

Decarbonisation is cheaper in the long run (2021-2050): €9 billion/year less

2030 (b.a.u.)	27%	30%
158€ MWh	161€ MWh	157€ MWh

## THE 30% ENERGY EFFICIENCY TARGET (Articles 1 and 3)

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



**SUSTAINABLE  
GROWTH**

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?



**SUSTAINABLE  
GROWTH**

Up to 900,000 more jobs  
in 2030

Up to 1% increase of GDP  
in 2030 (~ 190 bn €)

## ENERGY EFFICIENCY DIRECTIVE (EED)

WHERE WE ARE TODAY	OTHER INSTITUTIONS' POSITIONS	WHAT WE SUGGEST
<p><b>2020 Framework:</b></p> <p>Indicative national targets for 2020</p> <p>20% indicative EU target for 2020</p>	<p><b>Commission 2014:</b></p> <p>30% indicative EU target for 2030</p> <p><b>EUCO Conclusions 2014:</b></p> <p><i>'at least <u>27%</u> target for 2030 to be reviewed by 2020 having in mind a 30% target'</i></p> <p><b>EP 2015 Resolution:</b></p> <p>Binding <u>40%</u> target</p>	<p><b>2030 Framework:</b></p> <p>Indicative national contributions for 2030</p> <p>30% binding EU target for 2030</p>

## 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

## METERING AND BILLING PROVISIONS (Articles 9-11 EED)



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.

## *Energy Performanc of Buildings Directive*

### *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**

## 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

## 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)

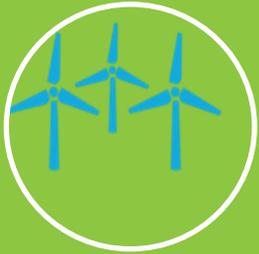
- ACER tasks and procedure

## 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



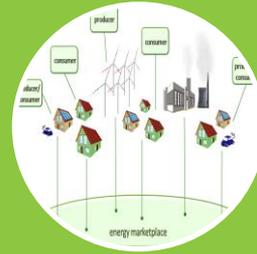
2030

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

## PURPOSES OF THE NEW ELECTRICITY MARKET DESIGN



Boost wholesale market **flexibility** and provide **clear price signals** to facilitate the continuing penetration of renewable energies and ensure investments

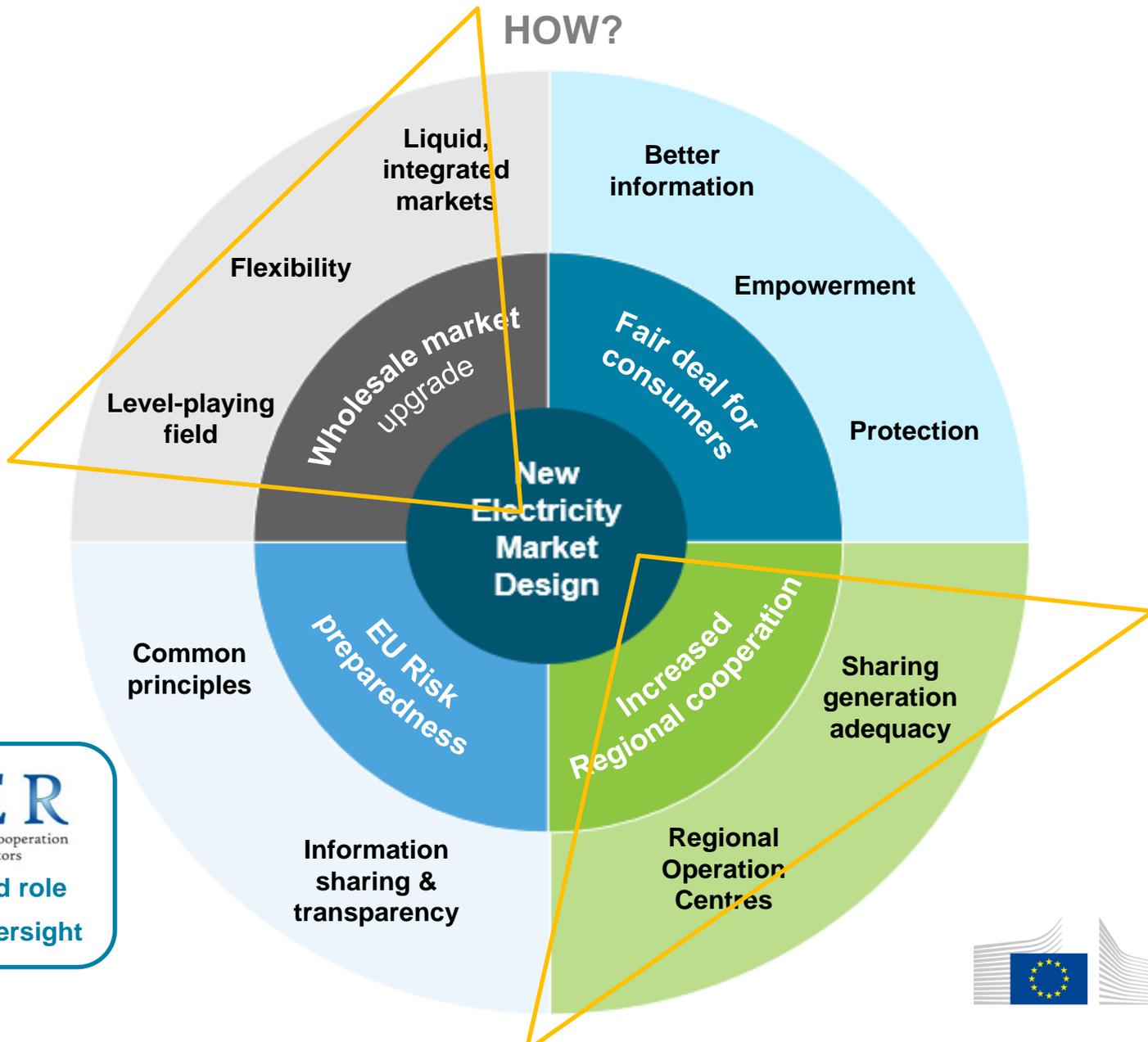


Enable **active consumer participation** and ensure that **consumers are protected and benefit** from progress in energy technologies



Promote **regional cooperation** and provide a true **European dimension to security of supply**

# CLEAN ENERGY FOR ALL EUROPEANS



**ACER**

Agency for the Cooperation  
of Energy Regulators

**Stengthened role**

**Regulatory oversight**

## WHOLESALE MARKET UPGRADE Evolution, not revolution

**Competitive energy markets are at the heart of a competitive economy**

### 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**

**Curtailed** 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

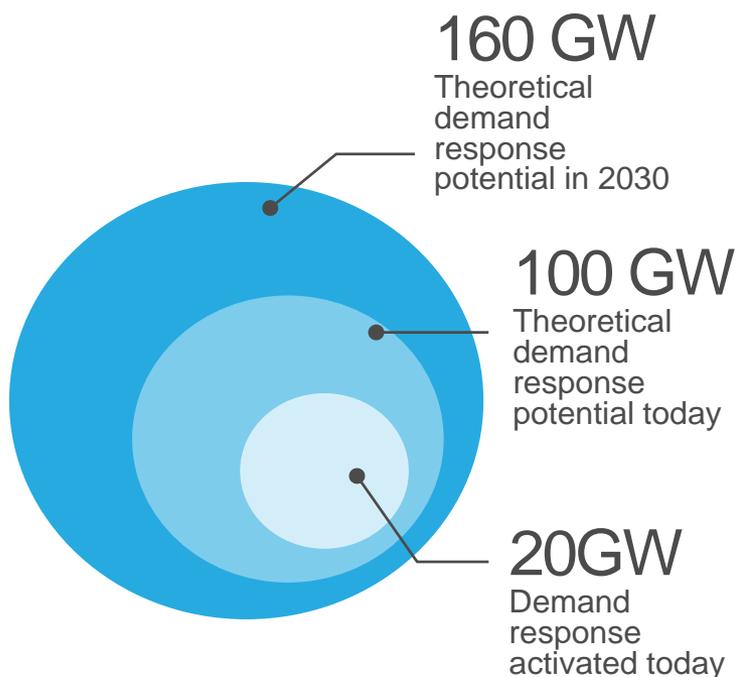
Commission decision on **bidding zones**

**Enhancing system flexibility:**

**INTEGRATION OF RENEWABLES**

**MARKET-DRIVEN INVESTMENTS**

## BACKGROUND – UNLOCKING THE UNTAPPED DEMAND-RESPONSE POTENTIAL



- 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.

