



EU Long term strategy

Industrial decarbonisation

CAN Europe GA

October 2018

IPCC SR1.5

On the need for industry to decarbonise

IPCC on Industrial Decarbonisation (C2.3.)

Global industry decarbonization

CO₂ emissions from industry in pathways limiting global warming to 1.5°C with no or limited overshoot are **projected to be about 75–90% (interquartile range) lower in 2050 relative to 2010**, as compared to 50–80% for global warming of 2°C (medium confidence).

Technological pathways

Such reductions can be achieved through combinations of new and existing technologies and practices, **including electrification, hydrogen, sustainable bio-based feedstocks, product substitution, and carbon capture, utilization and storage (CCUS)**.

Challenges

These options are technically proven at various scales but their large-scale deployment may be limited by **economic, financial, human capacity and institutional constraints** in specific contexts, and specific characteristics of large-scale industrial installations. In industry, emissions reductions by energy and process efficiency by themselves are insufficient for limiting warming to 1.5°C with no or limited overshoot (high confidence) {2.4.3, 4.2.1, Table 4.1, Table 4.3, 4.3.3, 4.3.4, 4.5.2}

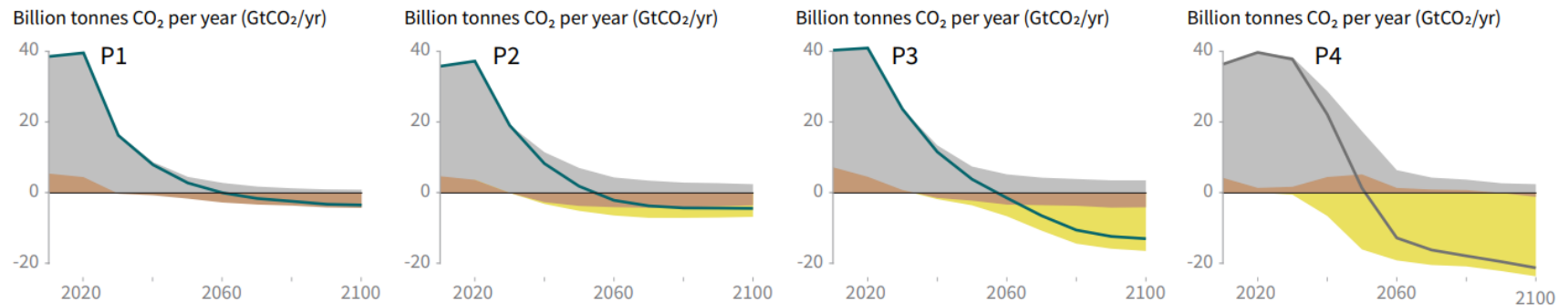
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D5.5. The systems transitions consistent with adapting to and limiting global warming to 1.5°C include the **widespread adoption of new and possibly disruptive technologies and practices and enhanced climate-driven innovation**. These imply enhanced technological innovation capabilities, including in industry and finance. Both national innovation policies and international cooperation can contribute to the development, commercialization and widespread adoption of mitigation and adaptation technologies. Innovation policies may be more effective when they combine public support for research and development with policy mixes that provide incentives for technology diffusion. (high confidence) {4.4.4, 4.4.5}.

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Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways

● Fossil fuel and industry ● AFOLU ● BECCS



P1: A scenario in which social, business and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A downsized energy system enables rapid decarbonization of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.

P2: A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.

P3: A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.

P4: A resource- and energy-intensive scenario in which economic growth and globalization lead to widespread adoption of greenhouse-gas-intensive lifestyles, including high demand for transportation fuels and livestock products. Emissions reductions are mainly achieved through technological means, making strong use of CDR through the deployment of BECCS.

