

Current discussions on energy and climate targets

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Agenda

- I. Overview of National, European and global targets
- II. Current state of the NECP process
- III. Should the EU revise its 2030 targets?
- IV. The role(s) of the EU long term climate strategy

I. Overview of National, European and global targets

Global targets (Paris Agreement)

- **Temperature:** “Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, ...” (Art.2)
- **Carbon neutrality:** “... a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century ...” (Art. 4)

European targets

- **2020:**
 - -20% **GHG** (1990; in line with Doha amendment);
 - -20% Energy Consumption (compared to BAU);
 - 20% RES
- **2030**
 - -40% **GHG** (1990; in line with NDC); **question on update**
 - -32.5% Energy Consumption (compared to BAU);
 - 32% RES
- **2050**
 - Net zero **proposal**

National targets

- National targets [e.g. Germany RES-e 2030: 65%]
- **Draft** national energy and climate plans (NECPs)

II. What are the NECPs?





Member states report which policies they have/plan and what impact on (i) non-ETS emissions; (ii) RES and (iii) energy consumption they expect

Purpose:

- EU <-> Member states (MS) governance process
 - Identify gap to trigger Commission action
- Reporting and monitoring
- Ensure compliance with its international climate obligations
- Addressing policy interactions

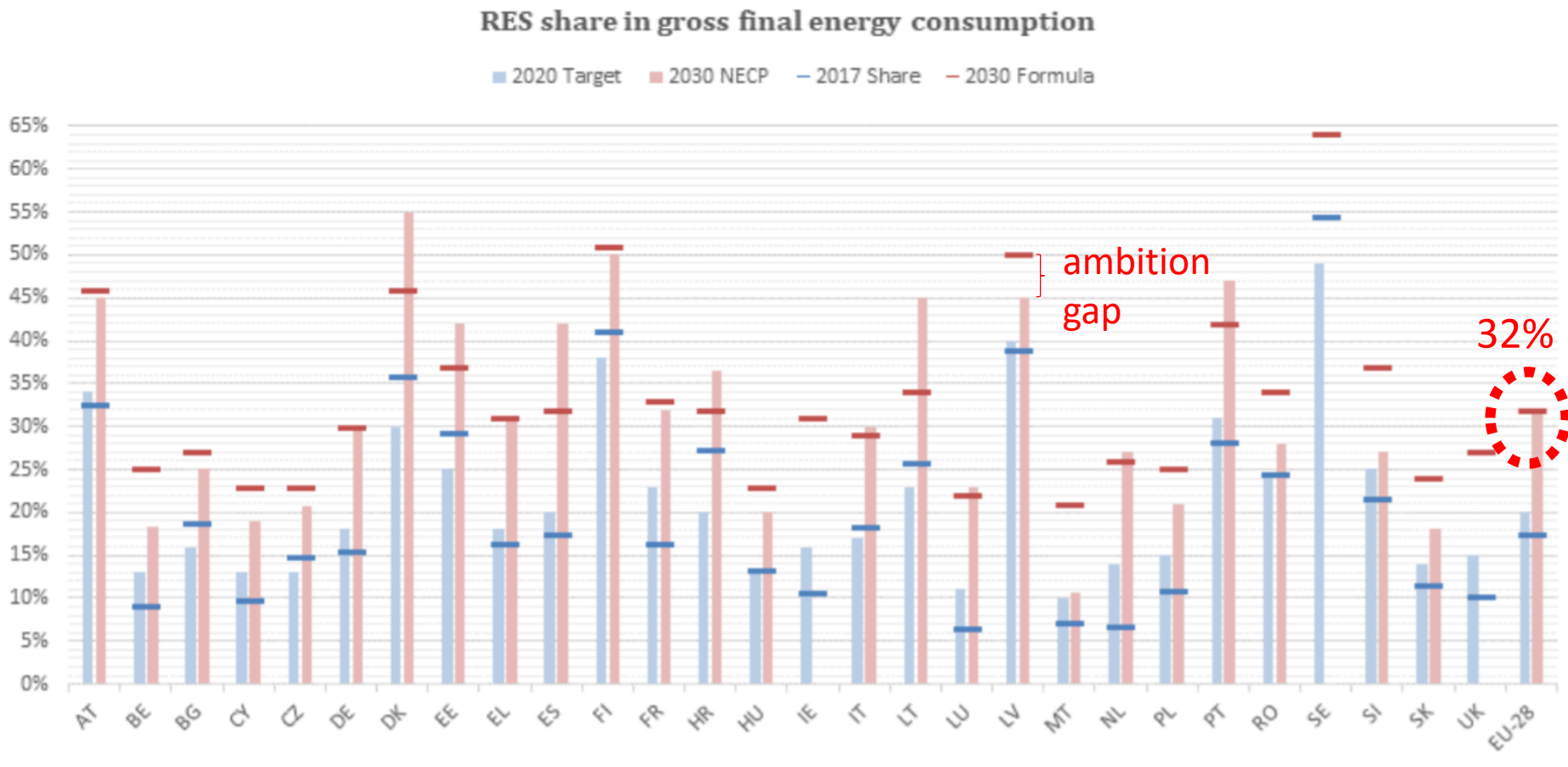
Country-level scorecards

Example: Belgium

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-10	-15	-35	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	9.1	13.0	18.3	Below 25 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	49.1 25.2	43.7 26.7	39.0 26.2	Modest Low
	Level of electricity interconnectivity (%)	19	21 ⁷	+/- 30 ⁸	N/A

Sources: EU Commission, ENERGY STATISTICS; Energy datasheets: EU28 countries; SWD(2018)453; European Semester by country⁹; COM/2017/718; Belgian draft NECP.