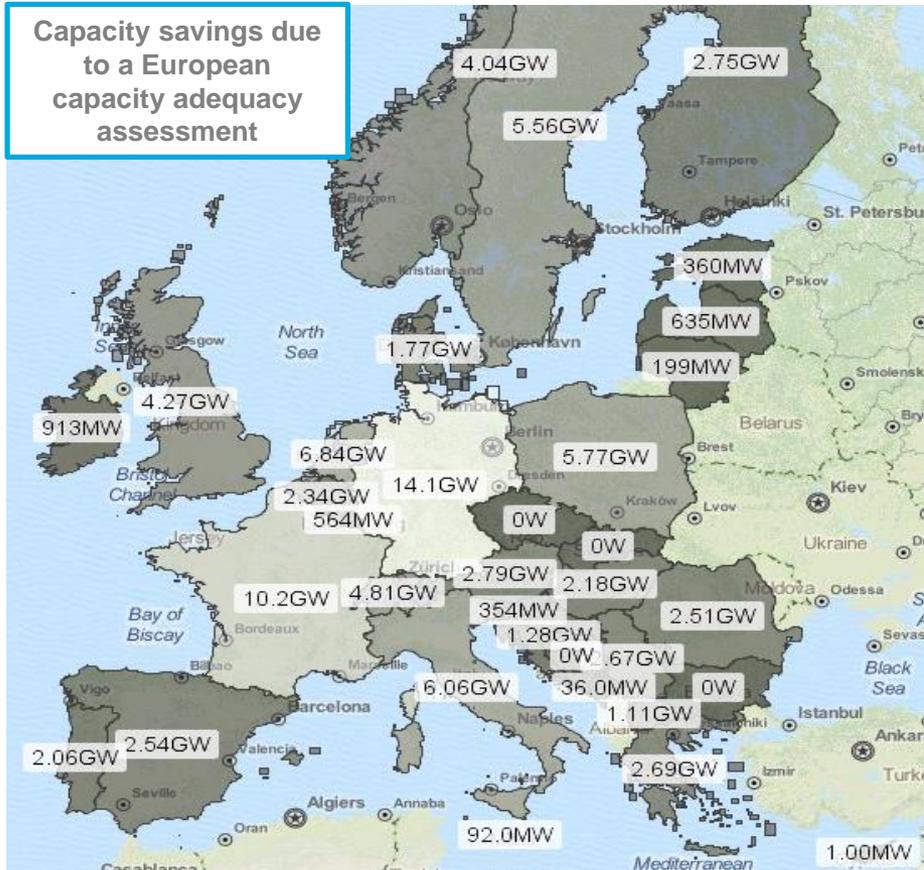
- **Phase-out regulated prices**, only duly justified exemptions allowed.
- Ensure **fair market access for independent aggregators** and other new service providers.
- Allow **flexible management of distribution networks** through curtailment of renewables and demand response solutions.
- Set clear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

WAY FORWARD

Competition within the retail energy market is key for unlocking efficient consumer behaviour and keeping the cost of the energy transition at check.

## STEPPING UP REGIONAL COOPERATION

Capacity savings due to a European capacity adequacy assessment



Development of a **European adequacy assessment** → mandatory use for CMs



**Common capacity mechanisms principles** in line with the Sector Inquiry to ensure least-distortive design → **550 gr CO<sub>2</sub>/kWh** threshold



**Regional Operation Centres (ROCs)** → 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

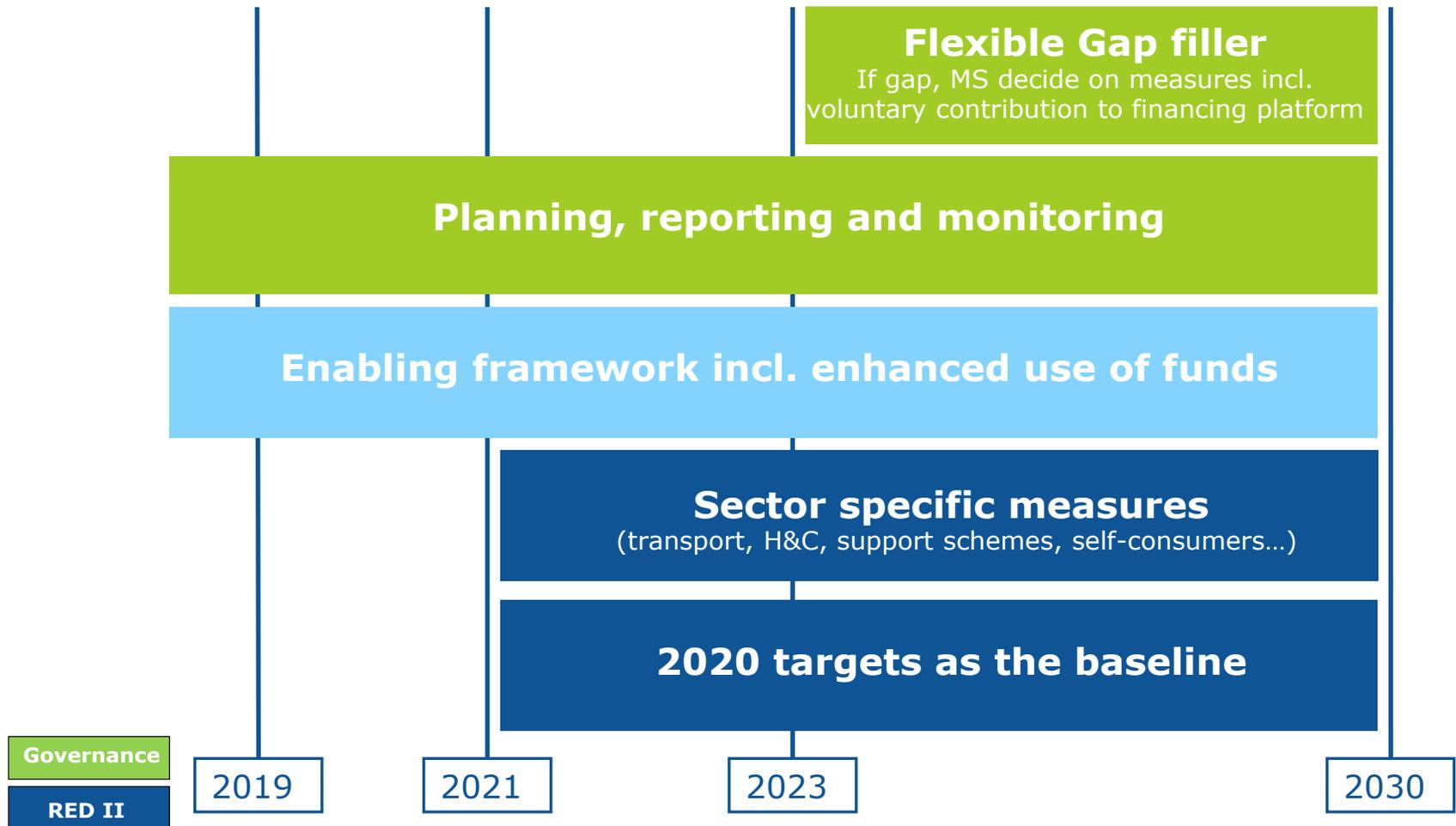
### Gap filling mechanism (ambition gap)

