

The logo for I4CE, with 'I4' in black and 'CE' in red.

INSTITUTE FOR  
CLIMATE  
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Une initiative de la Caisse des Dépôts et  
de l'Agence Française de Développement



# MIND THE GAP:

## ALIGNING THE 2030 EU CLIMATE AND ENERGY POLICY FRAMEWORK TO MEET LONG-TERM CLIMATE GOALS

*For a better coordination of climate and energy policies  
through the regulation on the Governance of the Energy Union*

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## INTRODUCTION | THE CONTEXT

*Negotiations on the EU 2030 climate and energy framework are the opportunity to implement Paris Agreement's goals in the EU*

- **EU climate ambition:** in October 2016, the EU ratified the Paris climate Agreement under which it committed to pursue efforts towards a more ambitious +1.5° C target
  - *February 2018 : The Commission acknowledges that further efforts and more ambition are needed to achieve EU's 2050 GHG objective*
- **EU ETS sectors :** An agreement in the trilogue was found on the post-2020 EU ETS reform in November 2017 after two years of negotiations and the Council approves its new rules for the period 2021 to 2030 on 27th February 2018
- **Non-ETS sectors:** An agreement between EU institutions was also reached on 21 December 2017. Trilogue negotiations succeeded, and EU institutions agreed on an Effort Sharing for the post-2020 period
- **EU 2030 clean energy package:** proposed in November 2016, other legislative pieces of the 2030 EU climate and energy framework are under negotiations. Trilogue negotiations on proposals for energy efficiency, renewable sources of energy and the governance of the Energy Union have started

## INTRODUCTION | 2018 POLITICAL WINDOW

*2018 political windows to create an EU sustainable and aligned policy mix compatible with long-term perspectives*



### Towards the operationalisation of the Paris Agreement in 2018

- January 2018: Start of the UNFCCC Talanoa Dialogue
- March 2018: Paris agreement Article 6 Negotiating Text Release
- April/May 2018: Bonn Negotiations (SB48)
- Aug/Sept 2018: Additional Negotiating Session in BKK
- 8 October 2018: IPCC 1.5°C Special Report
- 3-14 December 2018 : COP24 in Katowice, Poland



### EU climate milestones

- First quarter 2019 : the EU 2050 roadmap towards a low-carbon and resilient economy
- 2020 : New NDC to be submitted to UNFCCC → the EU may update 2030 NDC, may communicate 2050 strategy
- 2025 : New NDC submissions → the EU has to (?) update its NDC

# INTRODUCTION | OBJECTIVES OF THE REPORT

## *Defining an integrated climate and energy framework to meet EU long-term climate ambition*



- The first COPEC II report concluded that :
  - As currently negotiated, EU climate targets and policies **are not aligned to its long term climate ambition**
  - **Counterproductive interactions** undermine the energy and climate policies' efficiency and the agreed reform of the EU ETS will not be sufficient to mitigate overlapping effects of other policies on the EU ETS
- In order to extend these results, and to feed-in the EU 2018 negotiations on the Governance of the Energy Union and on other legislative pieces, this climate brief provides:
  - **An analysis of interactions between EU energy and climate policies.** The analysis is carried out on historical data (2005-2015) and on projections until 2030
  - **Policy options on how to better align policies to mitigate counteractive interactions** and meet an increased EU long-term climate ambition in line with the Paris Agreement.
- Two different quantitative methodologies were used : LMDI and POLES model.

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**1 | A 2030 climate target to be achieved  
through 2 policy instruments: the EU ETS  
and the ESR**

# 1 | THE EU ETS AND THE ESR

*The 2030 GHG emissions reduction target is split  
between the EU ETS and the ESR*

**In 2030: 40% reduction in GHG emissions compared to 1990 levels**

**43 % reduction compared  
to 2005 in 2030**

**30 % reduction compared  
to 2005 in 2030**

Covers  
around 45%  
of GHG  
emissions

**EU ETS**

Large-scale facilities in  
the power and industry  
sectors, and aviation

**An European GHG  
emissions cap**

**ESR**

Road and rail  
transport, housing,  
services, agriculture,  
waste, small industrial  
facilities

**28 national GHG  
emissions reduction  
objectives**

Covers  
around 55%  
of GHG  
emissions

**LULUCF**

**No-debit rule**

**Flexibility of 280 MtCO<sub>2</sub>e**

**Flexibility of 100 MtCO<sub>2</sub>e**

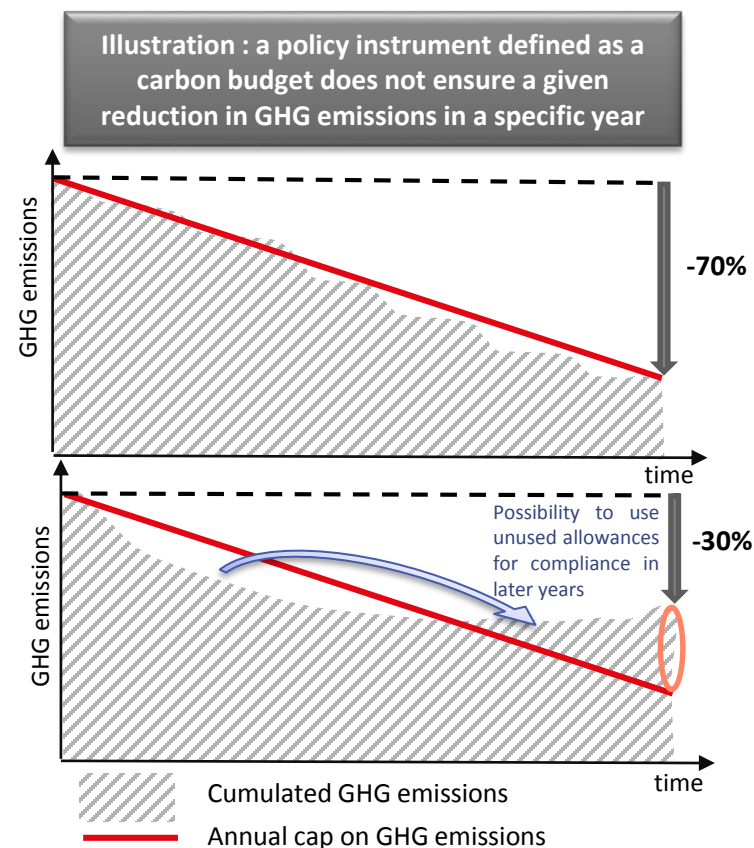
Source : I4CE, 2017

Note: LULUCF stands for "Land Use, Land Use-Change and Forestry".

