EU Climate and Energy Policy for 2030

How the EU implements the Paris Agreement

Wellington, New Zealand
1-4 February 2019

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EUI Florence/KU Leuven/European Commission

IPCC - Intergovernmental Panel on Climate Change
(5th Assessment 2013, 1.5°C Report 2018)

- **Warming of the climate systems is unequivocal and observed changes are unprecedented on scales of decades to millennia.**
- **Human influence on the climate system is clear.**
- **Continued emissions of greenhouse gases will cause further warming and changes to the atmosphere, land and oceans in all regions of the globe.**
- **Limit climate change to 2°C compared to pre-industrial level**

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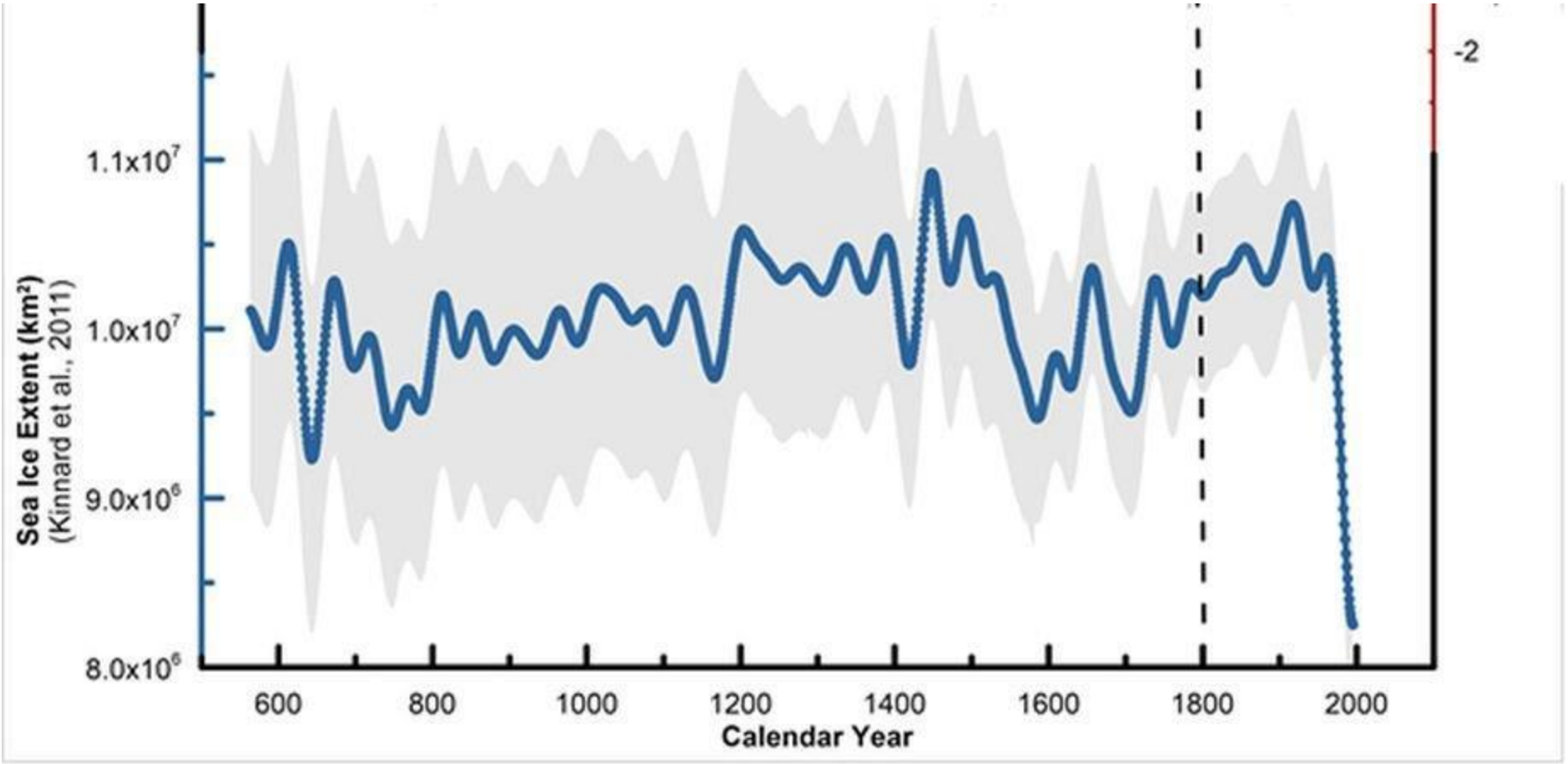
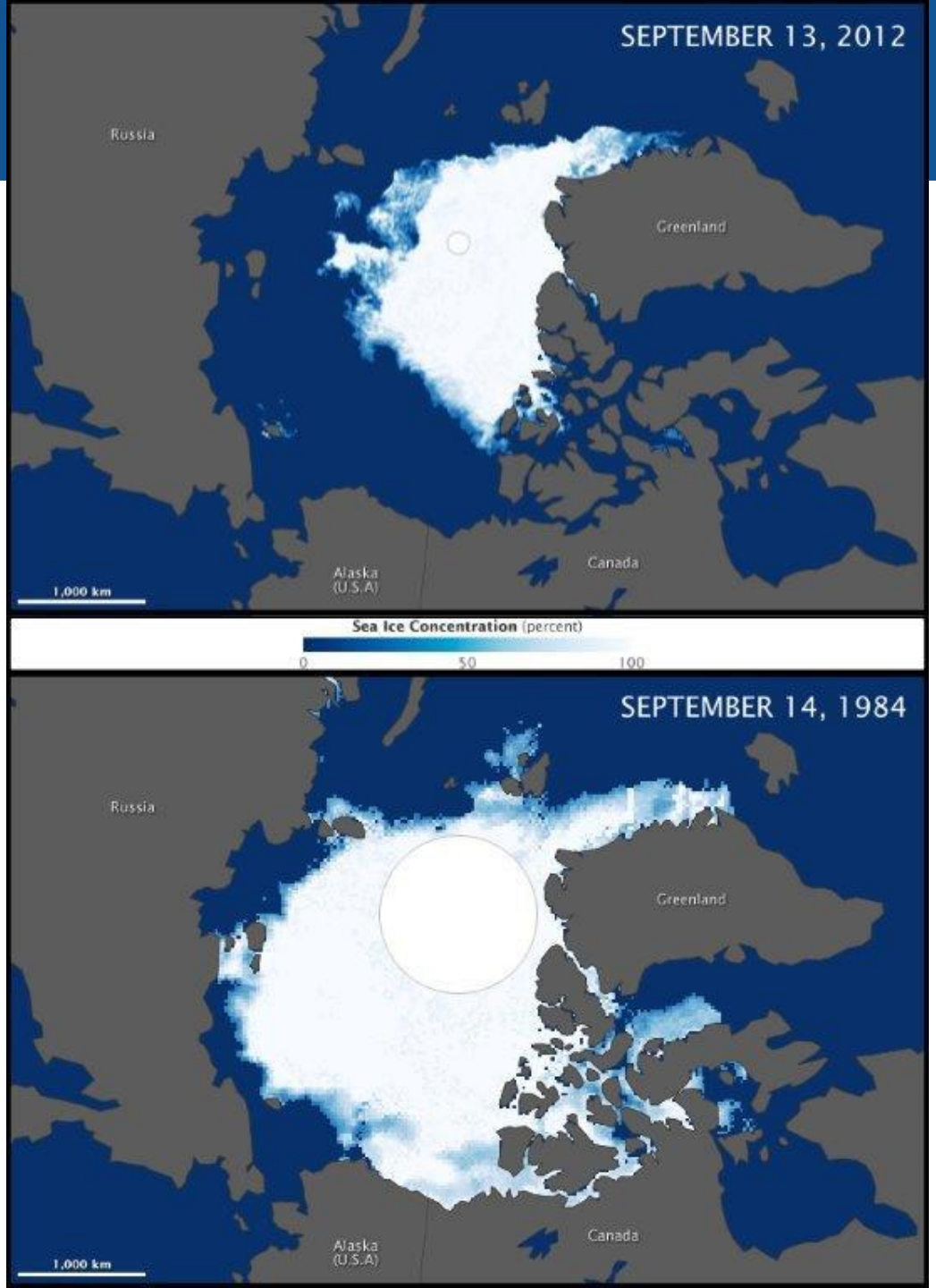
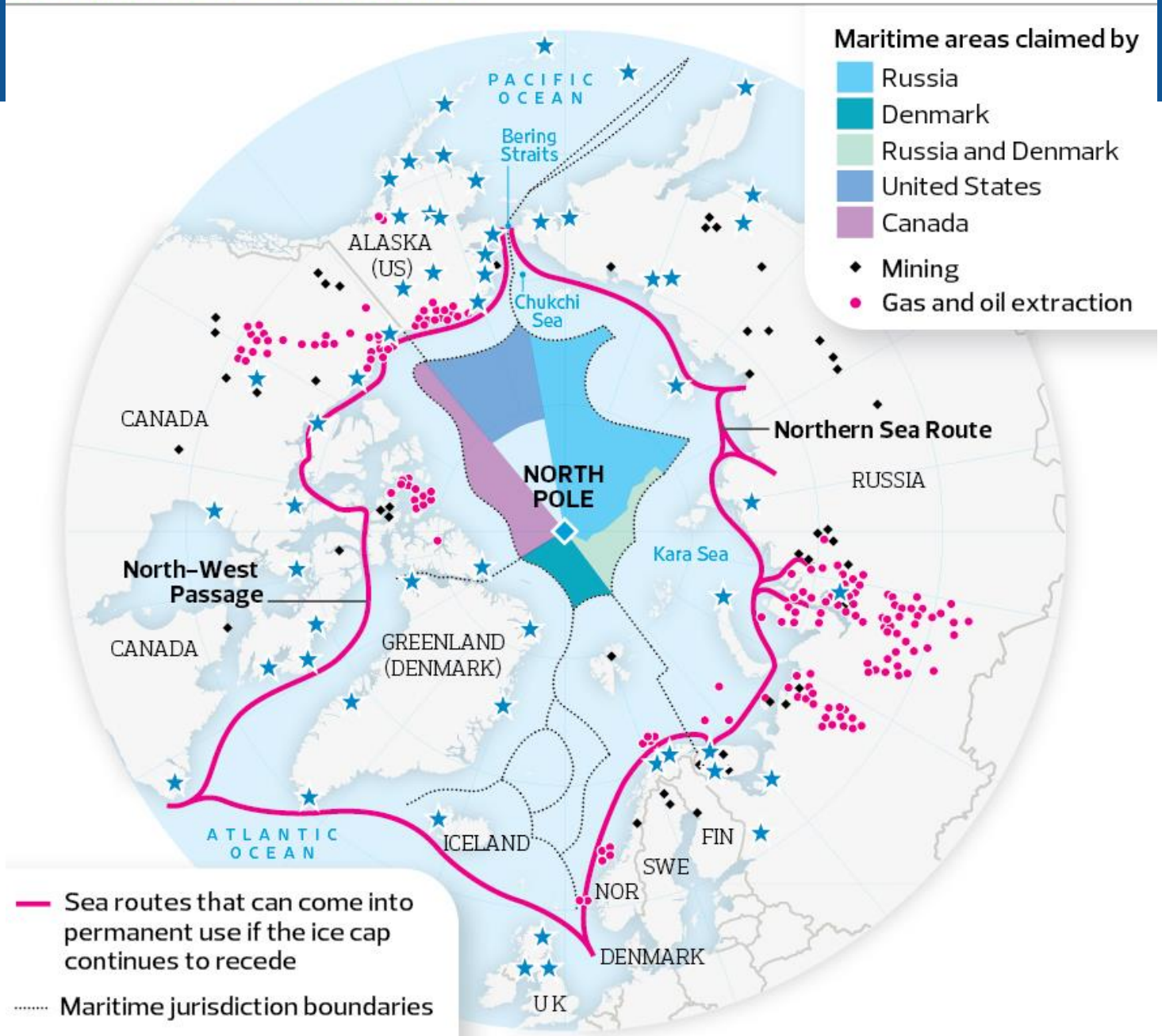
Sea Ice Extent - Arctic