- 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

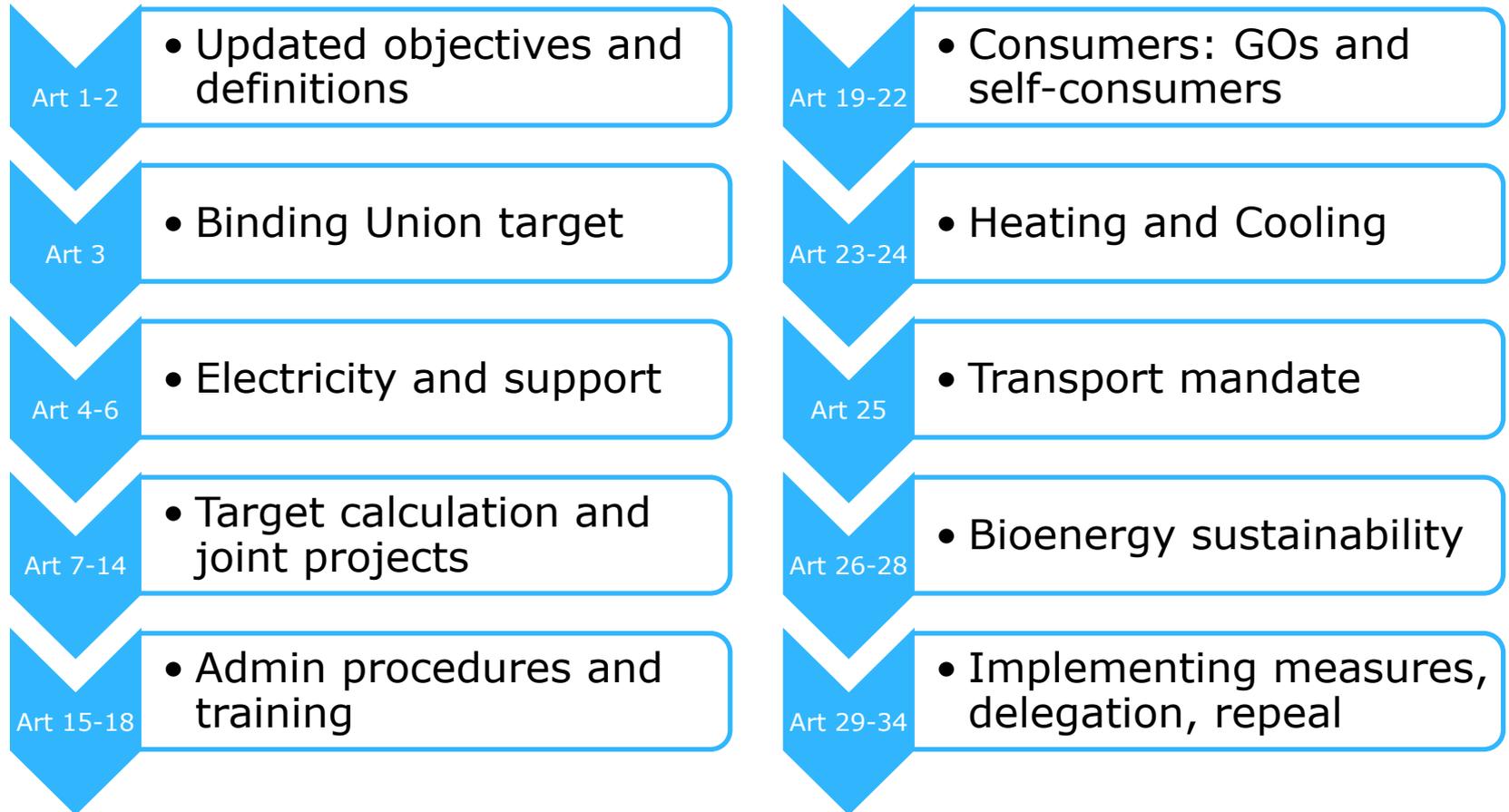
### Gap filling mechanism (delivery gap)

- 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

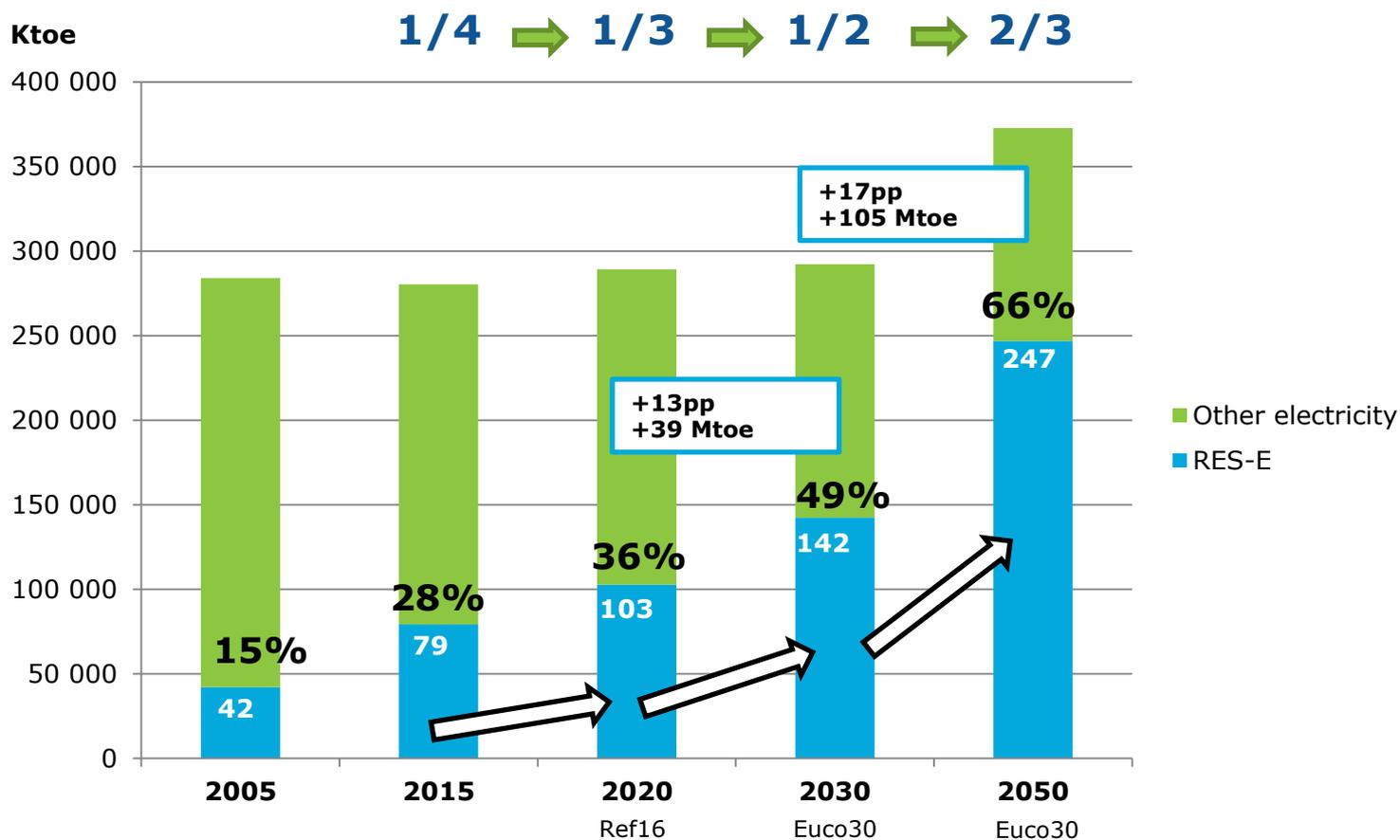
## PROPOSAL: Achieving at least 27 % RES EU-Wide