RES ambition overall in line with 2030 targets



- But, individual MS underperform

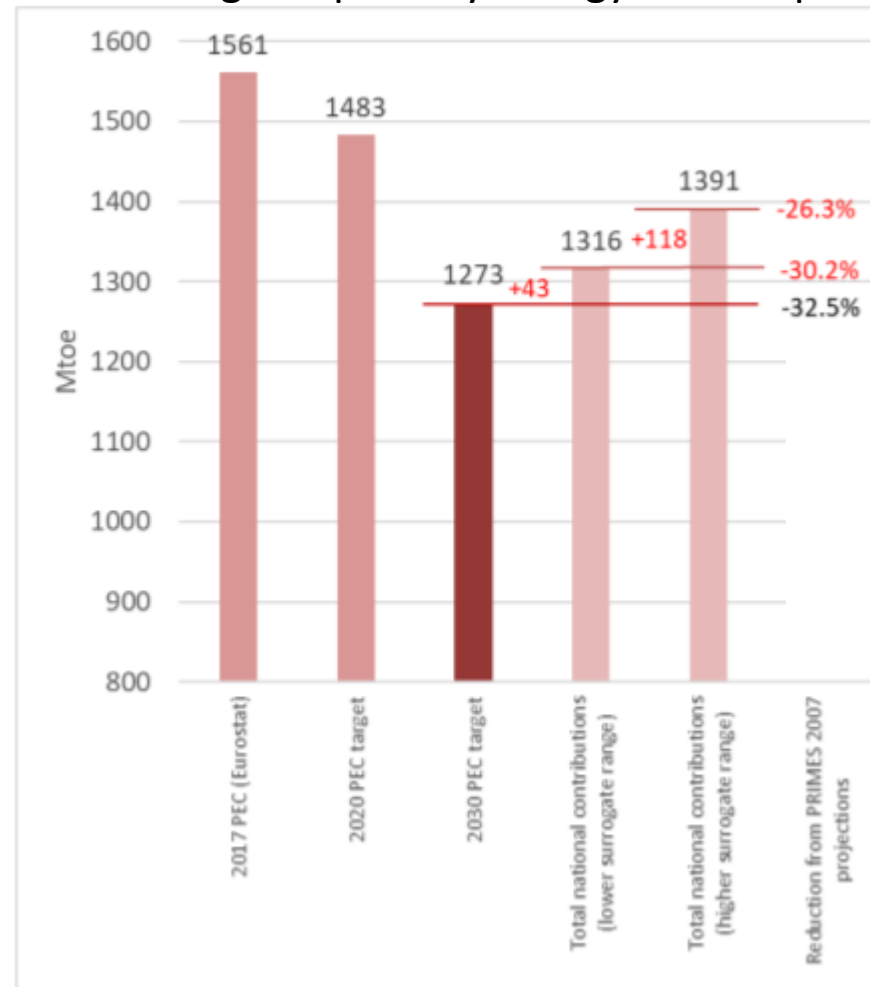
Energy efficiency ambition gap

- Target: 32.5% for PEC or FEC

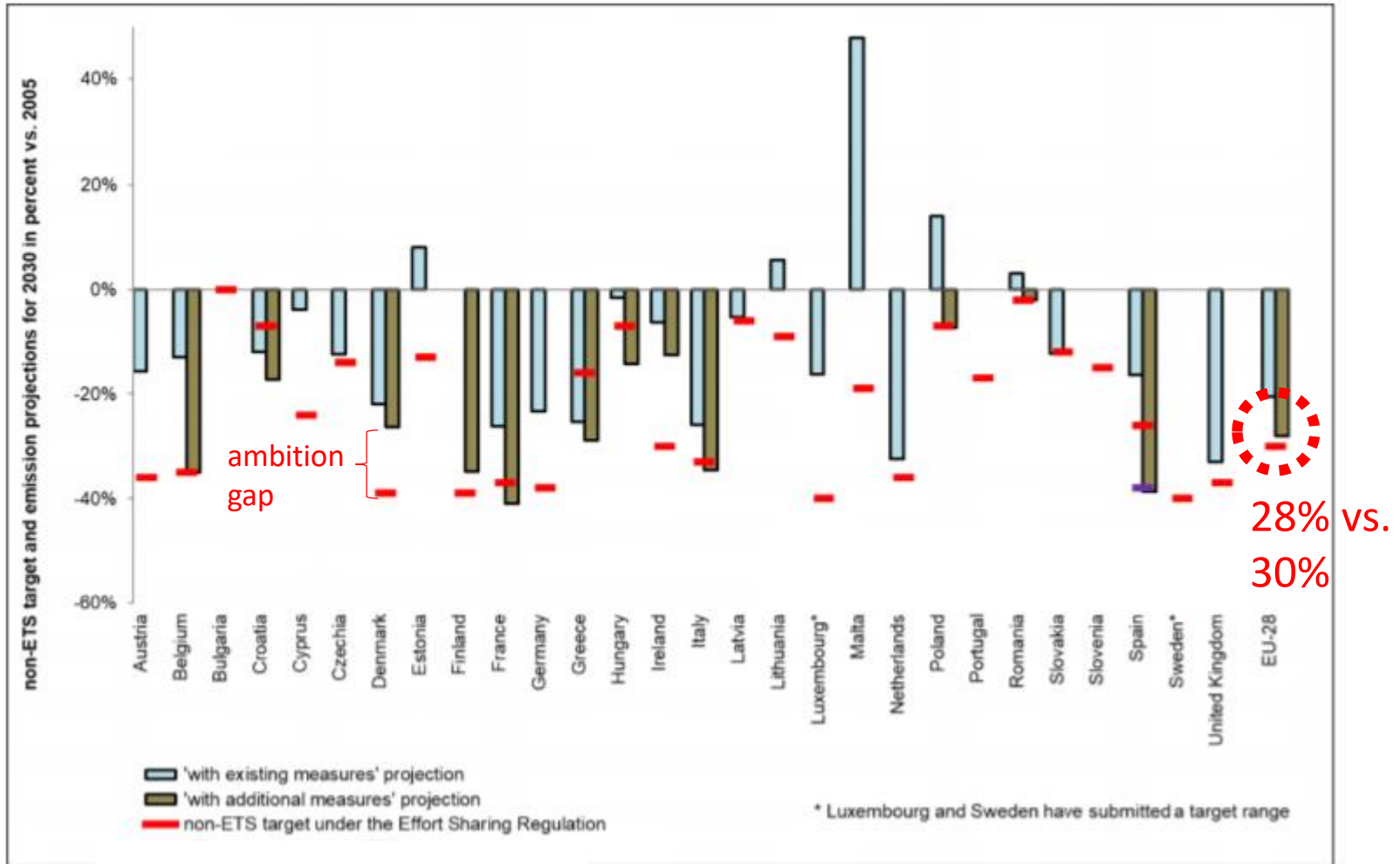
National contributions only imply reduction of:

- primary energy consumption by 26-30%,
- final energy consumption by 27-31%

Figure: primary energy consumption



Ambition gap on non-ETS emission reduction

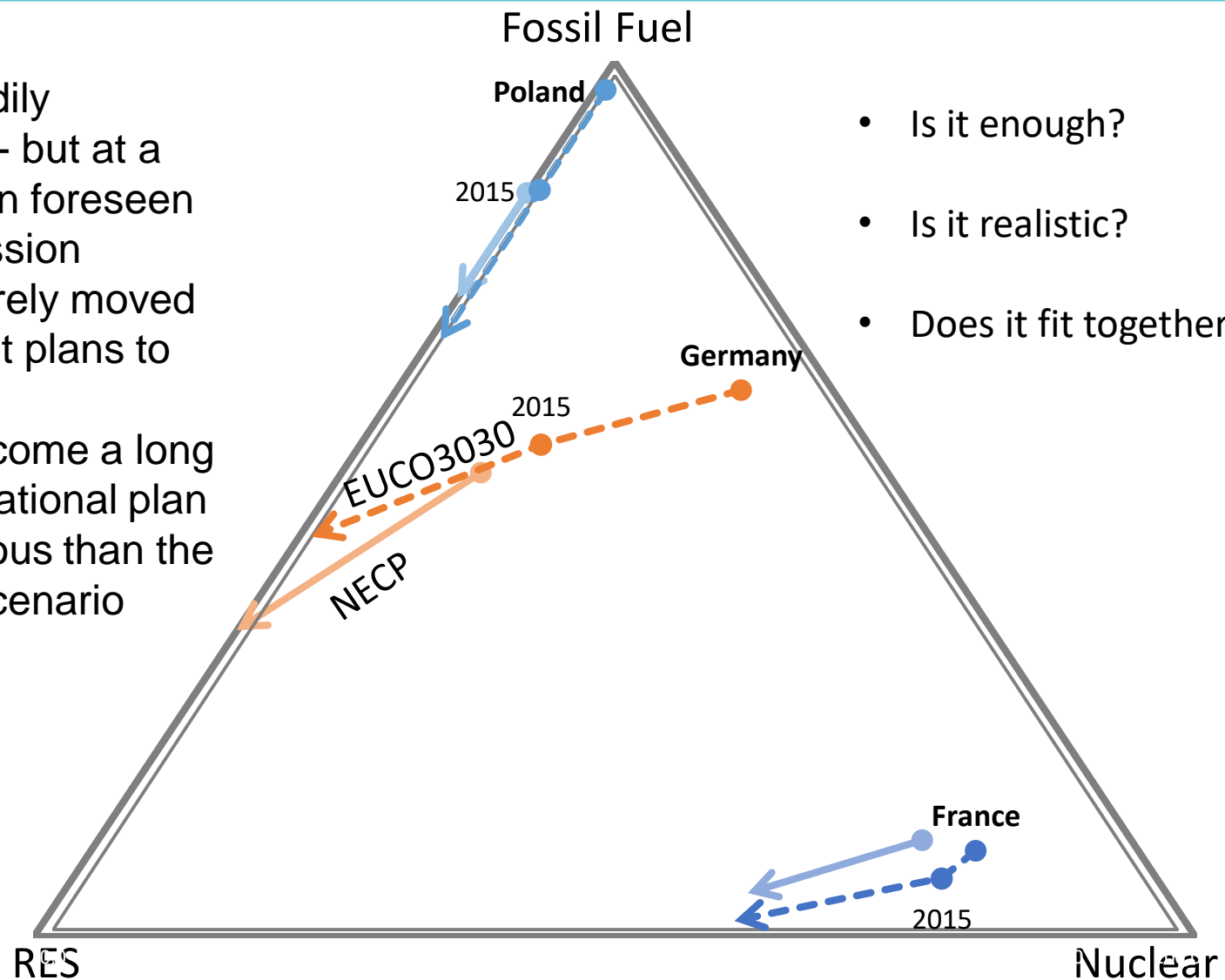


- -30% non-ETS -> -40% total emissions

Three questions to NECPs?

[here: EUCO3030 vs. NECP electricity-mix]

- Poland is steadily decarbonising - but at a lower pace than foreseen by the Commission
- France has barely moved in the past - but plans to speed up
- Germany has come a long way - and its national plan is more ambitious than the Commission scenario



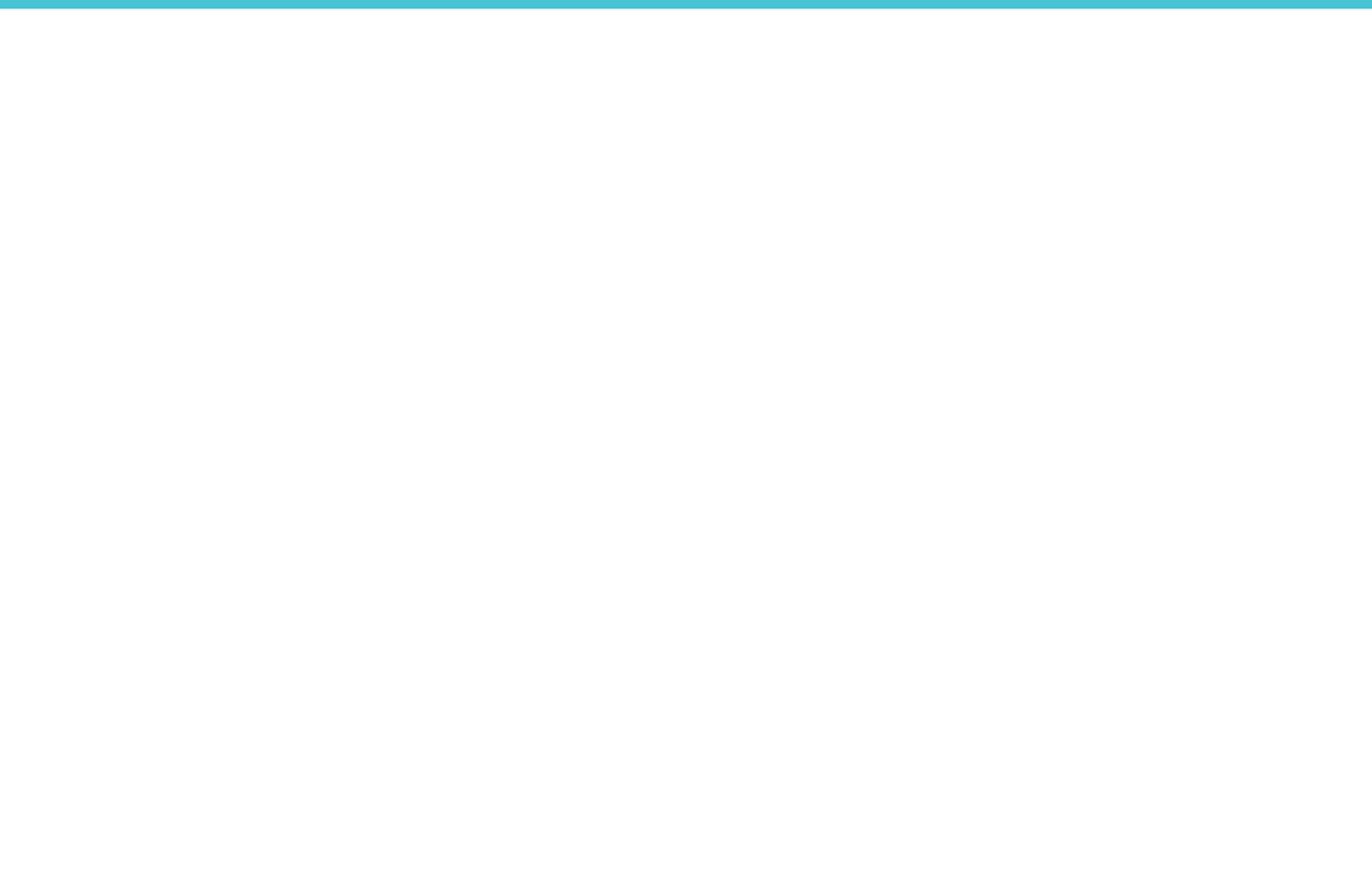
- Is it enough?
- Is it realistic?
- Does it fit together?

Discussion

- Governance will become more important with higher targets!
- How to avoid decoupling of ambition and policies?
- Will the European Commission be able to ensure (i) ambitious, (ii) good quality, (iii) well-coordinated and (iv) largely implemented plans?

Role for energy economists

- Impact assessments on national policy measures
- Explore benefits of cross-border cooperation
- Analyse policy interaction
- Indicators to allow meaningful comparison



III. Some arguments for increasing EU's 2030 climate ambition

- Avoiding unnecessary investments
- Preventing too high reliance on negative emissions
- Keeping higher ambition feasible
- Stimulating innovation
- Supporting domestic low-carbon industries
- Keeping Paris together
- Reducing financial stability risks



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The current legal framework is more ambitious than 2030 targets

Table: EU's 2030 emission target is higher than emissions implied by current policies and targets

Implied by current targets	Nationally Determined Contribution (NDC)
2.9 Gt (-48%)	3.3 Gt (-40%)

Source: In-depth analysis accompanying the EU Long term Vision (p.198)

Note: total GHG incl. LULUCF

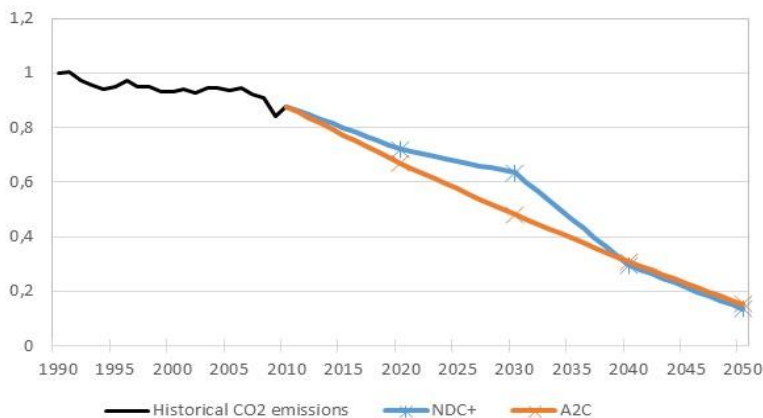
The current targets are incompatible with the 2°C goal