SEPTEMBER 13, 2012
Russia
Greenland
Alaska
(U.S.A)
Canada
1,000 km
Sea Ice Concentration (percent)
0
50
100
SEPTEMBER 14, 1984
Russia
Greenland
Alaska
(U.S.A)
Canada
1,000 km

OPENING UP THE FAR NORTH



SOURCE: **PHILIPPE REKACEWICZ, LE MONDE DIPLOMATIQUE**

Global governance

- **1992 – Rio 'World Summit'**

  UNFCCC – UN Framework Convention on Climate Change

- **1997 – Kyoto Protocol**

  12% of global emissions

  Divide developed / developing countries

- **2015 – Paris Agreement**

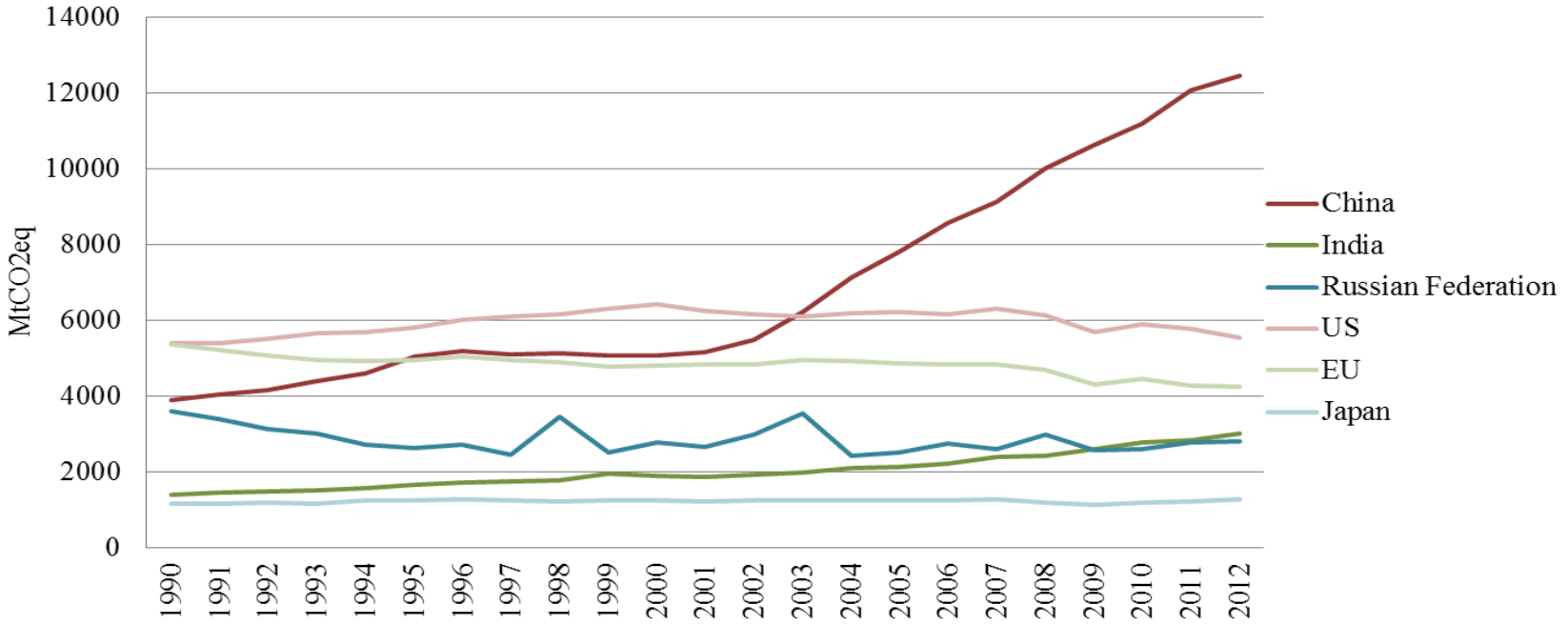
  98% of global emissions (+/- 80% without US as of 2020?)

  Goal: max 2° global warming

  Recognition that the world has changed

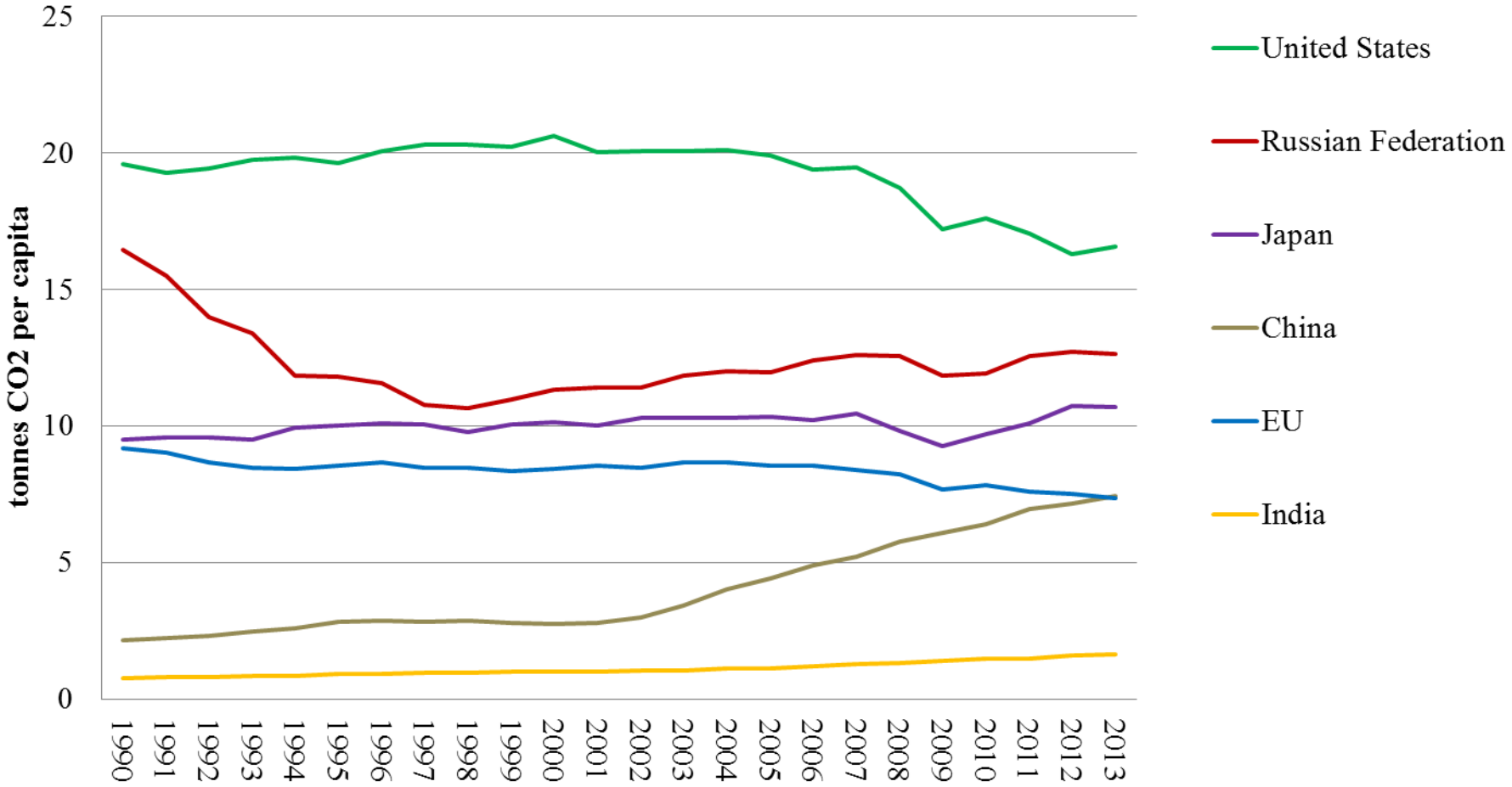
  Between 'top down' and 'bottom up' ?