# New Renewable Energy Directive

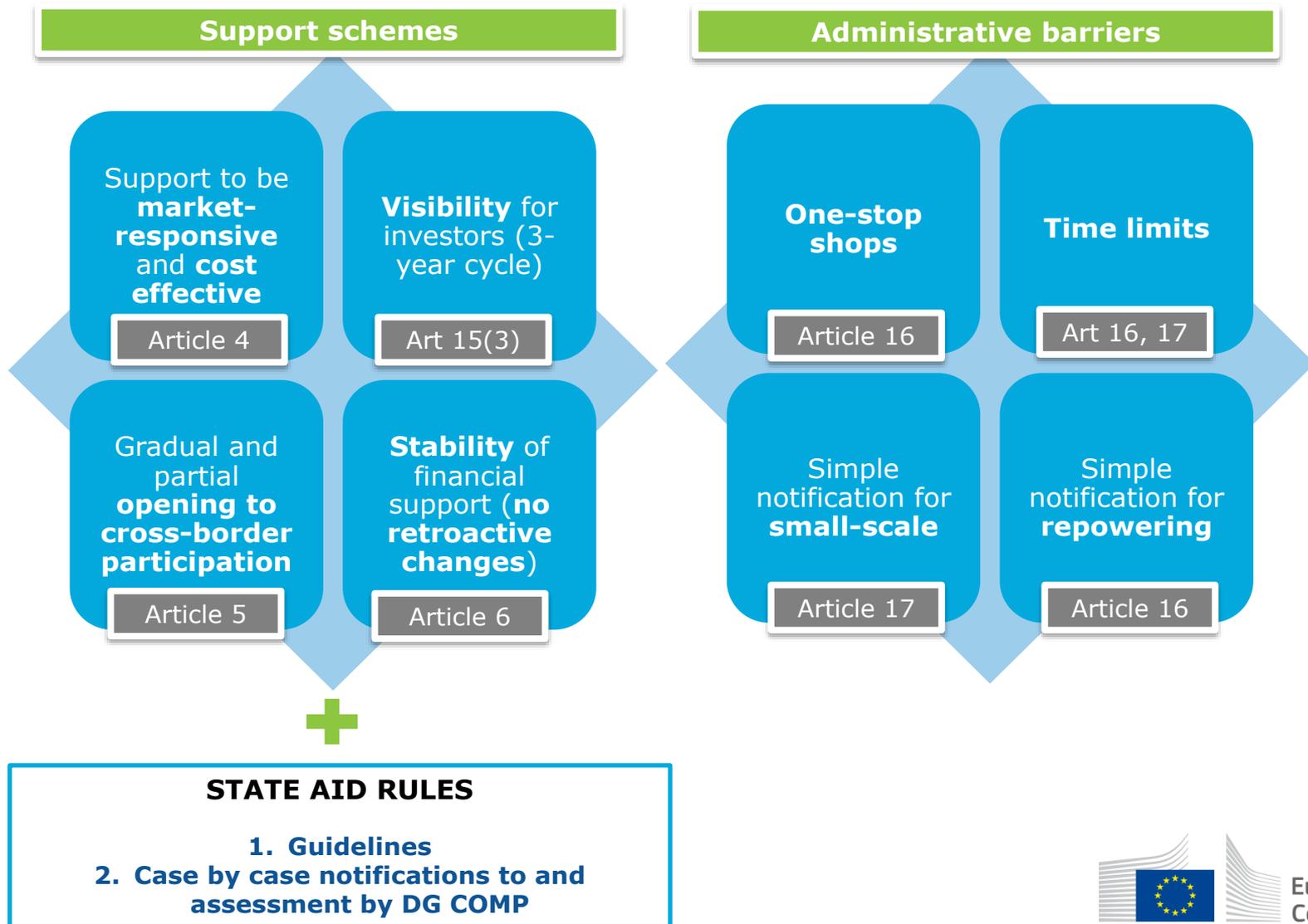


## RES-E: Where are we and where do we need to go?

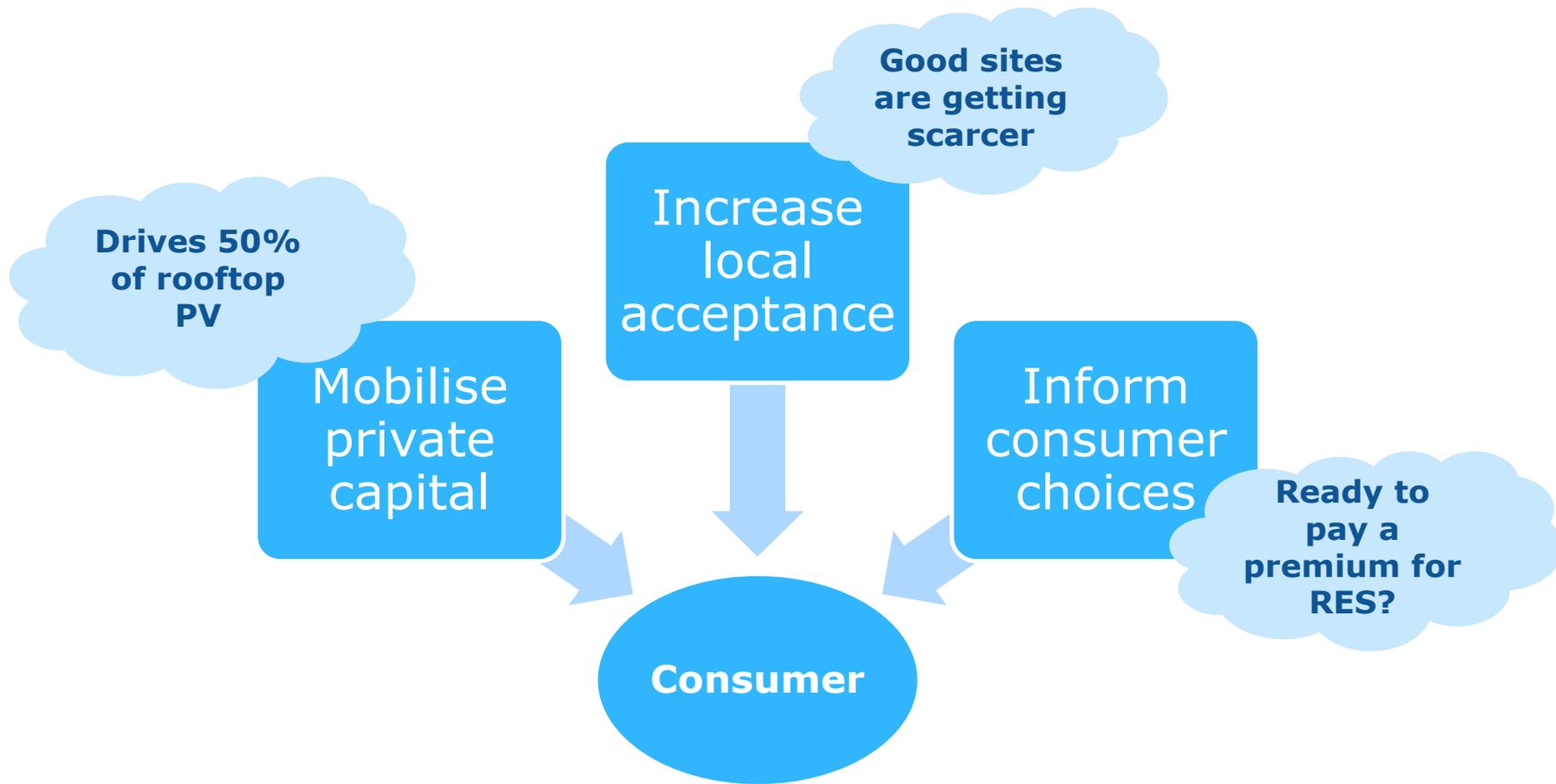


**RES-E share of total electricity**

## PROPOSAL: A Stable Framework for Renewable Electricity



## Unlocking the Potential of Consumer Engagement



## 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)

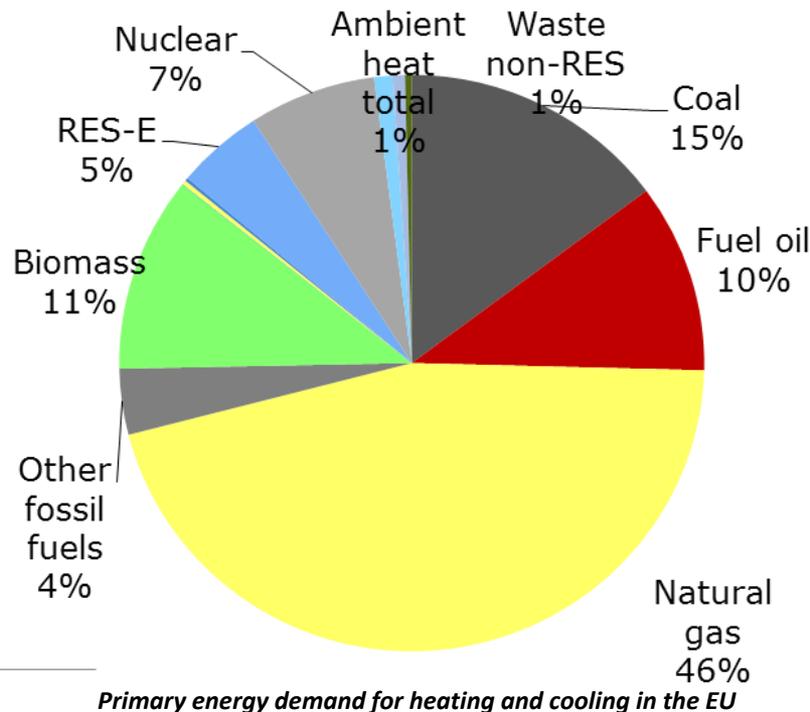