- The current global set of nationally determined contributions (NDCs) - including the EU one from 2015 - are consistent with 3°C global warming
- The EU needs to communicate a revised NDC and 2050 ambition to the UNFCCC in 2020

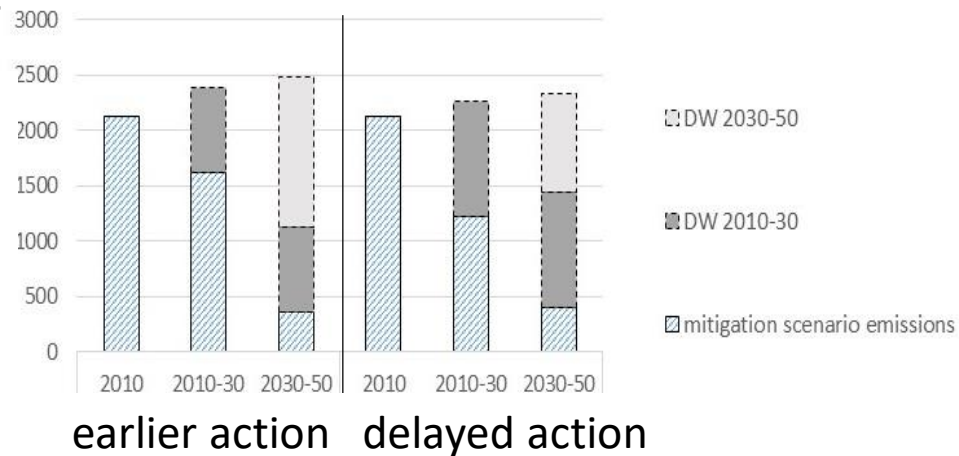
Delayed action will result in very unbalanced efforts before and after 2030

Ambitious and earlier action allows a stable level of effort to be maintained until 2050, while delayed action postpones the effort heavily to the period 2030-50

Figure: Emissions in the EU-5 region for Current-NDC and Enhanced-NDC scenarios



Mitigation scenario emissions and Decarbonization Wedges



Late decarbonisation benefits electrification, but at high cost

Table: Results for electrification in EU-5

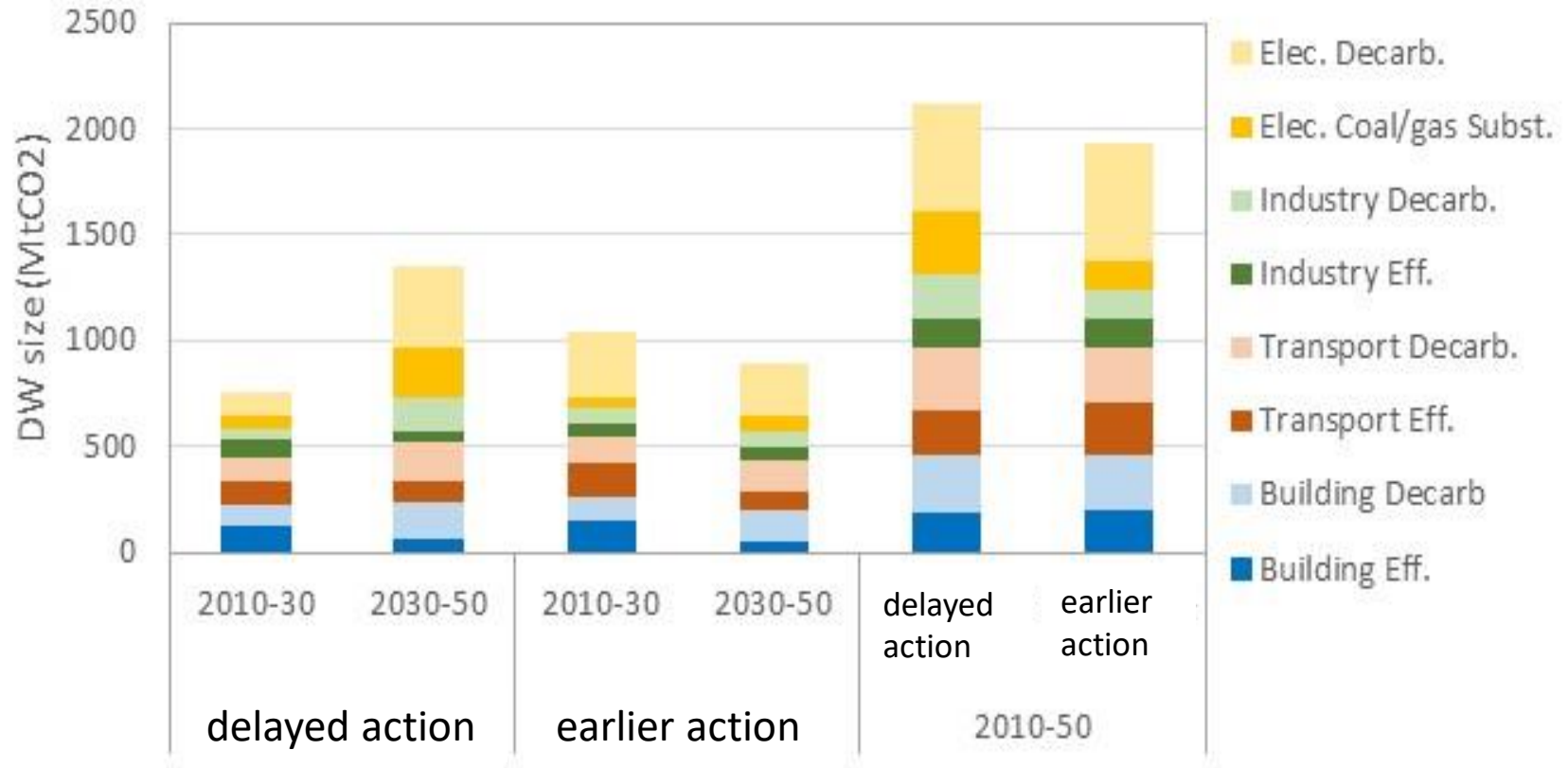
	Share of electricity in energy consumption in 2050	Increase in electricity consumption 2030-2050
earlier action	38 %	650 TWh
delayed action	51 %	1300 TWh

This sharp increase raises the question of socio- and techno-economic feasibility.

Late decarbonisation calls for carbon capture and storage (CCS), causes a short-live gas-demand bulge & the abrupt transition after 2030 might cause social pain

The earlier action scenario results in a continuous but significant decrease of coal in the energy mix and therefore does not use CCS or the substitution of coal for gas.