## 1 | THE EU ETS AND THE ESR

*An accurate calibration of the EU ETS and the ESR is required to achieve climate targets*

- The EU ETS and ESR, as they respectively allow the carry-over of allowances and AEAs over the period, define **carbon budgets**:
  - The “carbon budget” approach creates some uncertainty: the compliance with the EU ETS and with the ESR **does not ensure the achievement of the EU’s NDC by 2030**
- The carbon budgets defined by the EU ETS and the ESR should be calibrated accurately:
  - The carbon budgets defined by the EU ETS and the ESR should be **consistent with long-term global climate goals**
  - This calibration should be done as soon as possible before 2030, using **all possible windows offered by the Governance regulation timeline and other review processes**
  - The carbon budgets defined by the EU ETS and the ESR should be calibrated so as to **limit the formation of surplus** in order to achieve 2030 climate target



In this illustrative situation, a policy instrument defined as an annual cap on GHG emissions is implemented, with the possibility to carry-over unused emission allowances. **In both cases, the constraint on GHG emissions defined by the policy instrument is respected** : cumulated GHG emissions are lower than the cumulated cap on emissions. In the case at the top, GHG emissions are in the last year 70% below their reference level, while they are only 30% lower in the case at the bottom.



## **2 | Analysis of interactions in the climate and energy framework**

## 2 | ANALYSIS OF INTERACTIONS

# Mapping EU legislations in the 2030 climate and energy policy framework

EU legislations in the 2030 climate and energy framework are strongly interrelated: several legislative texts apply to each sector and several texts aim to achieve each EU objective

Sectors	Energy		Industry		Transport		Residential and commercial	Agriculture and forestry	Waste
Objectives	Utilities	Refineries		Aviation	Shipping	Road			
GHG emissions reduction	EU ETS								
			ESR		Effort sharing Regulation (ESR)				
	Industrial Emissions Directive (IED)							IED	
			F-gases regulation			F-gases regulation		LULUCF regulation	
		Fuel Quality directive				Fuel Quality directive			
Deployment of renewable energy sources									
Renewable Energy Directive (RED)									
Increase in energy efficiency			Ecodesign directive						
								EPBD*	
	Energy Efficiency Directive (EED)								
							Energy Labelling regulation		

Legend:

In revision or revised as part of 2030 climate and energy framework

In force

\* EPBD: Energy performance of buildings directive

Governance Regulation

**Interpretation of the graph:** The different objectives in the left-end column are to be achieved through the legislative texts in the frame with the same color. Those legislative texts apply in the sectors in the respective columns.



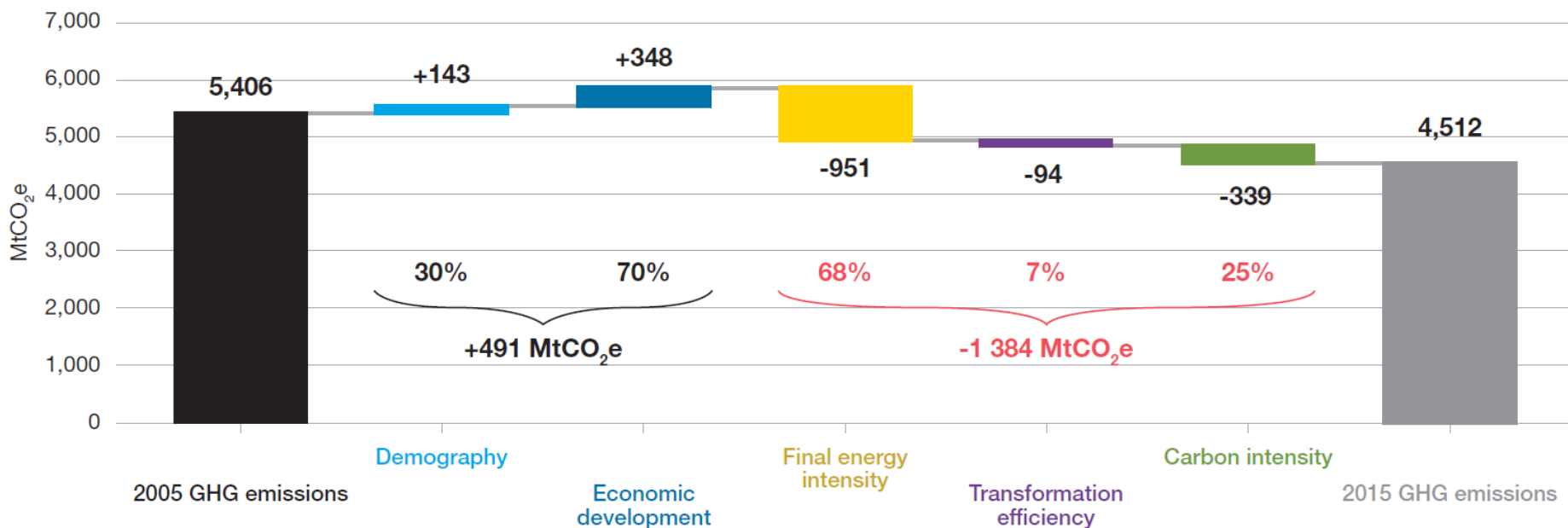
## **2 | Analysis of interactions in the climate and energy framework**