**Improved Guarantees of Origin** for better consumer information (art. 19)

## RES-H&C – What Is At Stake?

### Why act at EU-level ?

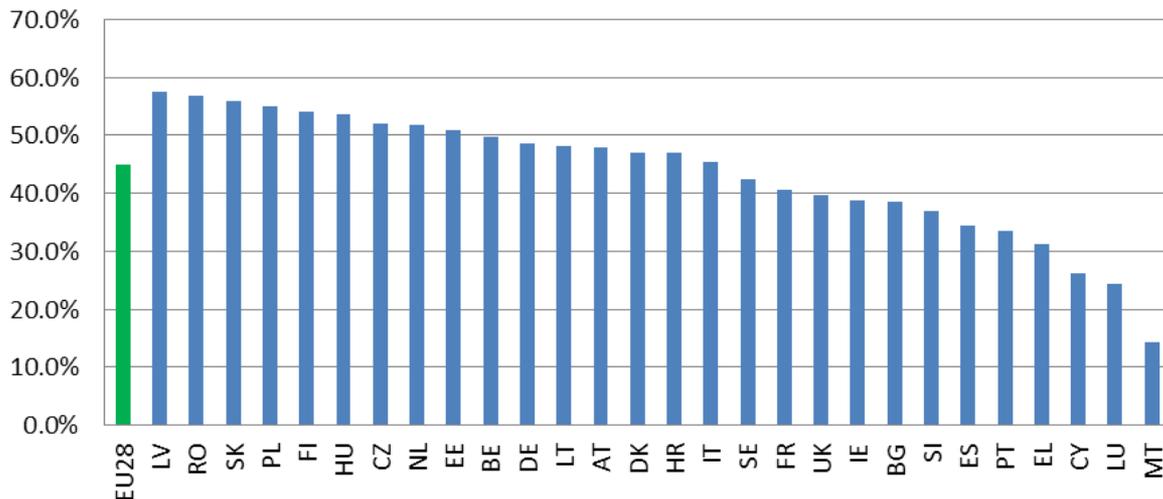
- ≈ 50% energy consumption
- 18% RES today => 27% in 2030
- 68% of the EU's gas imports
- Risk of missing target if no action



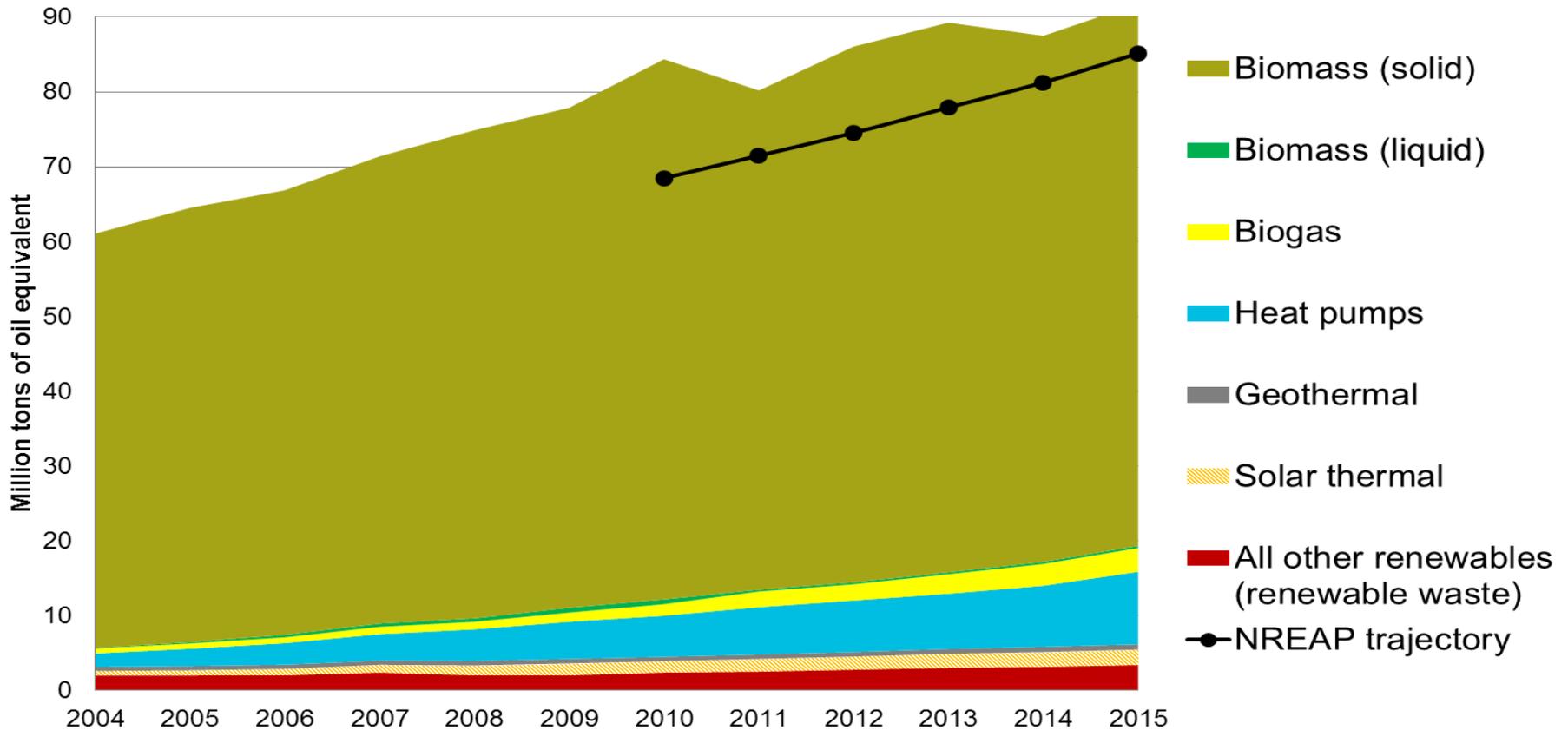
Primary energy demand for heating and cooling in the EU