Emissions of major economies, 1990-2012 (all greenhouse gases, all sources & sinks)

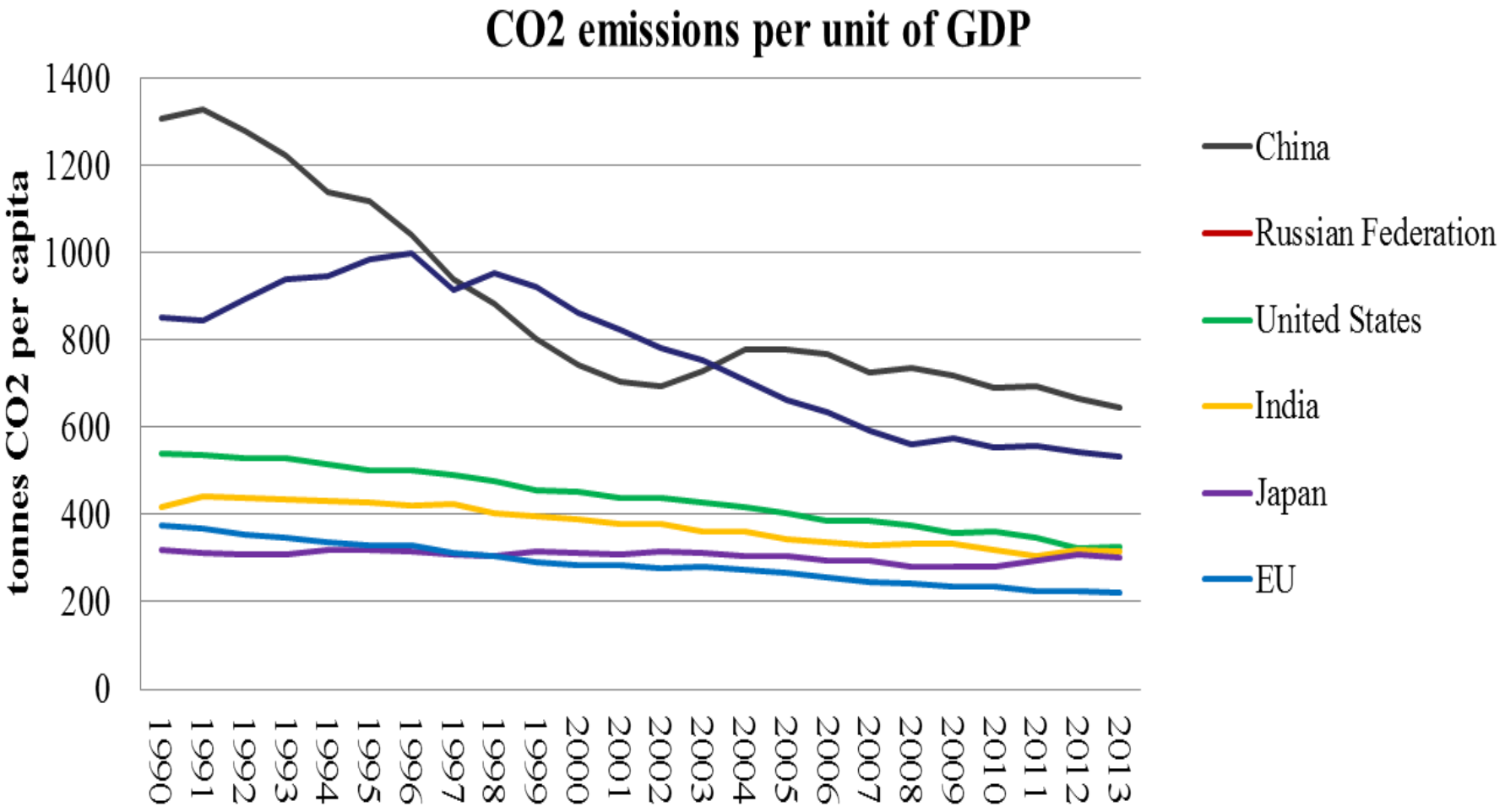


(Source: historical emissions data: inventories data to the UNFCCC (http://unfccc.int/national_reports/)

C02 emissions per capita



Source : CO_2 emissions per capita from fossil-fuel use and cement production, trends in global CO2 emissions, 2014 Report, PBL, JRC

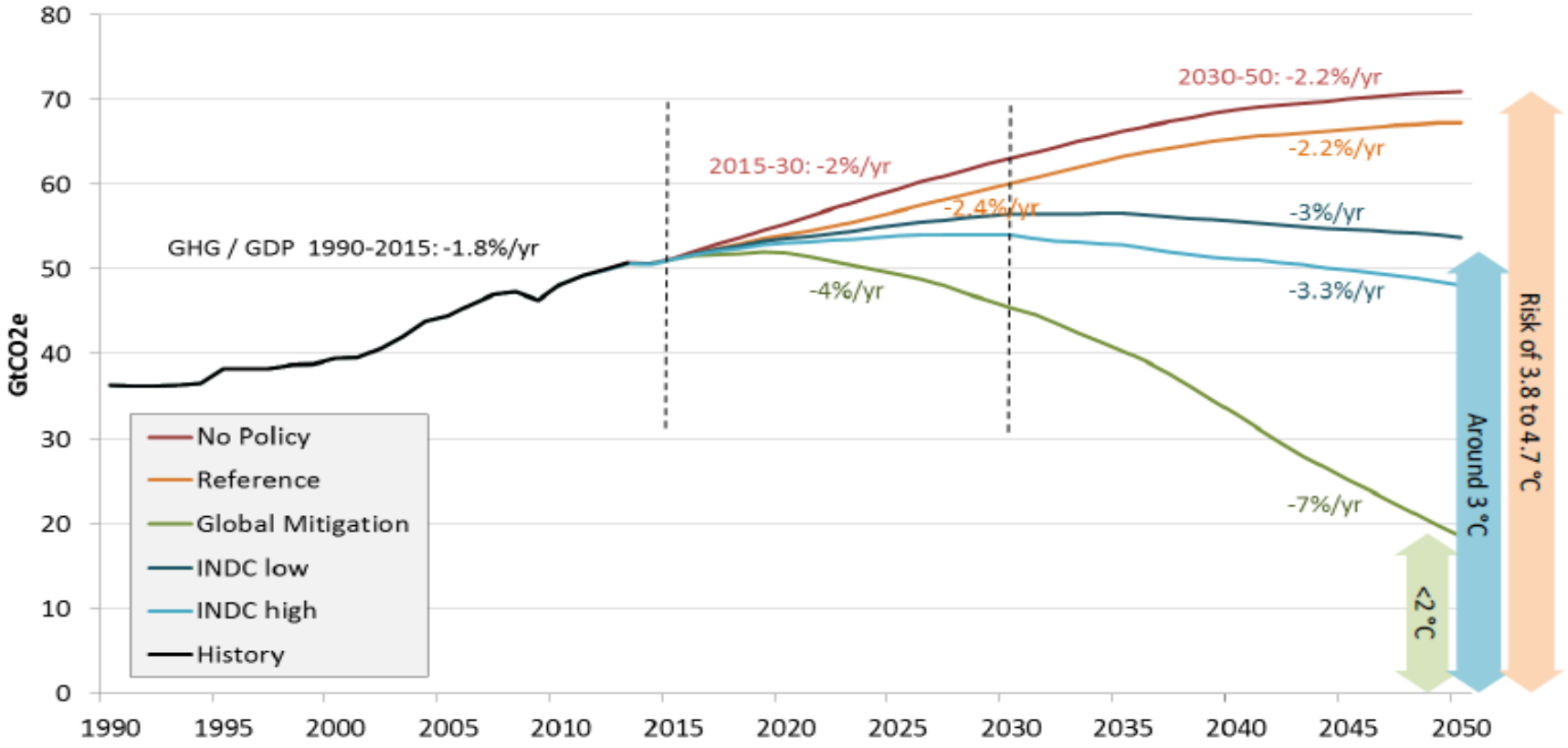

CO2 emissions per unit of GDP
tonnes CO2 per capita
1400
1200
1000
800
600
400
200
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
China
Russian Federation
United States
India
Japan
EU