### **a. Ex-post analysis (2005-2015)**

## 2 | EX-POST ANALYSIS OF GHG EMISSIONS REDUCTIONS IN THE EU

*The decoupling of final energy demand and GDP has been the most important driver of GHG emissions reductions*

### Drivers of GHG emissions variations in the EU28 (2005-2015)

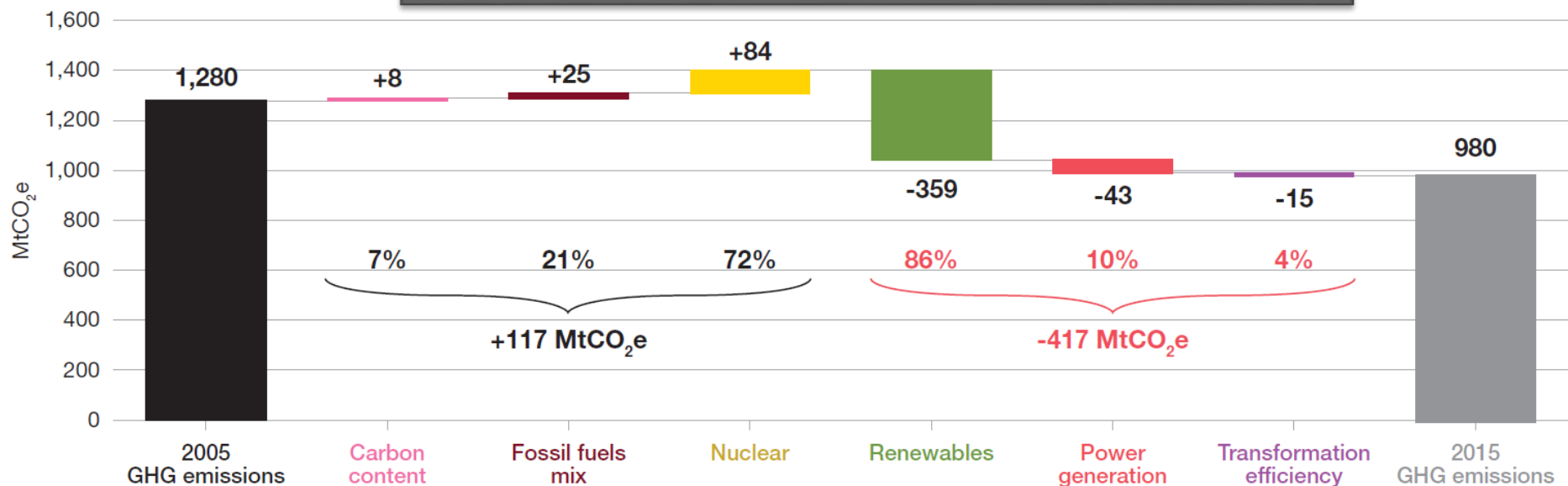


Source : I4CE, 2017

- An **increased efficiency of energy use**, as well as **structural changes in the EU economy** explain the major contribution of final energy intensity to the decrease in GHG emissions over 2005-2015: **-951 MtCO<sub>2</sub>e** in total.
- The move towards **less carbon intensive fuels** and improvements in the **transformation efficiency of energy** also participated in the decrease in GHG emissions, respectively **-339 and -94 MtCO<sub>2</sub>e**.
- On the contrary, an increase in population and in GDP/capita contributed to an increase in GHG emissions over 2005 – 2015 : respectively **+143 and 348 MtCO<sub>2</sub>e**.

## Analysis of drivers over 2005-2015 : GHG emissions reductions mainly came from the deployment of renewables

### Drivers of GHG emissions variations in the EU28 (2005-2015)

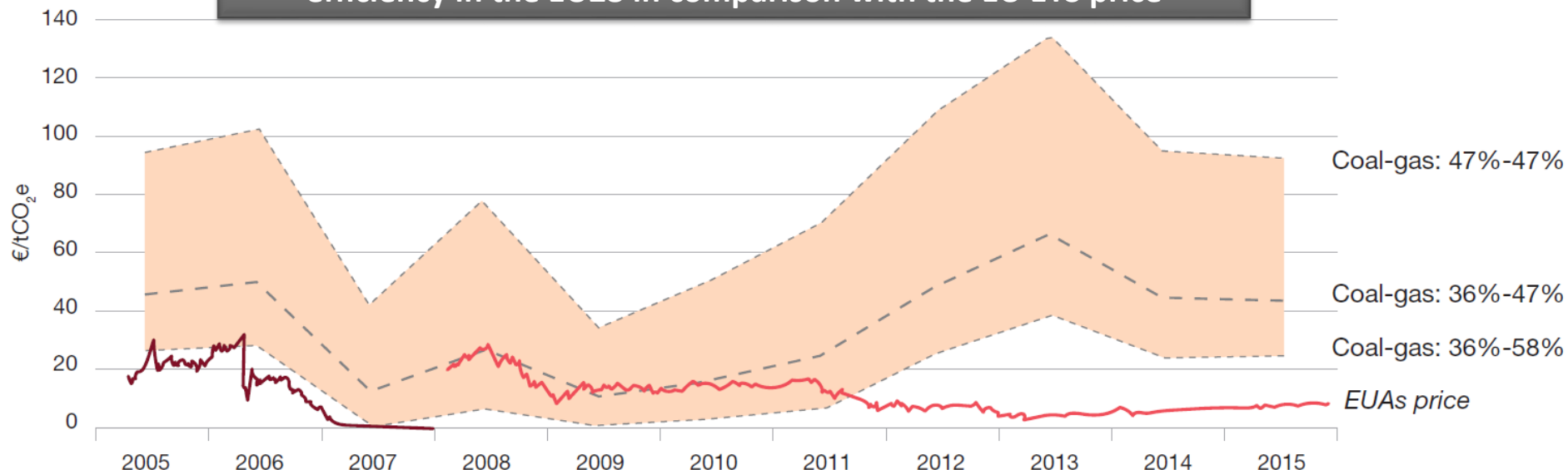


Source : I4CE, 2017

- The **deployment of renewable sources of energy** was the most important driver in decreasing GHG emissions in the power sector over 2005-2015: **-359 MtCO<sub>2</sub>e** over the period
- The **decrease in power generation** was the second most important contributor to GHG emissions reductions : **-43 MtCO<sub>2</sub>e**, followed by an improvement in the fuel efficiency of thermal power plants : **-15 MtCO<sub>2</sub>e**.
- All in all, the evolution of the **relative share of the different fossil fuels** in the fossil fuels mix was a net contributor to GHG emissions : **+25 MtCO<sub>2</sub>e**
- The decline in the share of nuclear power led to an increase in GHG emissions: **+84 MtCO<sub>2</sub>e**
- Finally, the evolution of the **carbon content of fossil fuels** slightly contributed to increasing GHG emissions : **+ 8 MtCO<sub>2</sub>e**