**Essential yet fragmented sector**

Share of heating and cooling in Gross Final Energy Consumption

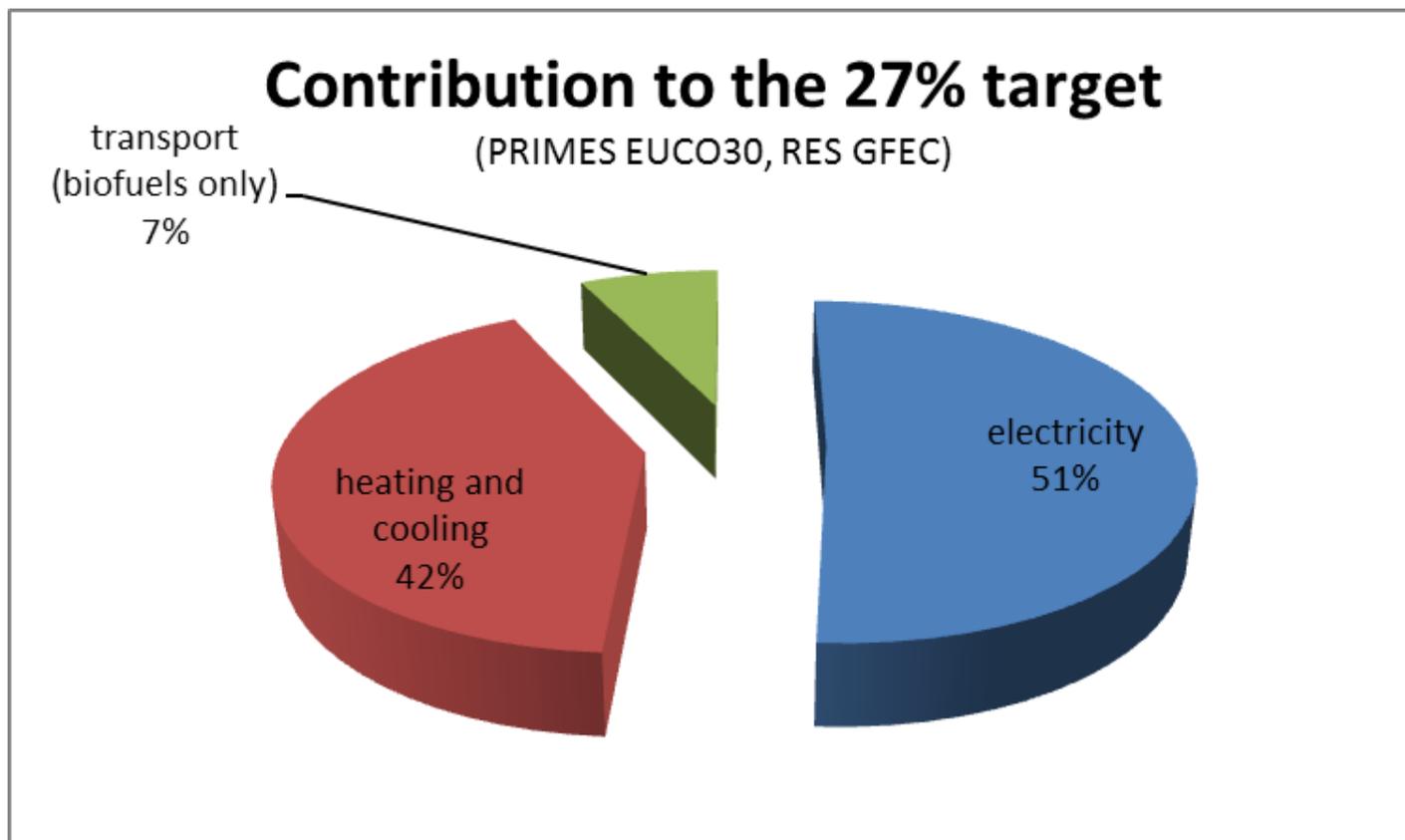


## RES-H&C – State of play



*EU-28 renewable heating and cooling production by source*  
*source: EUROSTAT, Öko-Institut*

## ENSURING COST-EFFECTIVE ACTION ACROSS ALL SECTORS



**Renewables need to be mainstreamed also in heating & cooling and transport**

## POLICY AREA – Increasing RES-H&C

### 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

## PROPOSAL: Addressing the Untapped Potential of Heating & Cooling

### 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

### Revisions

#### 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

## RENEWABLES in TRANSPORT

### Promoting advanced RES in transport

- No additional EU action
- Energy based incorporation obligation
- GHG emissions reduction obligation

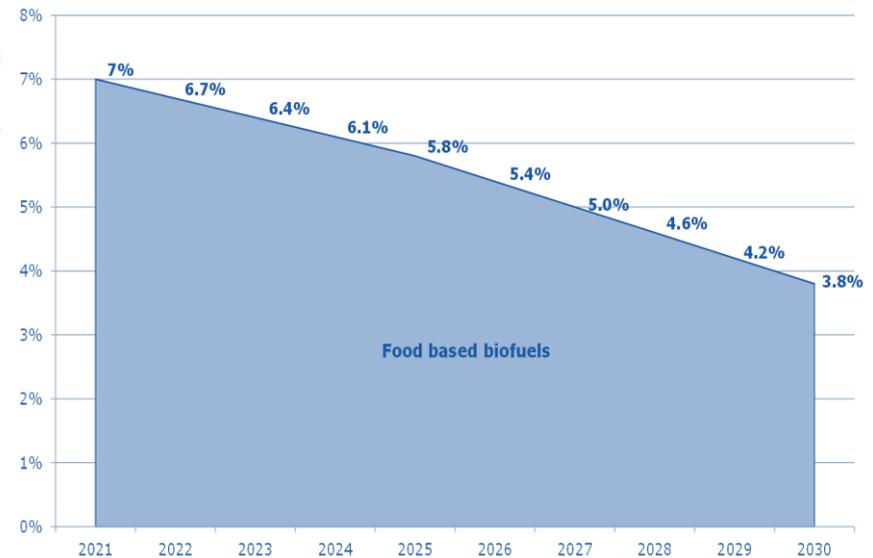
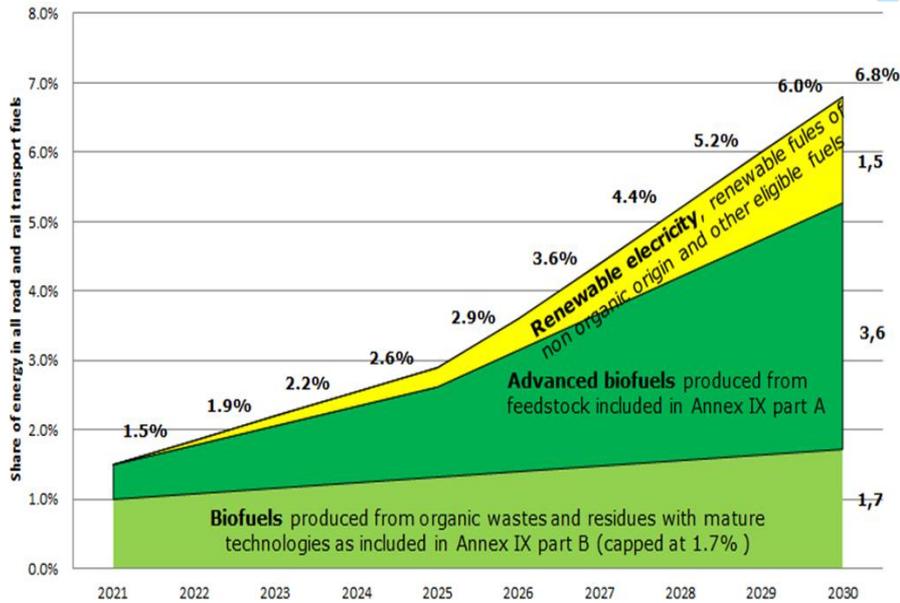
### Climate performance of food-based biofuels