The Paris Agreement

- **Long-term target based on IPCC:**
  - "well below 2C"
- **Universal participation:**
  - Developed and developing countries
- **Transparency and accountability**
  - Robust common rules
- **5 yearly reviews**
- **International support** for low carbon, climate resilient sustainable development

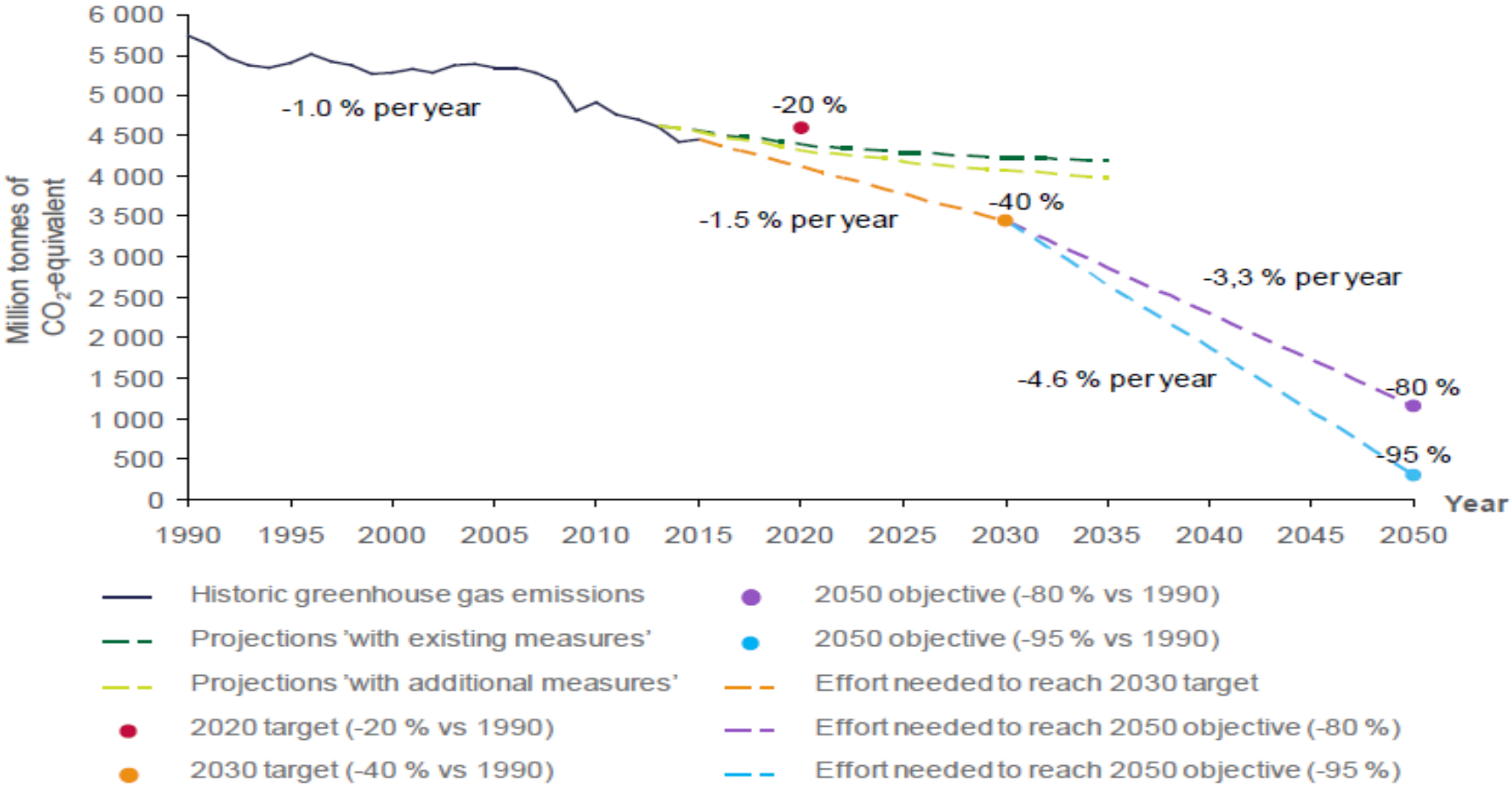
World emissions

(GtC02e, total excluding sinks) and percent change in emission intensity per unit of GDP