## Historically, the EU ETS had a minor impact on GHG emissions reductions - at least in the power sector

Carbon switching price for different coal and gas generation efficiency in the EU28 in comparison with the EU ETS price



Source : I4CE, from BP 2017 (Gas : Heren NBP Index; Coal : IHS Northwest Europe); and from ICE futures Europe (forward dec 2007 for EUAs price phase I and spot price for phases II & III)

- Given the relative coal and gas prices, and taking into account a large range of possible thermal efficiencies for coal and gas power plants, **the price of EUAs could only trigger a coal-to-gas switch in the 2005-2011 period.**
- GHG emissions coming from the evolution of the fossil fuels mix in this period can be attributed to the carbon price signal induced by the EU ETS: **around 50 MtCO<sub>2</sub>e**, which were more than offset by additional GHG emissions stemming from a gas-to-coal switch after 2011.



## **2 | Analysis of interactions in the climate and energy framework**

### **b. Projections to 2030**

## 2 | ANALYSIS OF INTERACTIONS IN THE 2030 CLIMATE AND ENERGY FRAMEWORK

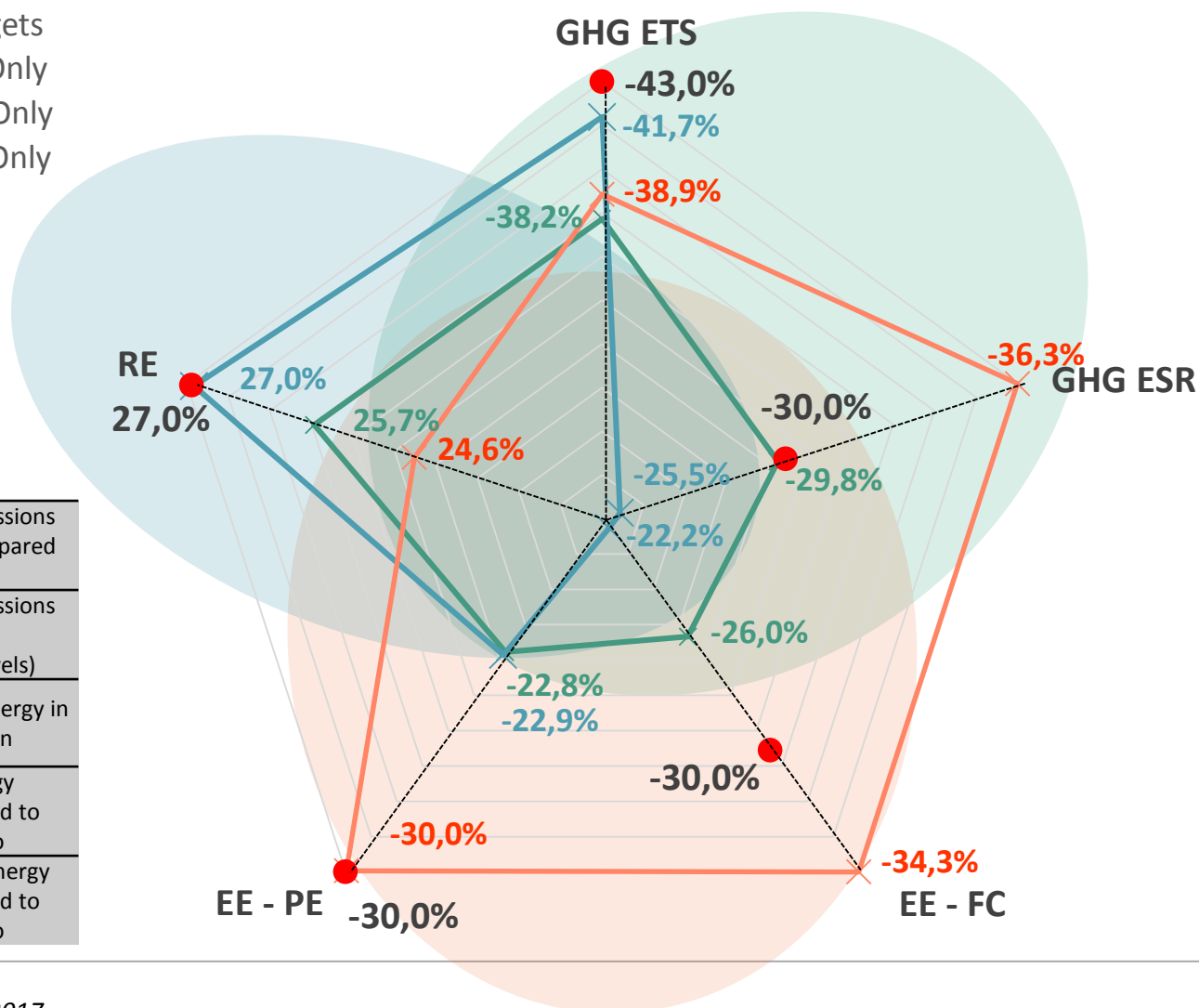
### *Understanding policy interactions through modelling: policies contribute to several objectives*