Global indicators**P1****Pathway classification****No or low overshoot**CO₂ emission change in 2030 (% rel to 2010)

-58

↳ in 2050 (% rel to 2010)

-93

Kyoto-GHG emissions* in 2030 (% rel to 2010)

-50

↳ in 2050 (% rel to 2010)

-82

Final energy demand** in 2030 (% rel to 2010)

-15

↳ in 2050 (% rel to 2010)

-32

Renewable share in electricity in 2030 (%)

60

↳ in 2050 (%)

77

Primary energy from coal in 2030 (% rel to 2010)

-78

↳ in 2050 (% rel to 2010)

-97

from oil in 2030 (% rel to 2010)

-37

↳ in 2050 (% rel to 2010)

-87

from gas in 2030 (% rel to 2010)

-25

↳ in 2050 (% rel to 2010)

-74

from nuclear in 2030 (% rel to 2010)

59

↳ in 2050 (% rel to 2010)

150

from biomass in 2030 (% rel to 2010)

-11

↳ in 2050 (% rel to 2010)

-16

from non-biomass renewables in 2030 (% rel to 2010)

430

↳ in 2050 (% rel to 2010)

832

Cumulative CCS until 2100 (GtCO₂)

0

↳ of which BECCS (GtCO₂)

0

Land area of bioenergy crops in 2050 (million hectare)

22

Agricultural CH₄ emissions in 2030 (% rel to 2010)

-24

EUROPEAN INDUSTRY

From Fat Cats to Zero-Carbon leaders

EU Industry

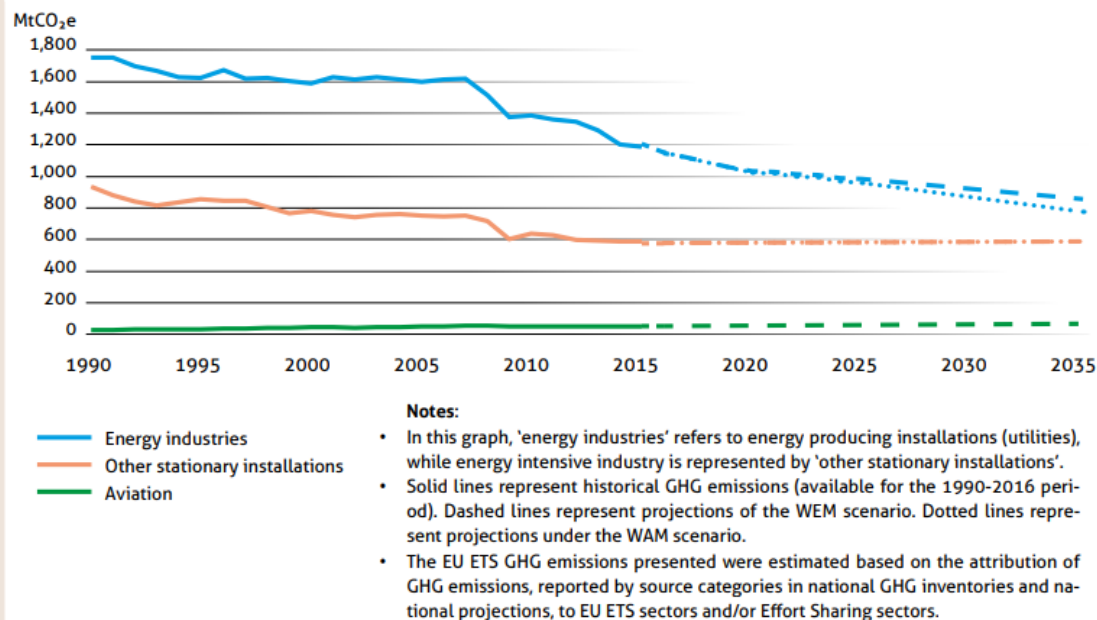
- Represents approximately 19% of total EU GHG emissions
- Mainly from energy intensive industries (iron and steel, cement, chemicals, refineries, copper, aluminium, paper, ceramic, lime, ferro-alloy, chlor-alkali, gypsum, metal, clay, petroleum, and glass producers)



EU ETS

- Industry covered under EU Emissions Trading System (EU ETS)
- But particularly energy intensive industries receive high level of protection (= exceptions to the polluter-pays-principle)
- Emissions have stagnated in recent years