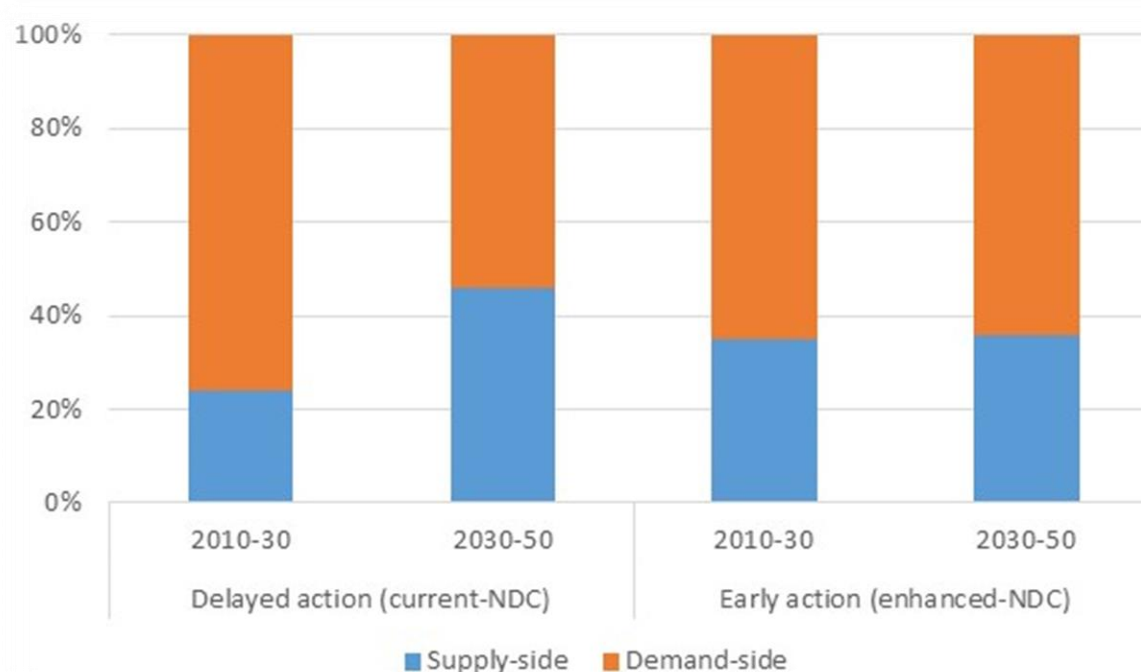
Figure: Sectoral decarbonisation efforts - EU-5



Easy 2030 targets can be reached by reducing demand – but then it gets difficult for 2050

By way of contrast, in the earlier action scenario, both supply and demand-side measures can be symmetrically distributed between both periods.

Figure: Contribution of demand-side and supply-side reduction efforts (% of total DW)



To keep 1.5°C within reach – EU's 2030 emissions need to be significantly below the current target

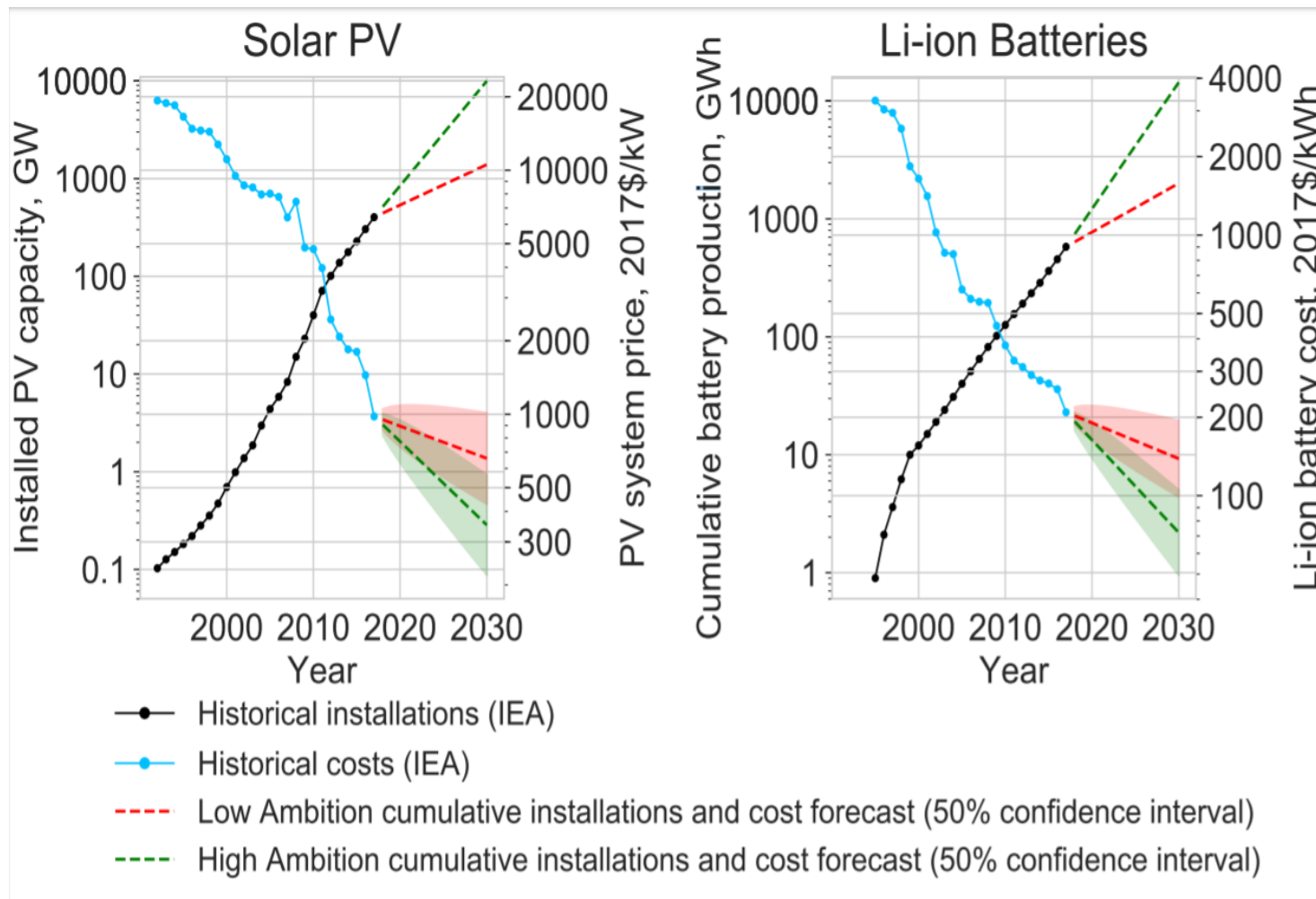
- The IPCC 1.5C Special Report finds that to keep temperature increase below 1.5°C, global GHG emissions should be in the range of 25-30 MtCO₂eq by. That is about half the level implied by NDCs (52-58 GtCO₂eq).
- The report is clear that any delays in achieving emissions reductions by 2030 will lead to higher overall mitigation costs and particularly steep costs increases in the 2030-2050 period, and to a high dependency on so-called negative emissions

Without early action we might need to rely on carbon dioxide removals

Maintaining the EU's climate leadership role

- “Leading by example” was for a long time the precept of EU climate policy in the international realm. Not increasing the 2030 target could well set a dangerous precedent.
- More specifically, not increasing the ambition of the first NDC could reduce the EU's clout within the UNFCCC negotiations.