#### Achievement of EU 2030 targets in different scenarios

- 2030 targets
- Sc. GHG Only
- Sc. RE27 Only
- Sc. EE30 Only

#### Legend

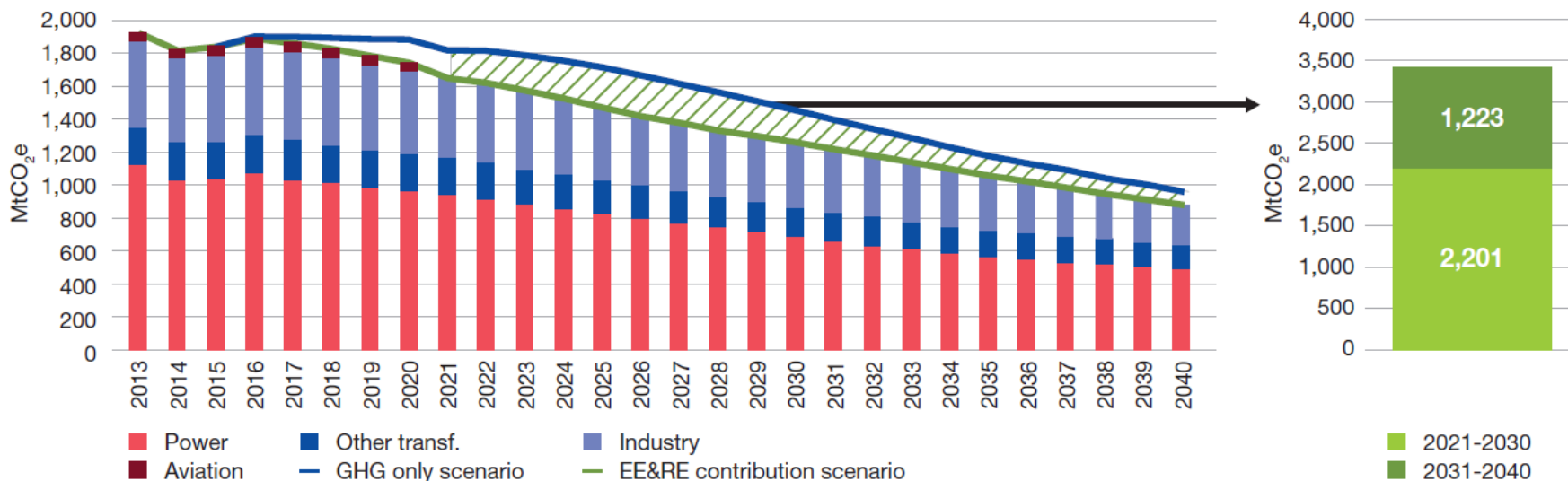
<b>GHG ETS</b>	Reduction in GHG emissions from ETS sectors (compared to 2005 levels)
<b>GHG ESR</b>	Reduction in GHG emissions from non-ETS sectors (compared to 2005 levels)
<b>RE</b>	Share of renewable energy in gross final consumption
<b>EE - FC</b>	Decrease in final energy consumption compared to 2007 Baseline scenario
<b>EE - PE</b>	Decrease in primary energy consumption compared to 2007 Baseline scenario



## 2 | ANALYSIS OF INTERACTIONS IN THE 2030 CLIMATE AND ENERGY FRAMEWORK

### *Estimating the impact of EE and RE policies on GHG emissions covered by the EU ETS and the ESR*

GHG emissions covered by the EU ETS (left) and contribution of energy efficiency and renewable energy policies on GHG emissions reductions in ETS-sectors over 2021-2040 (right)



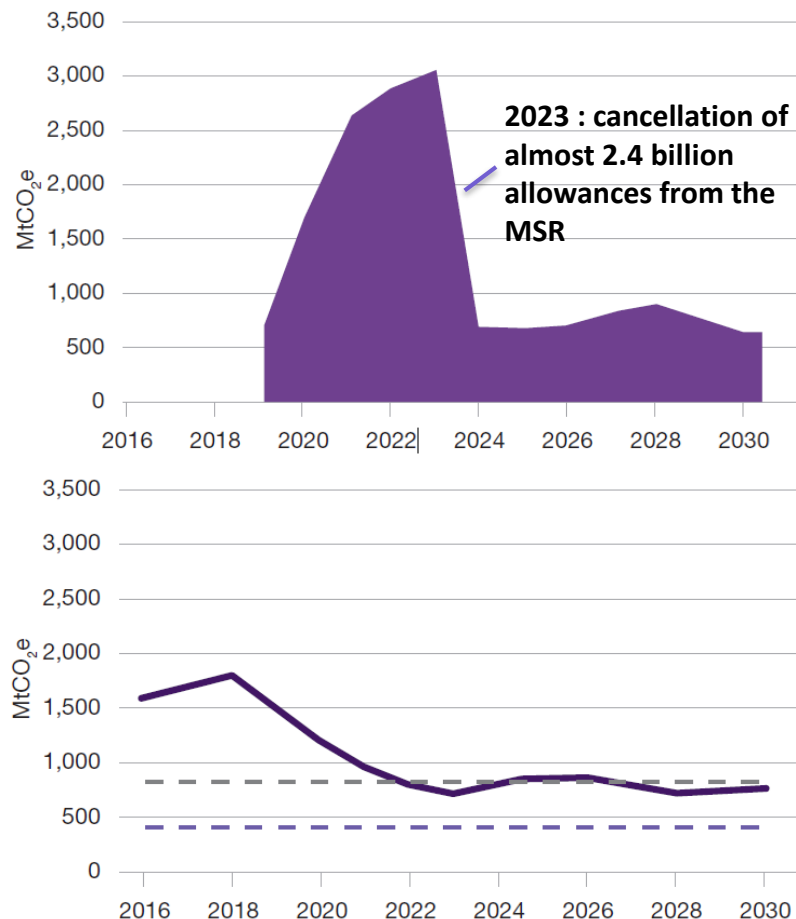
Source : Enerdata, 2017

- In total over 2021- 2030, **energy efficiency and renewable energy policies are estimated to contribute to a reduction of 2.2 GtCO<sub>2</sub>e in GHG emissions covered by the EU ETS** (≈1,5 years of Phase IV allowances, or 95% of reductions required from ETS sectors)
- In total over 2021- 2030, **energy efficiency and renewable energy policies are estimated to contribute to a reduction of 2.1 GtCO<sub>2</sub>e in GHG emissions covered by the ESR** (≈10% of cumulated AEAs, or 2.5 times the amount of reductions required from non-ETS sectors)