- 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

## 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

agri

**agriculture biomass** – kept/streamlined existing sustainability criteria (e.g. no-go areas) (full harmonization)

forest

**forest biomass** – new risk-based criteria on biodiversity and carbon management (minimum requirement, Member States can go beyond)

### End-use performance criteria

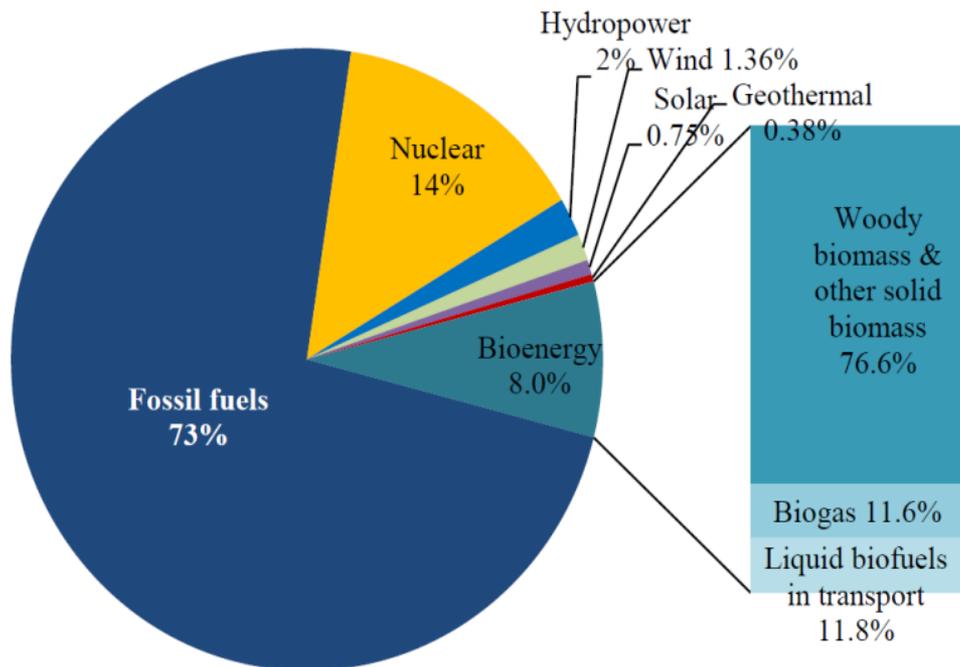
GHG

**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)

efficiency

**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

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

## INTERLINKAGES (1)



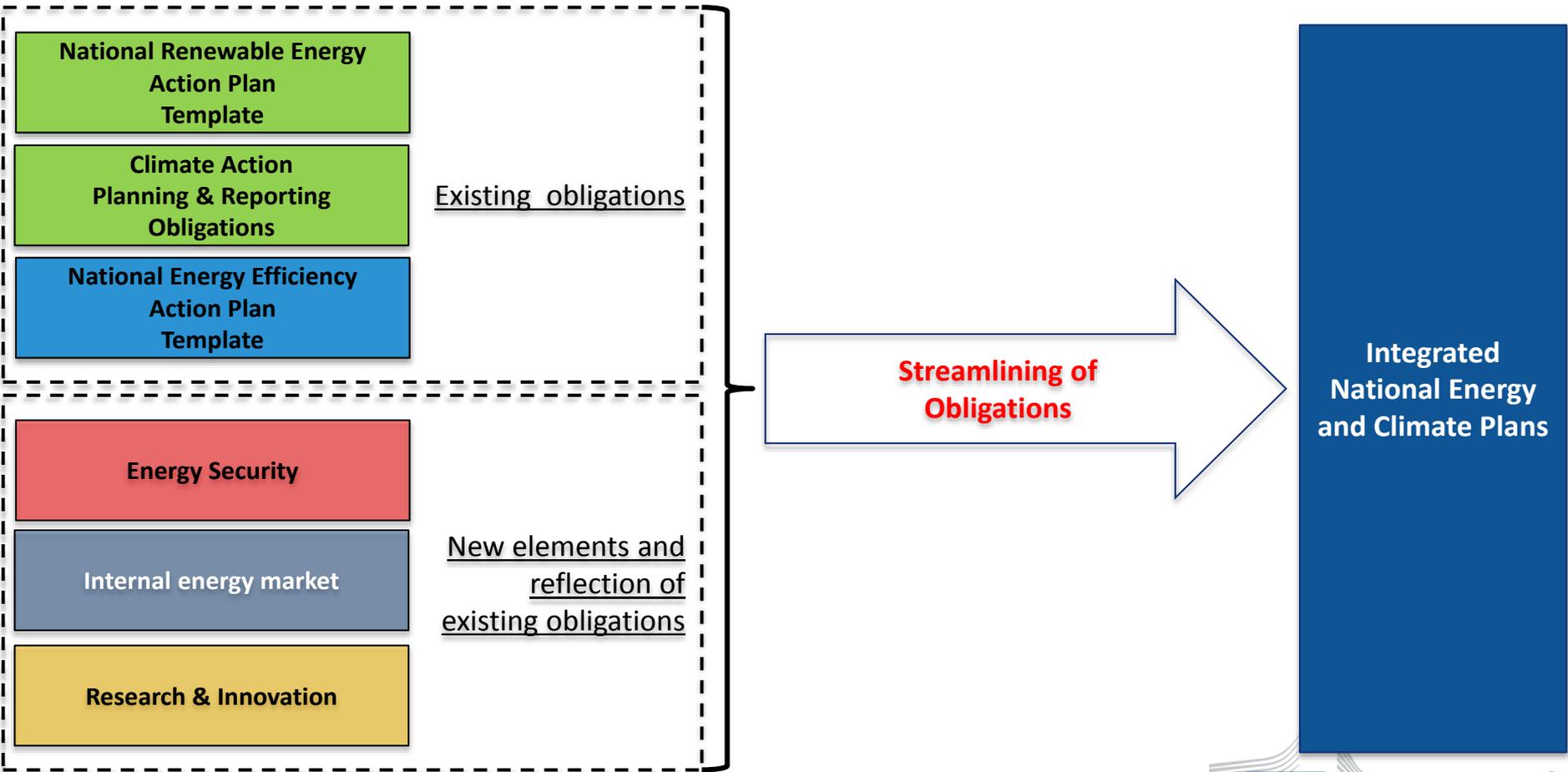