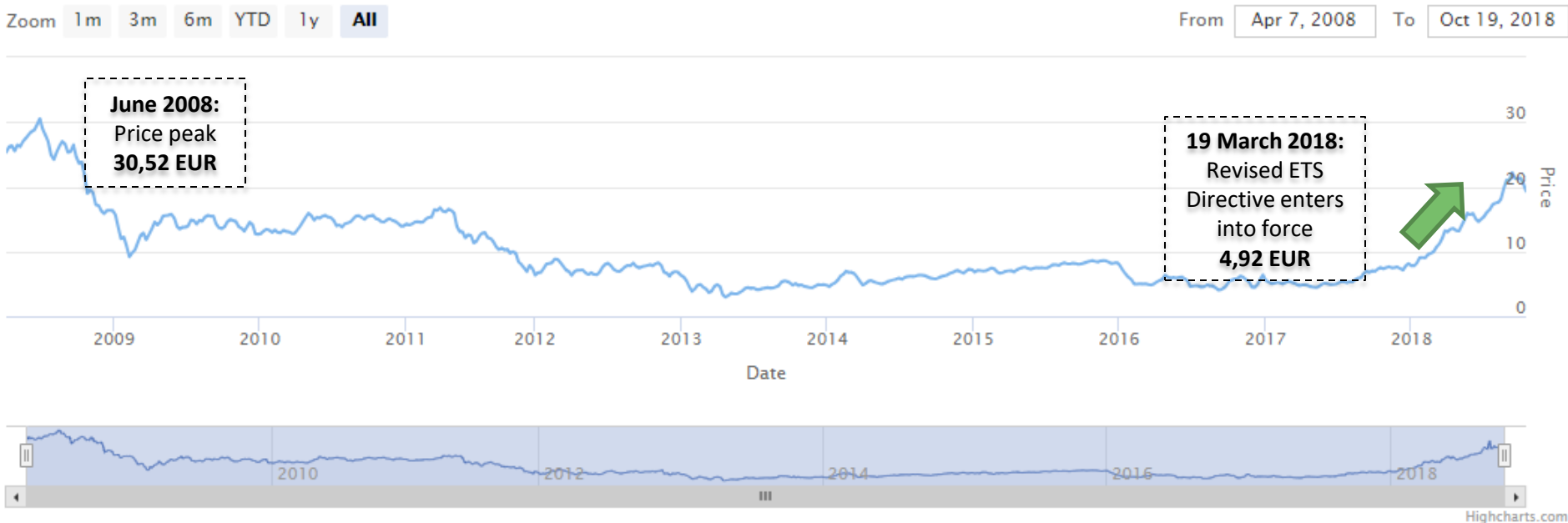
GRAPH 2: Greenhouse gas emission trends and projections under the scope of the EU ETS, 1990-2030



Sources: EEA, 2017a, 2017b, 2017c, 2017d.

ETS carbon price

EUA Price



- CP has increased since publication in OJ (today: 20,49 EUR)
- But uncertainty about future price development after MSR becomes operational in 2019
- PL (and RO) currently calling on European Commission to intervene according to art. 29a

EU ETS Reform

- Revision of the ETS concluded at the end of last year, revised Directive published in OJ on 19 March 2018
- Step forward:
Cancellation mechanism in the Market Stability Reserve
- Shortcoming particularly on tackling industrial emissions
 - 😊 Reduction of free allowance allocation to manufacturing industry from 30% until 2025 to 0% in 2030
 - 😞 Sectors and sub-sectors deemed to be at a significant risk of carbon leakage (above 90% of all sectors) continue to receive 100% of their allowances for free

EU Fat Cats

European Fat Cats

EU Energy Intensive Industries:
paid to pollute, not to decarbonise



- Free allowances constitute public subsidies and foregone public revenue
- Estimated magnitude in upcoming trading phase (2021-2030) = 237 billion EUR
- Taxpayer pays twice
 - Subsidies that thwart the objective of EU climate policy
 - Climate change impacts (ecosystem, health, pollution)