## 2 | ANALYSIS OF INTERACTIONS IN THE 2030 CLIMATE AND ENERGY FRAMEWORK

### *Counterproductive interactions undermine the effectiveness of the EU ETS and the ESR to 2030*

**Volume of the MSR (top) and evolution of the surplus (bottom) in the 2017 Baseline scenario**



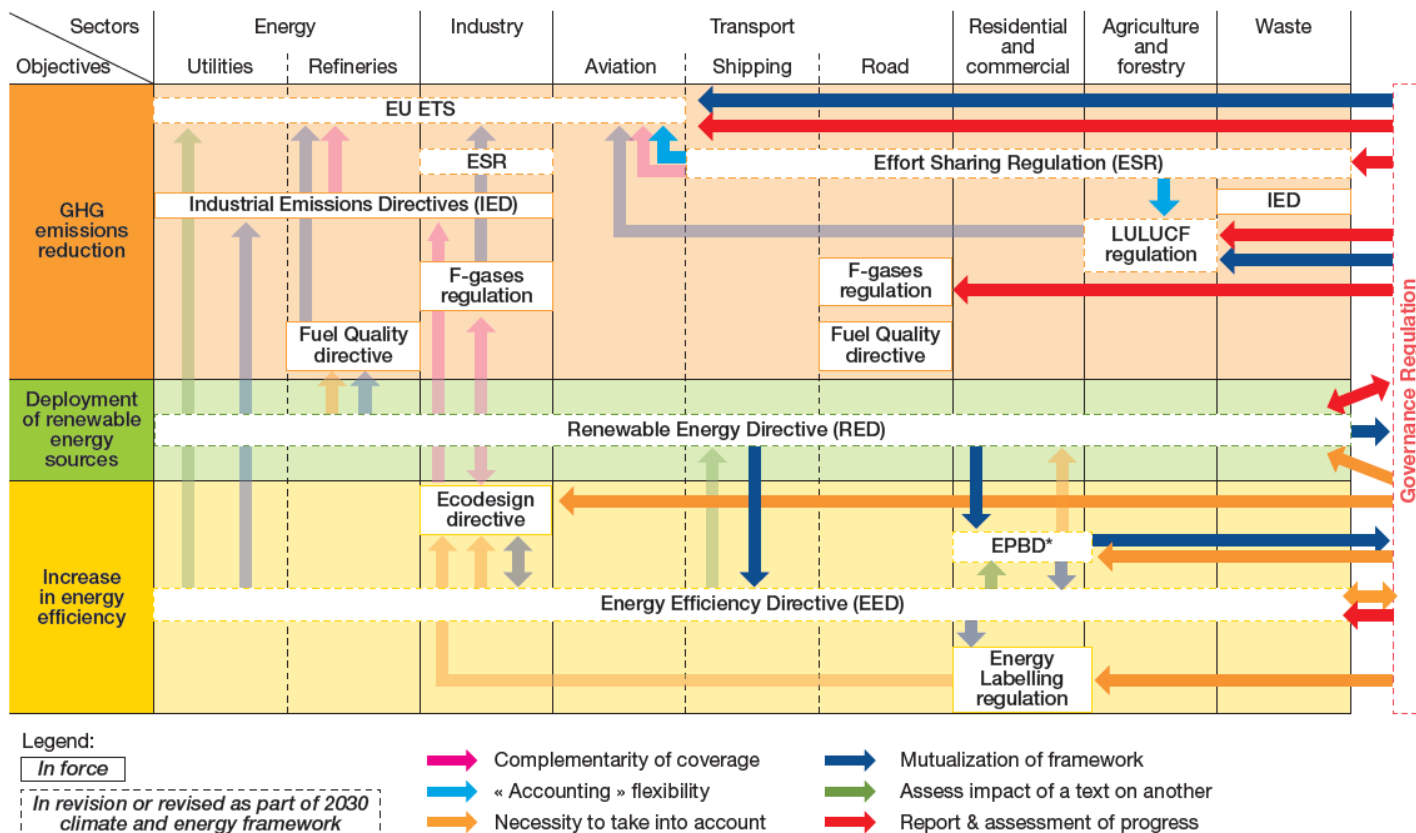
- Because of counteractive interactions, the EU ETS is **not expected to drive GHG emissions reductions in the post-2020 period**
  - **GHG emissions reductions notably driven by renewable energy and energy efficiency policies** are expected to be sufficient to respect the EU ETS target in Phase IV
    - its **carbon price signal will be depressed** and it will not be able to drive low-carbon investments
- Counteractive interactions also **reduce the incentive for additional GHG emissions reductions in non-ETS sectors**
- Counterproductive interactions continue to **jeopardize the achievement of climate targets by 2030 in ETS and ESR sectors**
  - The MSR will not be able to **mitigate the effect of other policies on the EU ETS** while absorbing the historical surplus



### **3 | An enhanced governance approach to implement before 2030 a policy mix compatible with the Paris Agreement**

## A necessary step : assessing the impact of policies on others

In the current climate and energy framework, only the energy efficiency directive requires the assessment of its impact on other policies. The proposed regulation on the Governance of the Energy Union is a first step towards a more coherent policy package but it does not include requirements to assess the impact of policies on one another at EU level



**Interpretation of the graph:** The arrows represent the interactions between the different legislative texts of the climate and energy framework. The colors represent the nature of the interactions. Nontransparent arrows represent interactions which were introduced with the revision of the 2030 climate and energy framework.