Source: POLES – JRC Model

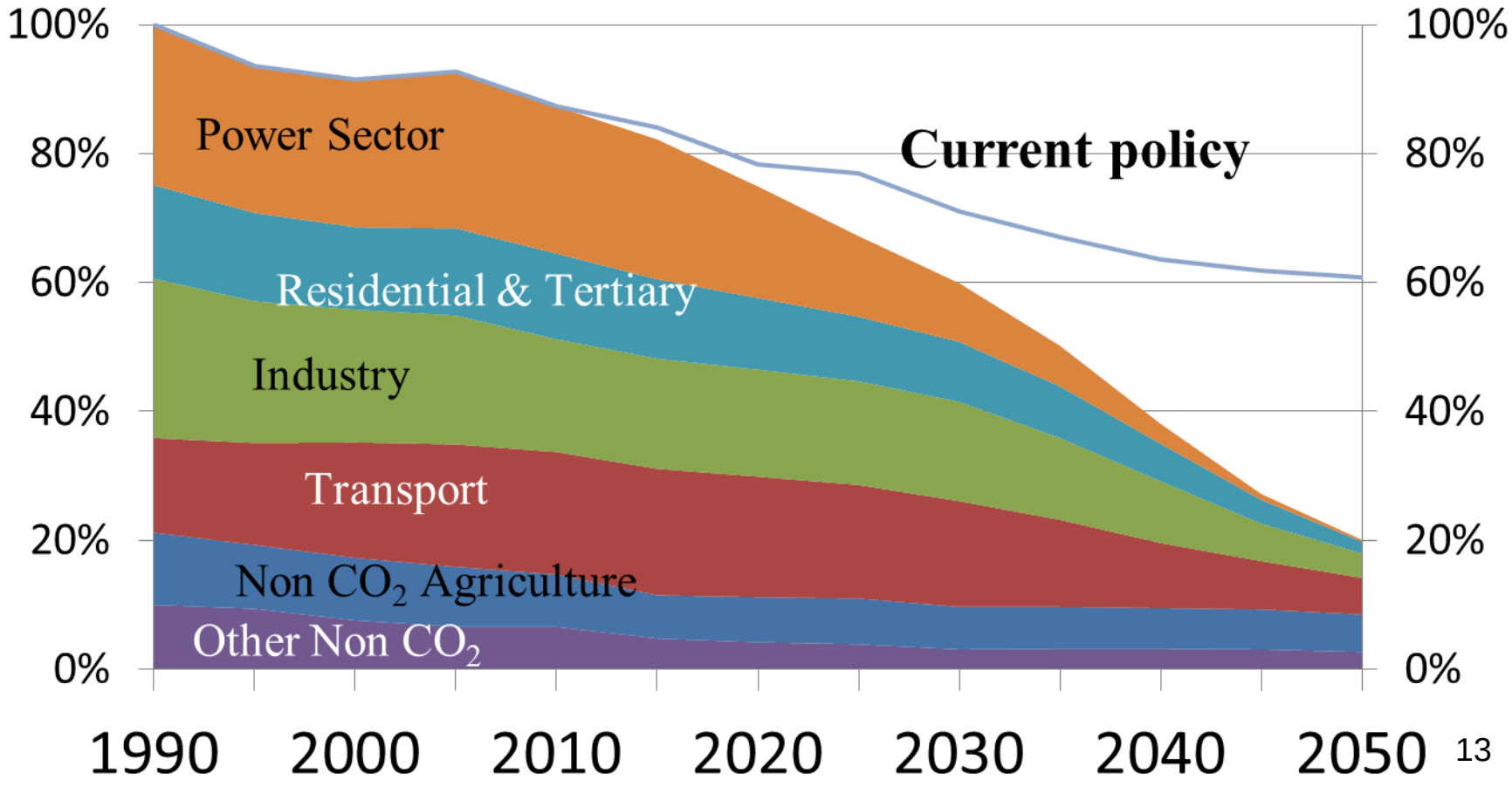
EU greenhouse gas emissions



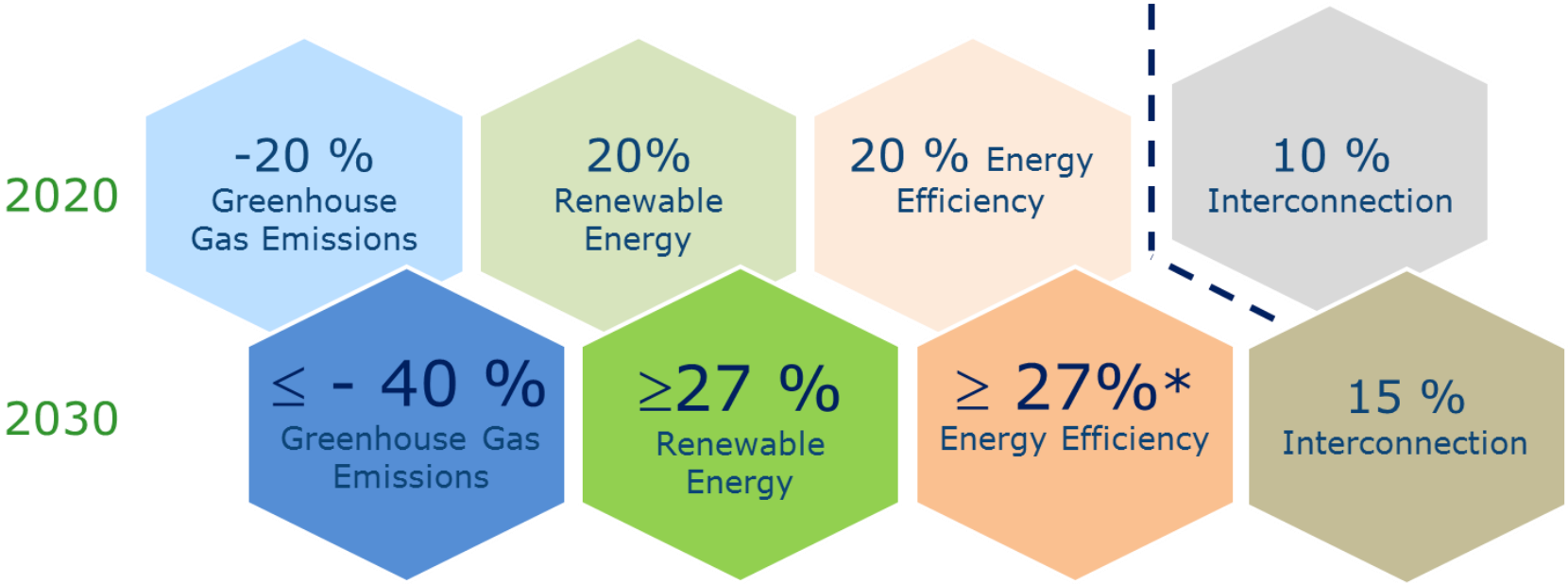
Source: EEA – Trends and pojections in Europe 2016

Transition to a low-carbon EU economy in 2050

(greenhouse gas emissions by sector over time as % of 1990 levels)