April 2018



Low carbon leakage

Figure 1: League Table summary

League Table rank	2016 League Table rank	Company	Ticker	Country	Average market cap 2017 (US\$bn)	2016 cement production (million tonnes)	League Table weighted rank	Transition risks rank	Physical risks rank	Transition opportunities rank	Climate governance & strategy rank
1	n/a	Dalmia Bharat	DBEL IN	India	3.4	15	4.64	1	9	2	4
2	n/a	Ambuja Cements	ACEM IN	India	7.7	21	5.62	3	11	12	1
3	5	Cementos Argos	CEMARGOS CB	Colombia	5.3	14	5.90	7	2	7	2
4	2	Shree Cement	SRCM IN	India	9.4	20	5.91	2	13	3	7
5	1	LafargeHolcim	LHN SW	Switzerland	34.8	233	6.03	8	6	4	3
6	6	Heidelberg	HEI GR	Germany	19.3	125	6.08	9	7	1	5
7	4	CRH	CRH ID	Ireland	29.7	34	6.85	6	4	5	9
8	n/a	ACC	ACC IN	India	4.7	23	7.02	4	10	6	10
9	8	Ultratech Cement	UTCEN IN	India	17.0	48	7.32	5	12	10	8
10	7	CEMEX	CEMEXCPO MM	Mexico	12.6	67	8.04	12	8	8	6
11	10	Taiheyo	5233 JP	Japan	4.7	32	8.58	11	1	11	12
12	11	Cementir Holding	CEM IM	Italy	1.1	10	9.00	10	5	9	13
13	n/a	Asia Cement Corporation	1102 TT	Taiwan	3.1	34	9.80	13	3	13	11

The Fat Cats' Mess

- Industrial emissions have not only stagnated, but even **increased in 2017 by 1.8%**

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EU carbon market emissions rise for first time in 7 years in 2017

Susanna Twidale

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LONDON (Reuters) - Emissions regulated under Europe's carbon market rose for the first time in seven years in 2017 due to stronger industrial output, data published on Tuesday by the European Commission and examined by carbon analysts at Thomson Reuters showed.



LONG TERM DECARBONISATION

Where can industry go and how can it get there?

Sector decarbonization potentials

	Share of verified emissions of all stationary installations in EU (%)	Share of industrial emissions, excl combustion (%)	Emissions reductions potential by 2050
Iron and steel	7	22	98
Chemicals	4	14	85
Non-metallic minerals I: cement (4/5) and lime (1/5)=80%	8	28	(75)
Non-metallic minerals II: (glass + ceramics)=20%	2	6	75
Pulp and paper	1.5	5	80
Non-ferrous metals (mainly aluminium and copper)	1	2	98
Refineries	7	23	70

Options for decarbonisation

(i) Process emissions

- Circular economy
- Sector coupling
- CCS and CCU
- Efficiency
- Reduction in demand
- ...

(ii) Energy related emissions

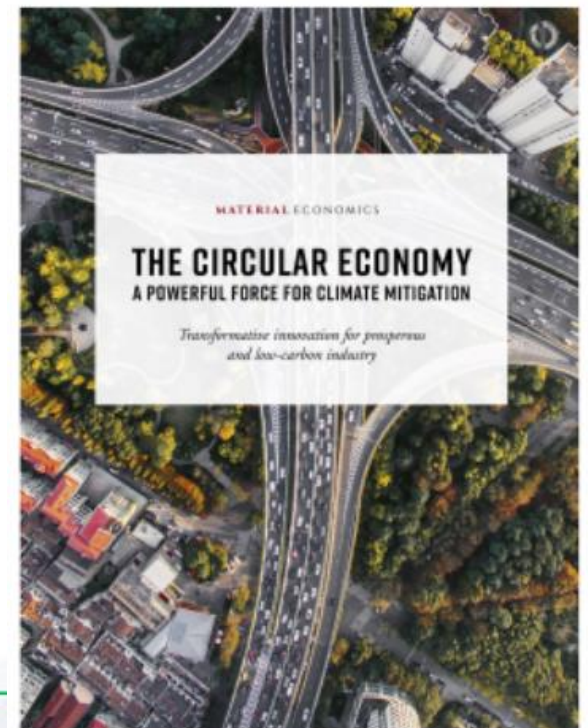
- Electrification
- Fuel switching
- Efficiency
- ...

Options for decarbonisation

- (i) Process emissions
 - Circular economy
 - Sector coupling
 - CCS and CCU
 - Efficiency
 - **Reduction in demand**
 - ...
- (ii) Energy related emissions
 - Electrification
 - Fuel switching
 - Efficiency
 - ...

Business and economic models

- Circularity can achieve 25%-55% less primary production



Decarbonisation Study

Industrial Value Chain

A Bridge Towards a Carbon Neutral Europe



Thank you for your attention!

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