## *Aligning EU climate and energy policies in the 2030 policy framework enables to mitigate counteractive interactions*

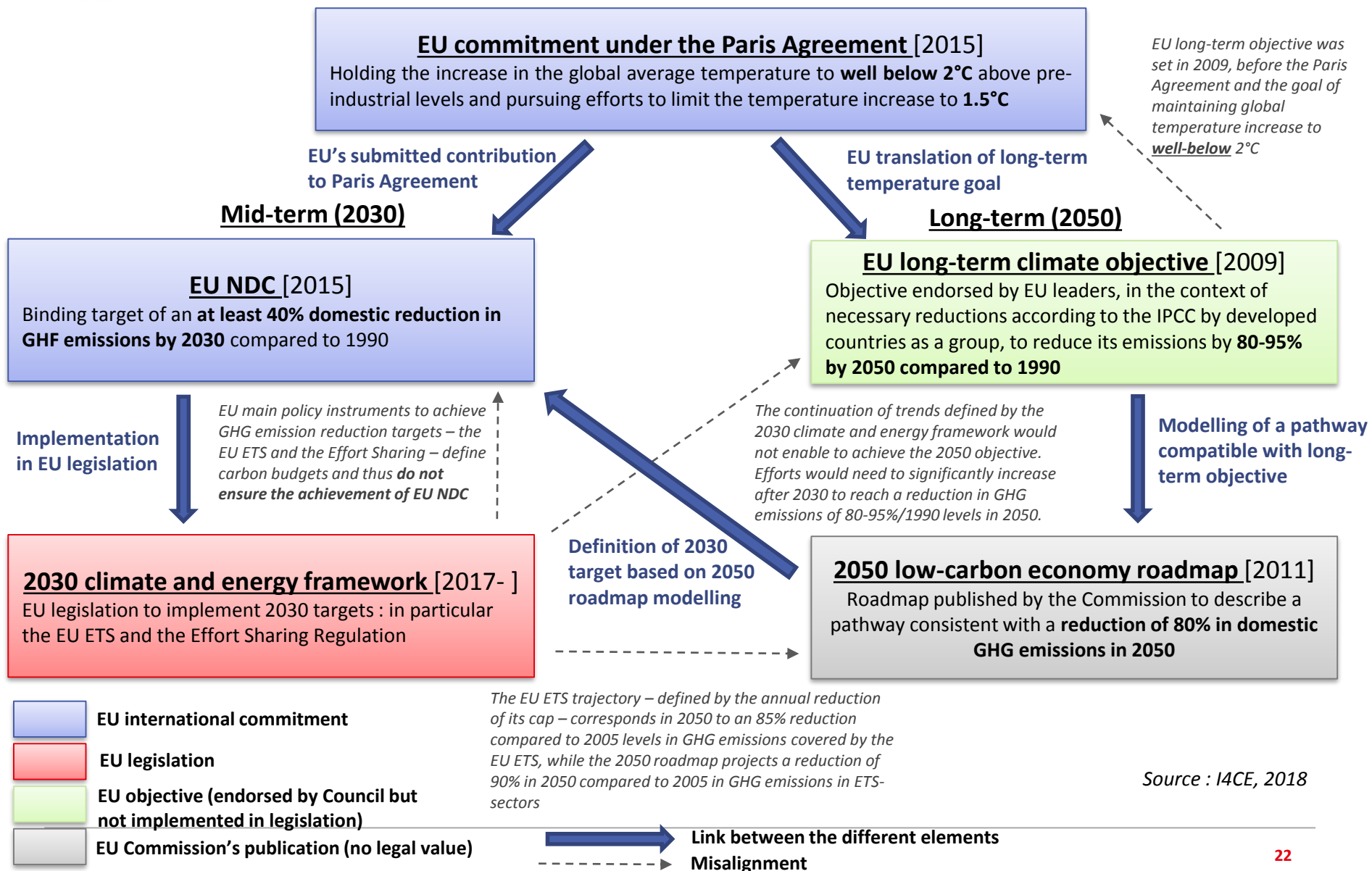
- **“Alignment” of the EU ETS and of the ESR to account for GHG emissions reductions coming from other policies** by removing from the EU ETS cap and from ESR AEAs the contribution of other policies to GHG emissions reductions
- The alignment of the EU ETS cap within the EU 2030 energy and climate framework restores its effectiveness :
  - The **surplus of EUAs is very quickly resorbed** and goes below the lower threshold of the MSR from 2023
  - The **EU ETS becomes a driver of abatement**: the carbon price signal leads to a deployment of renewable energy sources sufficient to achieve EU 2030 target and it leads to an immediate switch to less carbon-intensive energy sources
- The alignment of AEAs incentivizes **additional GHG emissions reductions in sectors covered by the ESR**
- In 2030, resulting GHG emissions are lower than without the “alignment”:
  - - **47% /2005 levels** in ETS sectors
  - - **37% /2005 levels** in non- ETS sectors