Faster capacity expansion can reduce future cost of low-carbon technologies dramatically



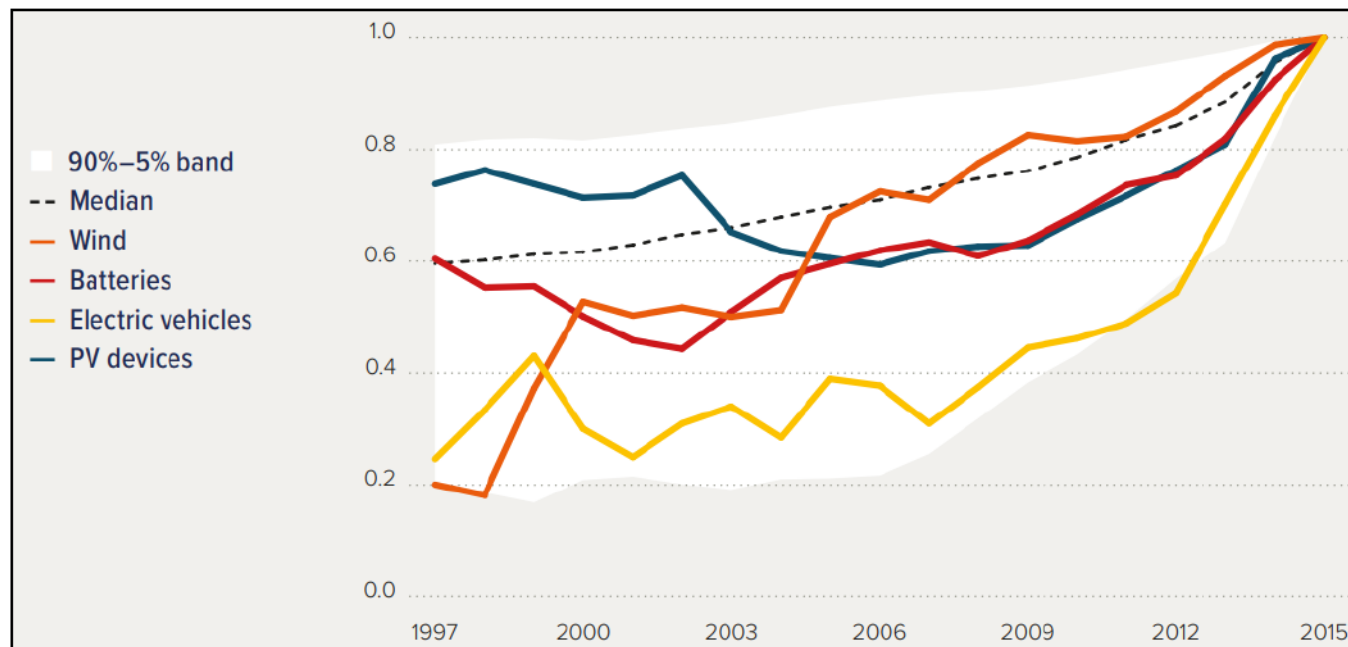
Switching earlier to faster learning technologies implies economic benefits over time

The low carbon technologies race is still open

- Countries rarely make large jumps in terms of the products that they are particularly good or bad at exporting, but certain countries might find it easier to develop new strength in emerging low-carbon sectors, than in more mature sectors.

Figure 1-1: Correlation between current (2015) and past specialization

Exports, 1997 – 2015, showing RCA



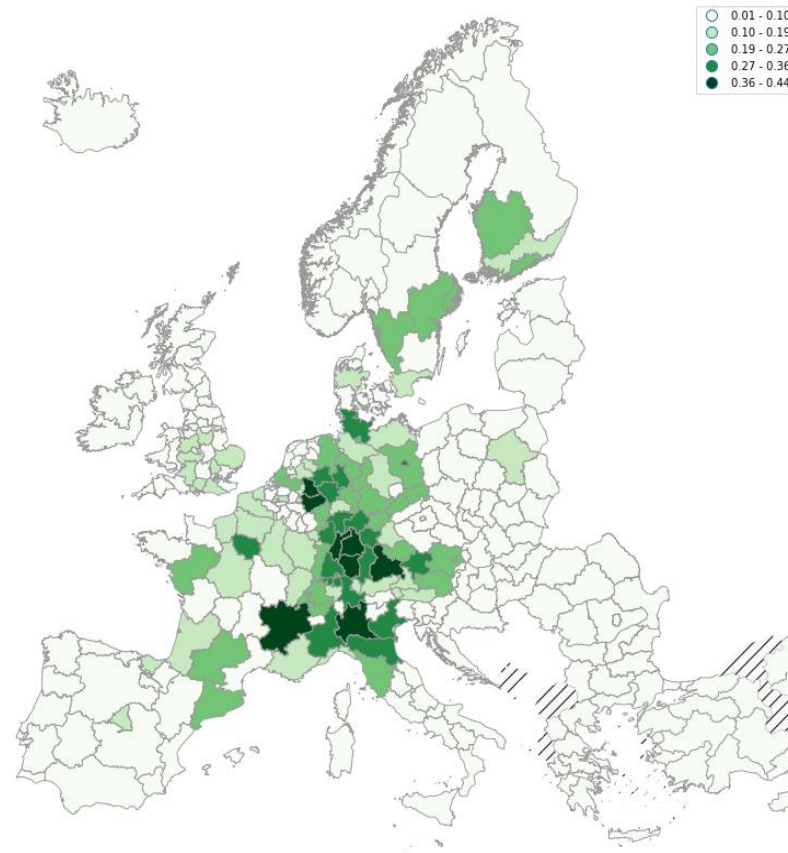
Source: Zachmann and Kalcik (2017), based on UN Comtrade.

Note: The dashed line is the median correlation, across 5,842 export products. The shaded area comprises the RCA and RTA correlations of all technologies between the 5th and the 95th percentiles of the distribution

Specific European regions have the potential to specialise in certain low carbon technologies

- Early action can help to translate this potential into an actual competitive edge
- A credible commitment to ambitious targets can contribute to translate regional potential into an actual competitive edge.

Figure: Potential RTA (2018) for NUTS2 European Regions in electric vehicles.