### INTERLINKAGES WITH OTHER LEGISLATIVE PROPOSALS

- **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



## INTERLINKAGES (2)

### STREAMLINING OF PLANNING OBLIGATIONS



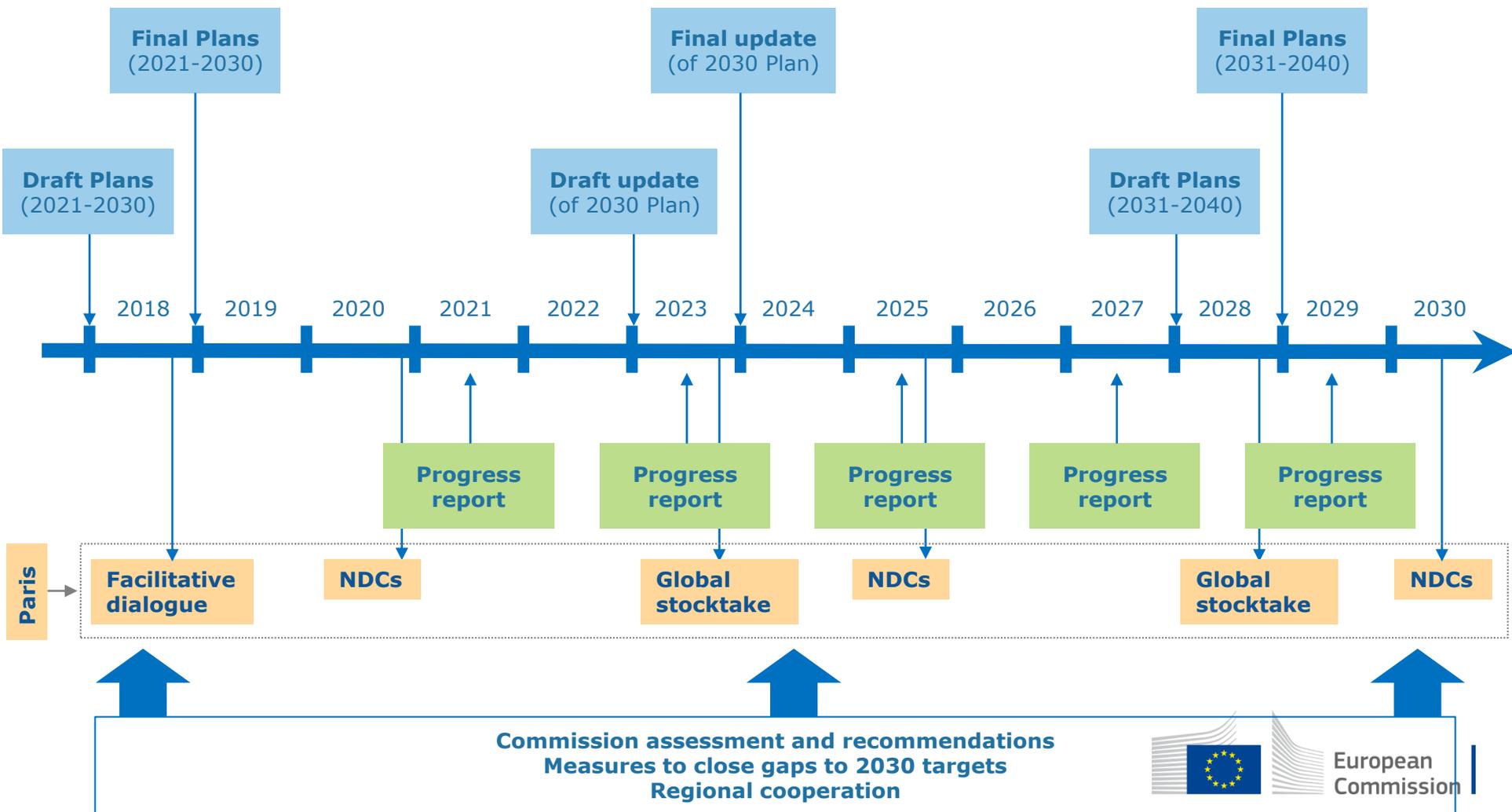
## INTERLINKAGES (3)



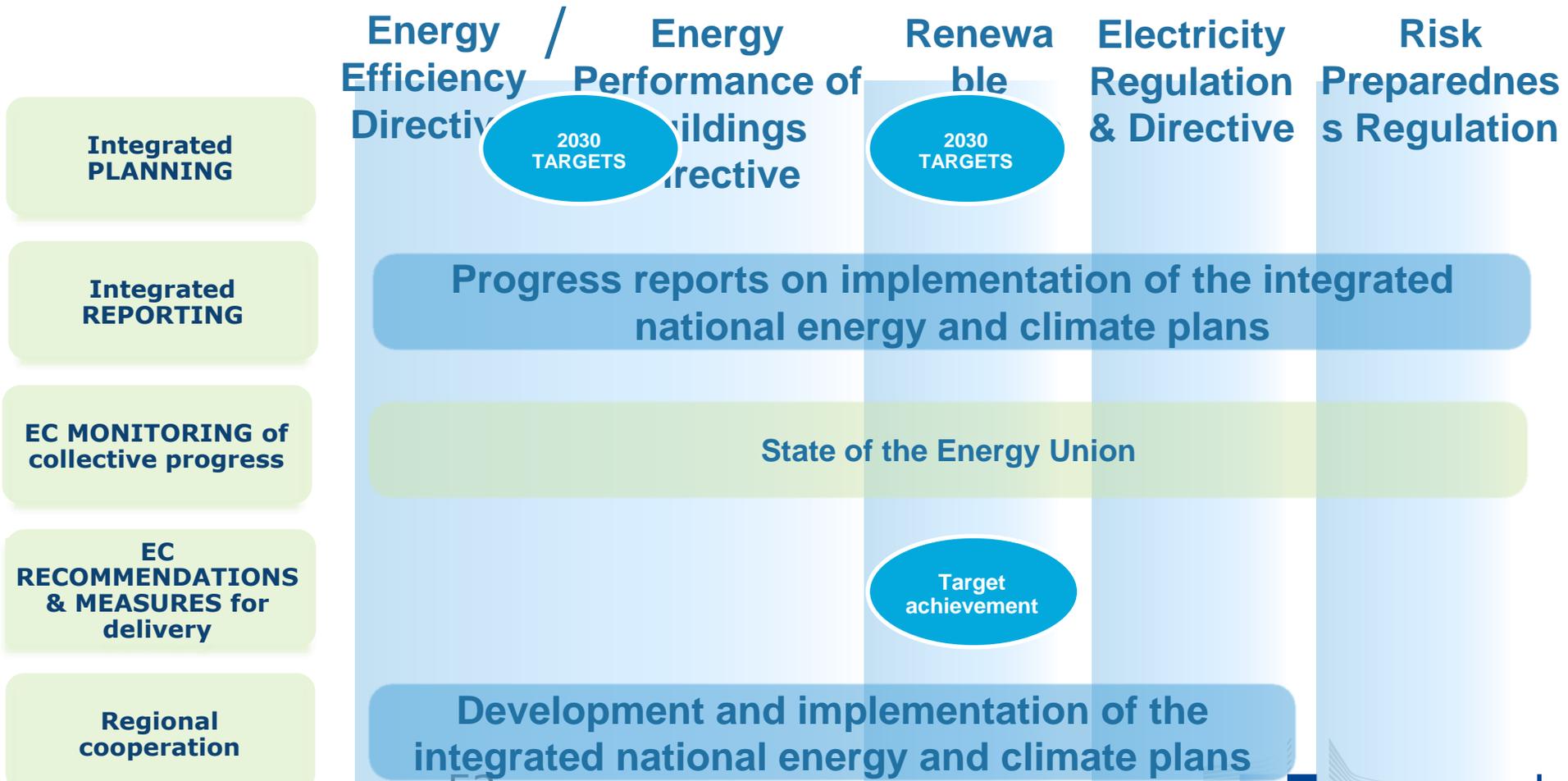
### INTERLINKAGES WITH THE PARIS AGREEMENT

- Historically significant landmark agreement strengthening global response to climate change
- Energy Union provides broader framework in 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

## PROPOSED TIMELINE



## Cross-cutting issues addressed in the Energy Union Governance Regulation





European Commission

# ENERGY UNION



# THANK YOU!