**EU ETS cap (top) and ESR annual emissions allocations (bottom) over 2021-2040 in the Aligned scenario**



### 3 | DESIGNING AN AMBITIOUS AND COHERENT POLICY MIX

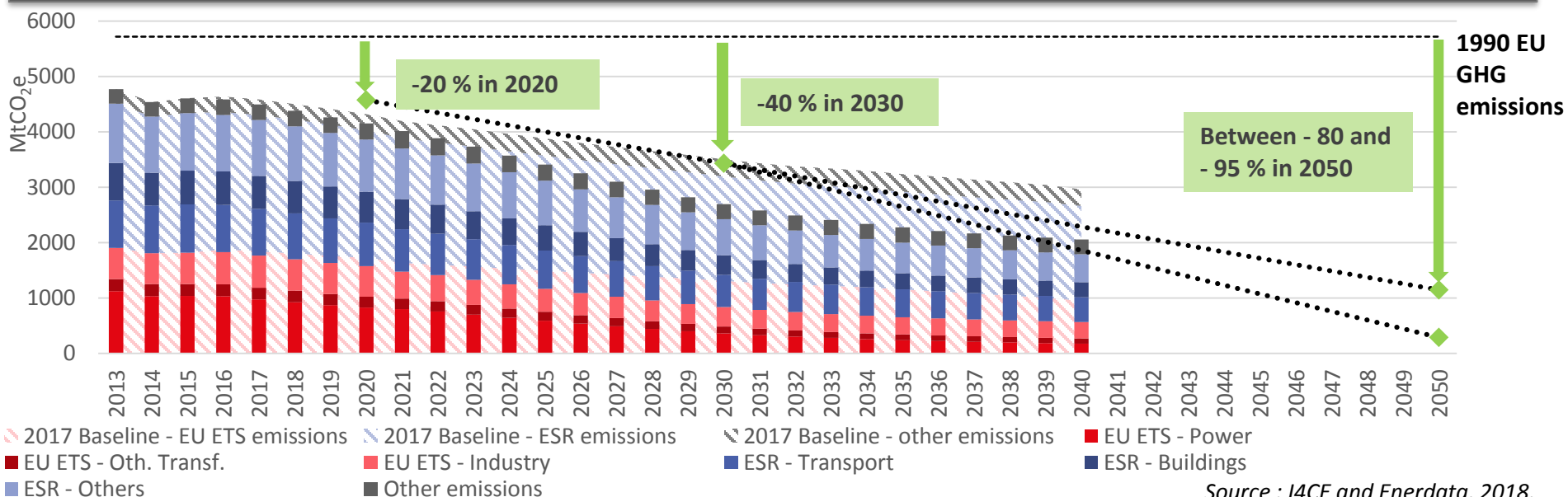
## EU long-term ambition needs to be increased in line with the objective of the Paris Agreement



### 3 | DESIGNING AN AMBITIOUS AND COHERENT POLICY MIX

*GHG emissions trends defined by the 2030 climate and energy framework as currently negotiated fall short of the EU 2050 objective*

GHG emissions paralleled with EU climate targets pathway (in the “2017 Baseline” and the “AmbitionPlus” scenarios)



Source : I4CE and Enerdata, 2018,  
with data from the EEA

- To have a sustainable decarbonisation pathway, an **anticipation of the suitable transformation of the energy system** to achieve drastic GHG emissions reductions in the long-term is required, as well as a **timely deployment of low-carbon solutions**
- An update of the 2050 roadmap consistently with the EU carbon budget and the “net-zero” emissions target would **inform the adequate adaptation of climate and energy policies, at the EU-level and at the national level.**
  - At the EU level, the roadmap would enable setting **appropriate long-term targets for the EU ETS and the ESR**, as well as **intermediate 2040 targets** + could also be used to elaborate a **corridor of trajectories for the social value of carbon**
  - At the national level, **INECPs and long-term low-emission strategies** should also build on the updated 2050 roadmap

- The negotiations on the EU 2030 climate and energy framework, and in particular on the Governance of the Energy Union, are the opportunity to **implement in the EU a coherent and ambitious policy mix to fulfill its commitment under the Paris Agreement.**
- The legislative texts as currently negotiated lack adequate provisions to mitigate **counterproductive interactions** which undermine the effectiveness of the 2030 climate and energy framework and jeopardize the achievement of climate targets.
- Furthermore, they fall short of the EU long-term ambition, which is itself insufficient to respect its commitment under the Paris Agreement.
- **A two-fold alignment of the policy package is thus required:** within the 2030 climate and energy framework to mitigate counteractive policy interactions and with an increased long-term ambition.

## 10 policy recommendations

### *To make the EU climate and energy policy framework consistent with the Paris Agreement before 2030 (2/2)*

#### **STEP 1 : Setting the EU long-term climate targets right**

1. Evaluating the **EU carbon budget** in relation to the 2018 IPCC 1.5°C report, based on the principles of capability, equality and responsibility
2. Translating this carbon budget as well as the “net-zero” emissions target in an **updated 2050 EU roadmap**, jointly elaborated with representatives from all sectors through an openly carried out prospective exercise
3. Setting **appropriate and realistic 2050 targets** for sectors covered by the EU ETS and the ESR with **intermediate 2040 targets**

#### **STEP 2 : Defining a climate and energy policy framework aligned with long-term climate targets**

- **At the EU level :**

4. **Calibrating EU policy instruments** (in particular the EU ETS and the ESR) according to the updated 2050 roadmap as soon as possible before 2030, using all possible windows offered by the Governance timeline and other review processes (i.e. for the EU ETS, building on the intended reviews in the light of the implementation of the Paris Agreement to appropriately increase the linear reduction factor of the cap)
5. Calculating a **corridor of social values of carbon in the EU** until 2050, aligned with long-term climate ambition, which economic stakeholders could use as a reference and on which could lean public policies
6. Assessing regularly EU progress towards meeting its targets and introducing provisions to allow a **periodic ratcheting up of ambition** in line with the stocktakes of the Paris Agreement

## 10 policy recommendations

### *To make the EU climate and energy policy framework consistent with the Paris Agreement before 2030 (1/2)*

#### **STEP 2 : Defining a climate and energy policy framework aligned with long-term climate targets**

- **At the national level :**

4. Calling for an **alignment of Member States' long term low-carbon strategies** to the 2050 low-carbon roadmap
5. Making sure Member States' **10-year integrated national climate and energy plans (INECPs)** are aligned to **their long-term low-carbon strategy** and to the 2050 EU roadmap

#### **STEP 3 : Ensuring the coherency of the different pieces of the climate and energy policy framework**

9. Carrying out an **ex-ante assessment** of the interactions between energy and climate policies – at the **national and EU levels**, as well as **annual ex-post assessments**
10. **Introducing provisions to adapt policies accordingly** as soon as possible – directly at EU level and through recommendations by the EU Commission for an adaptation of policies in the INECPs

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# Merci de votre attention!

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**“Mind the gap:  
Aligning the 2030 EU climate and energy policy  
framework to meet long-term climate goals ”**