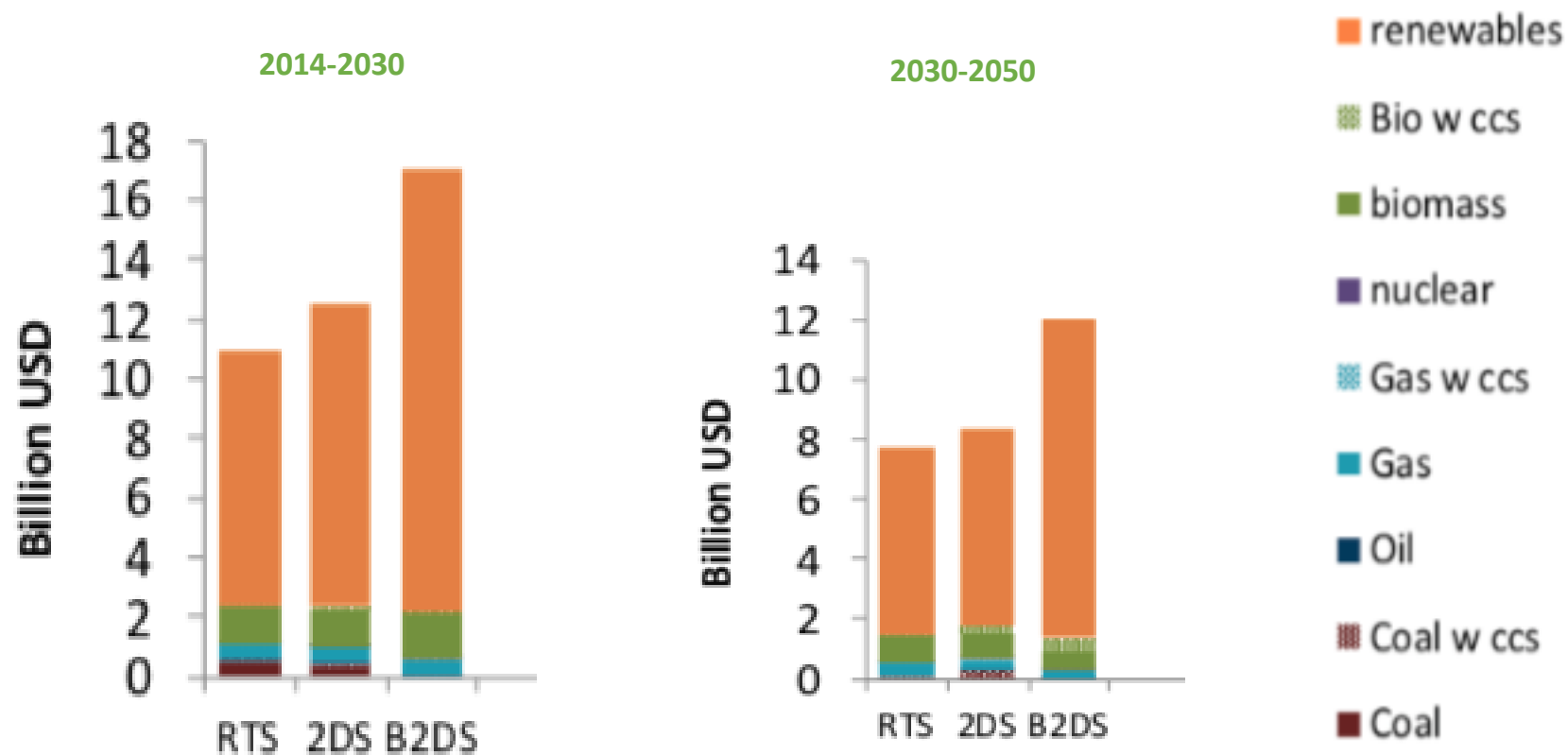


Delaying action to after 2030 poses an even higher risk to financial stability

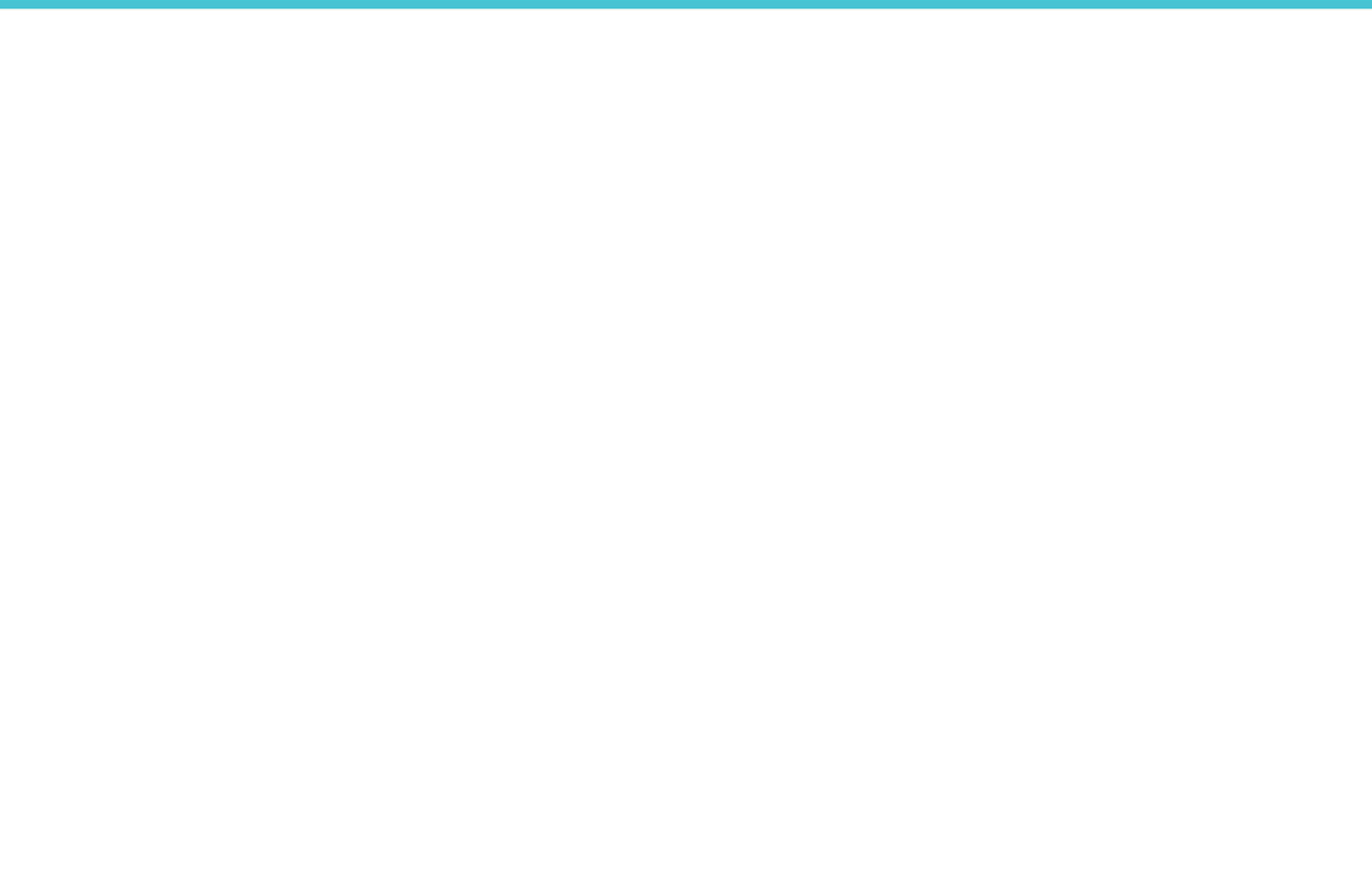
- The financial sector is exposed to
 - physical risks from increasing frequency and severity of **physical climate impacts** (e.g. damages infrastructure and affects value of assets) and
 - **transition risks** cause by policy, technology, and market shifts that will lead to the reevaluation of assets in a low-carbon economy
- Delaying action until after 2030 will increase the disruptive effects for the financial sector compared to a 1.5°C scenario where climate policy is enacted smoothly and with immediate effect

To avoid stranded assets and economic disruption in the EU, there is urgency for increasing low-carbon and phasing-out fossil fuel investments

Figure: Average annual investments in electricity generation



Note: RTS – Reference Technology; 2DS – 2°C Scenario; B2DS – Beyond 2°C scenario
Based on SIAMESE modelling results



III. The role(s) of the EU long term climate strategy

- European Commissions „vision document“ and „in-depth analysis“ (Nov.2018) sets out arguments for EU 2050 climate target
- EU submission to UNFCCC of 2050 strategy in 2020
- IMO: EU might also need a new 2050 roadmap to coordinate national/sectroal policies