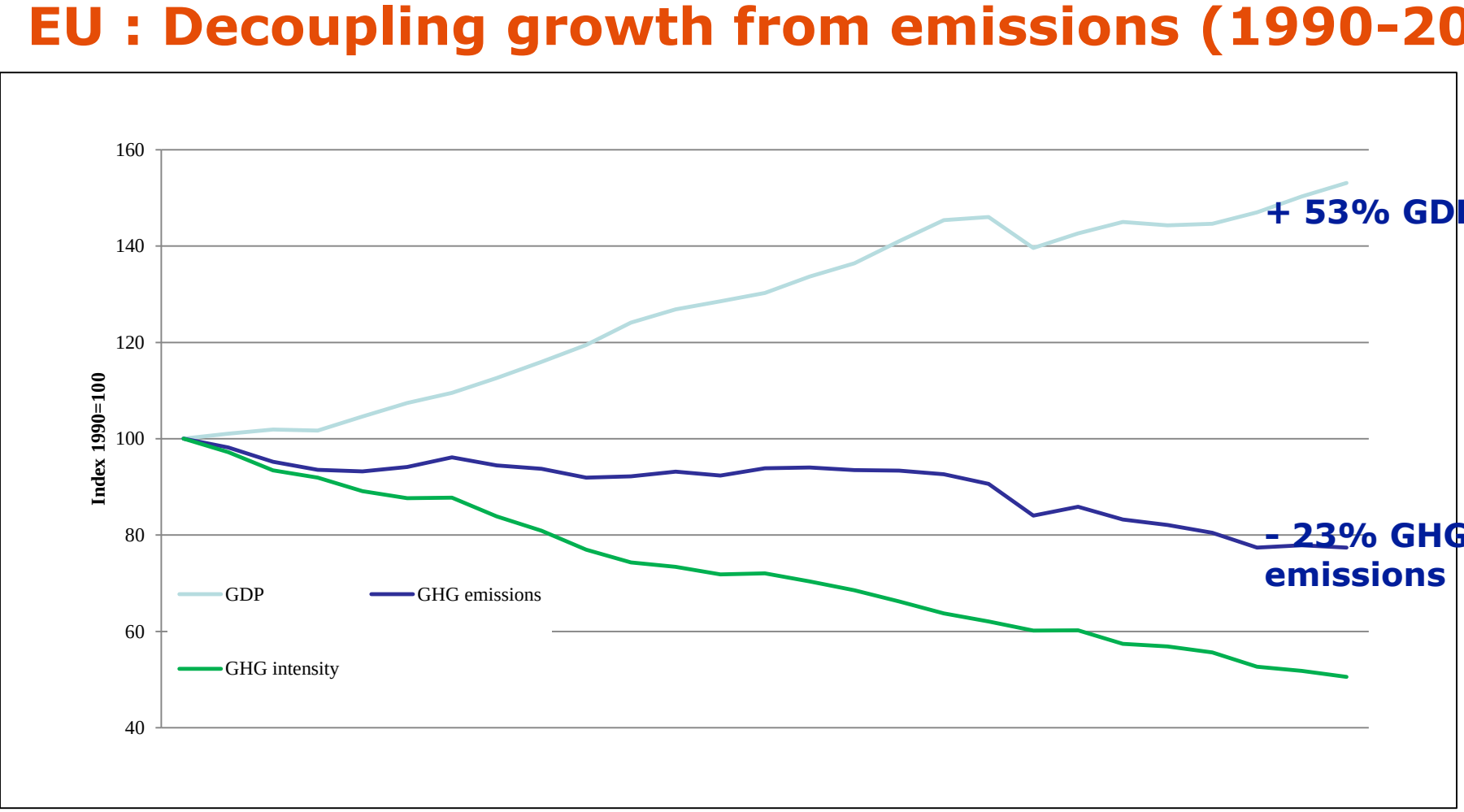
2030 Climate and Energy Framework



EU GHG emissions by sector, 1990-2030

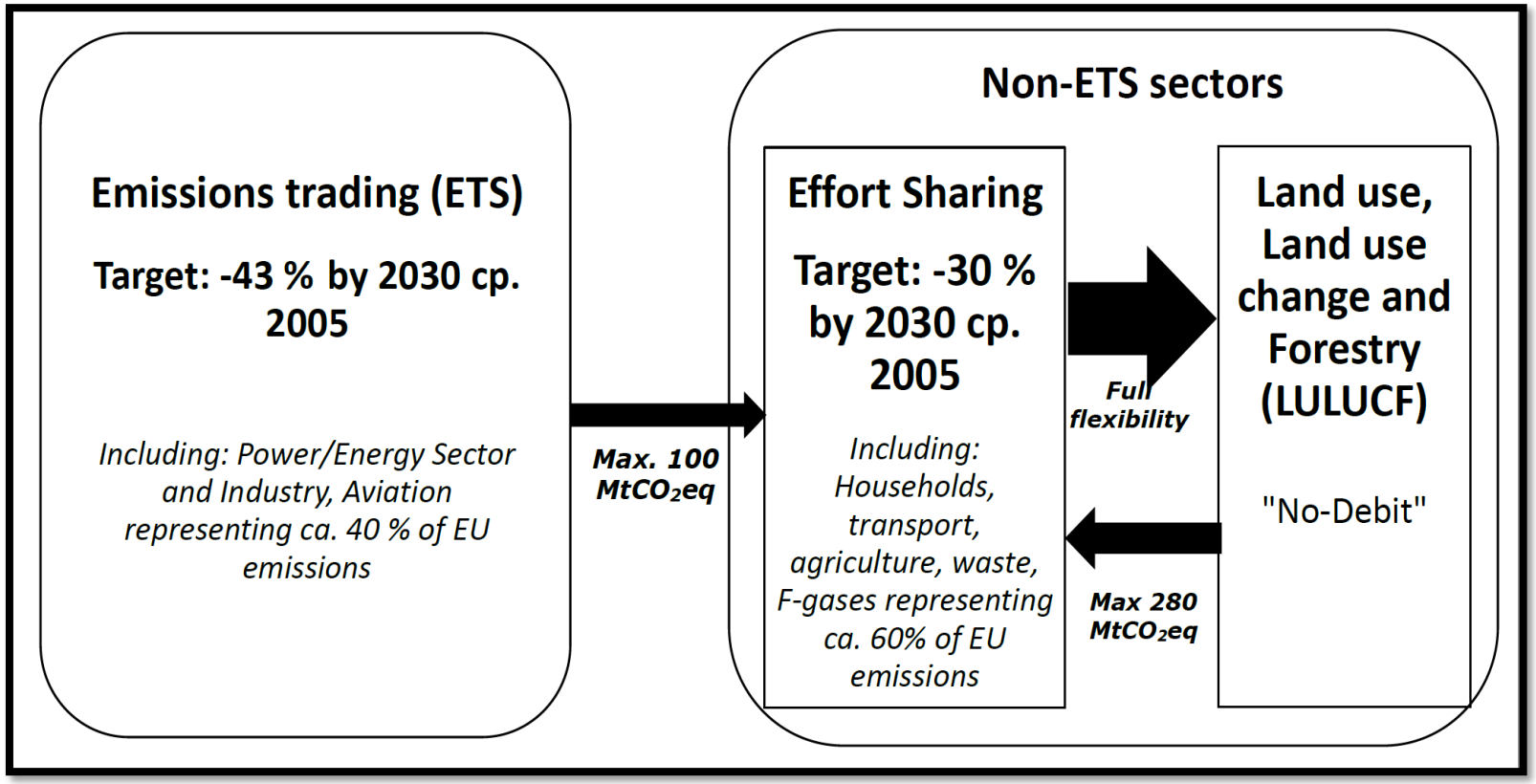
	1990 (in million tons)	2005	2017	2030
Energy supply	1869	92	68	56
Energy use in Manufacturing	841	76	57	55
Industrial processes and product use	517	90	73	66
Transport	787	124	120	113
Other energy use	854	93	78	65
Agriculture	542	80	80	80
Waste	236	85	58	42
International aviation	69	190	217	238
Total	**5715**	**94**	**78**	**70**

EU : Decoupling growth from emissions (1990-2016)