Motivation for a new long-term climate strategy: **new targets**

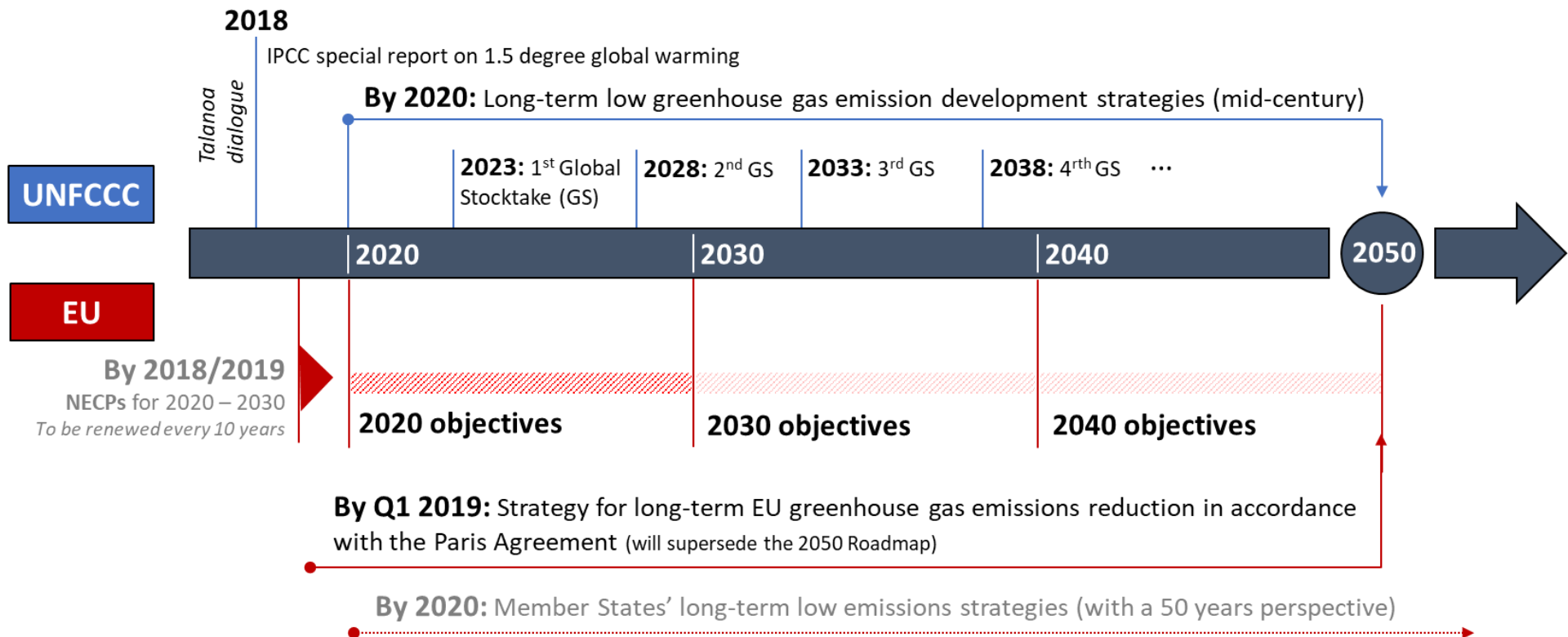
- Paris Agreement (1.5-2 °C)
- New EU carbon commitments

	Coverage	Reduction of all covered countries	EU reduction
Kyoto	18% of global emissions	4-5% from 1990 to 2012	2012: 8%
Doha	11% of global emissions	18% from 1990 to 2020	2020: 20%
Paris	100% of global emissions	carbon neutrality at some point after 2050	2030: 40%* 2050:tbd

- Science of climate change evolved (IPCC, UNEP Gap)

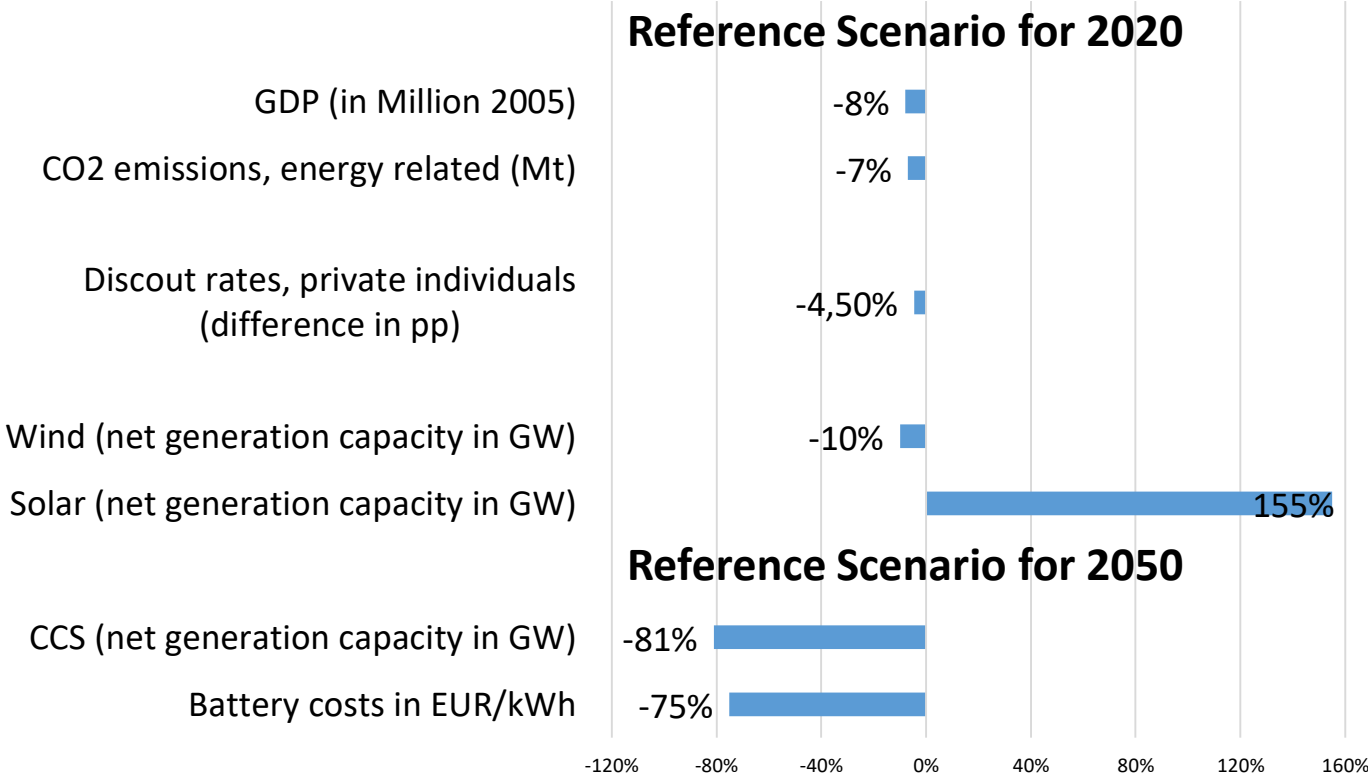
Motivation for a new long-term climate strategy: **governance**

Coordination with UNFCCC and Energy Union:



Motivation for a new long-term climate strategy: change in assumptions

Figure 2. Change in expectations 2011 vs. 2016/17



Motivation for a new long-term climate strategy: wider participation

Table 5: Selected international, national and sectoral strategies and scenarios

Author	Scope	Sector	Reduction Target
Austrian Government (2018)	Austria	All	36% by 2030 (compared to 2005)
WWF, Greenpeace and Global2000 (2017)	Austria	Energy	67% by 2030 98% by 2050
Belgium Government (2013)	Belgium	All	80/95%
German Government (2016)	Germany	All	80/95%
BCG/Stahl (2013)	Germany	Steel	-
BDI (2018)	Germany	All	80/95%
Greenpeace (2017)	Germany	Agriculture	50% (compared to 2010)
Swedish Government (2017)	Sweden	All	100% (by 2045)
The Swedish Shipowners' Association (2015)	Sweden	Maritime	100%
ECF (2010)	EU	All	80%
Öko (2018)	EU	All	100%
T&E (017)	EU	Buses and Freight	100%
Cembureau (2013)	EU	Cement	80%
Eurofer (2013)	EU	Steel	-
EAA (2012)	EU	Metals (Aluminium)	79%
Cefic (2013)	EU	Chemical	-
CEPI (2017)	EU	Paper	80%
Cerame-Unie (2012)	EU	Ceramics	65/78%
IEA (2017)	World	Energy	100% (by 2100)
Shell (2018)	World	All	100% (by 2100)
Shell (2018)	World	Energy	100% (by 2070)

Note: Unless specified otherwise, the targets in the table refer to 2050