Source: European Commission based on data compiled by EEA

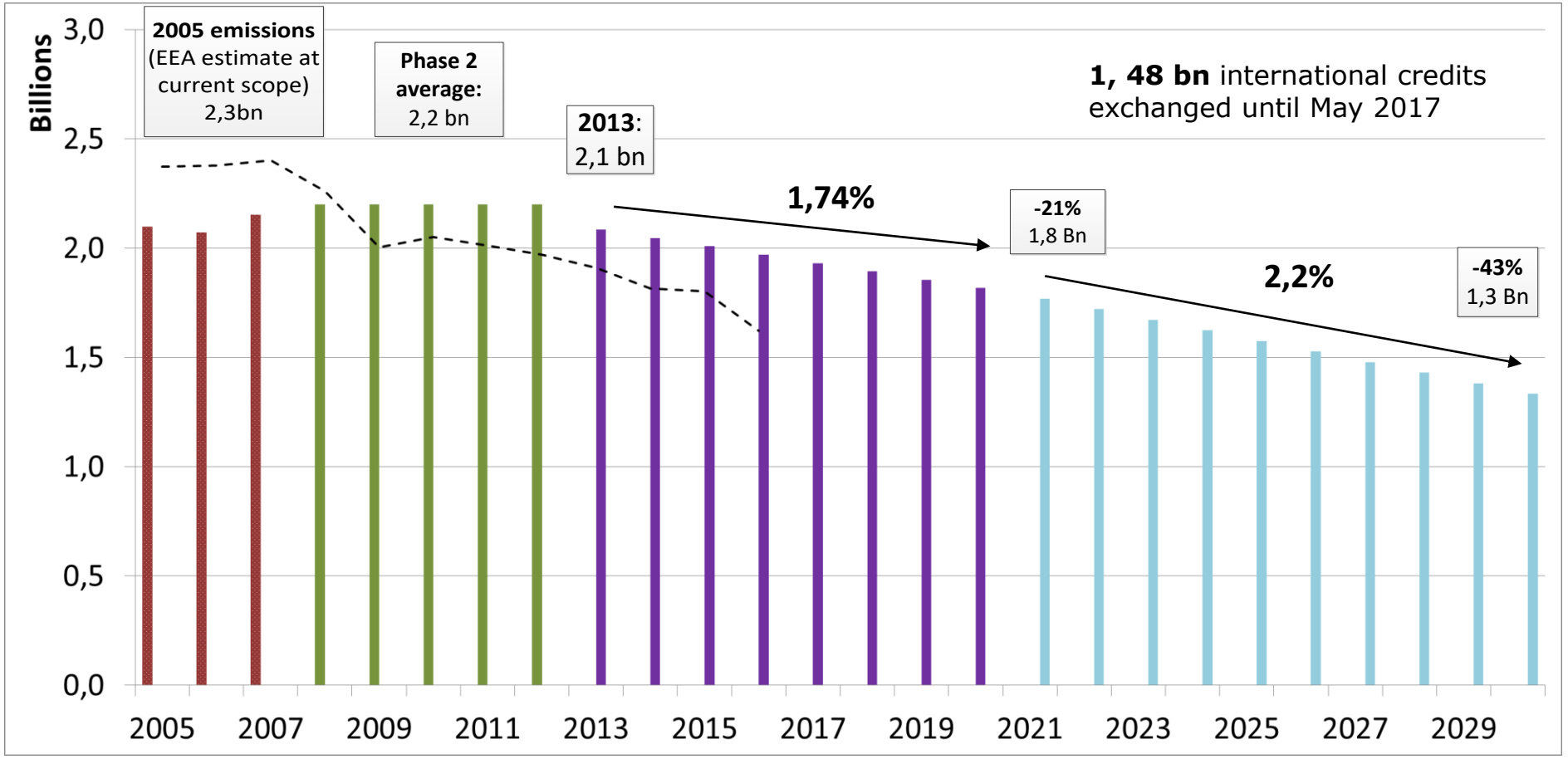
The three legislative pillars of the EU's 2030 climate policy framework



1. EU ETS in a nutshell

- Europe's key instrument to reduce emissions - in place for 10 years
- Cap on emissions of more than 11,000 energy-intensive installations across EU covering around 45% of EU CO_2 emissions;
- In the first decade of operation the EU ETS has delivered steady emission reductions, significant learning benefits and inspired many others to consider the use of carbon markets
- Continuing emissions reductions, EU close to 2020 target. But: surplus of around 2 bio allowances.
- Back-loading followed by MSR reform agreed to address surplus. Reform efforts increasingly reflected in price signal.

EU ETS: -26% emissions between 2005 and 2017

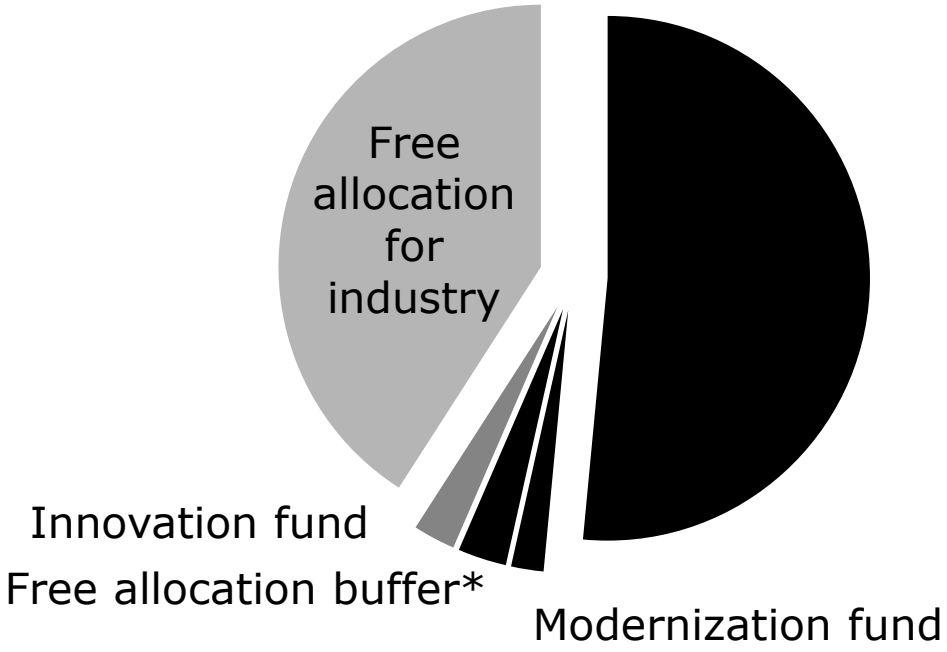


Note: emissions for phases 1 and 2 are EEA estimates for historic emissions, at the current scope of the ETS.

Development of the carbon price

Source: ICE

The structure of the EU ETS in Phase 4…



Total: 15.5 billion allowances

Key condition 1: protection of EU industry from carbon leakage… based on benchmarks

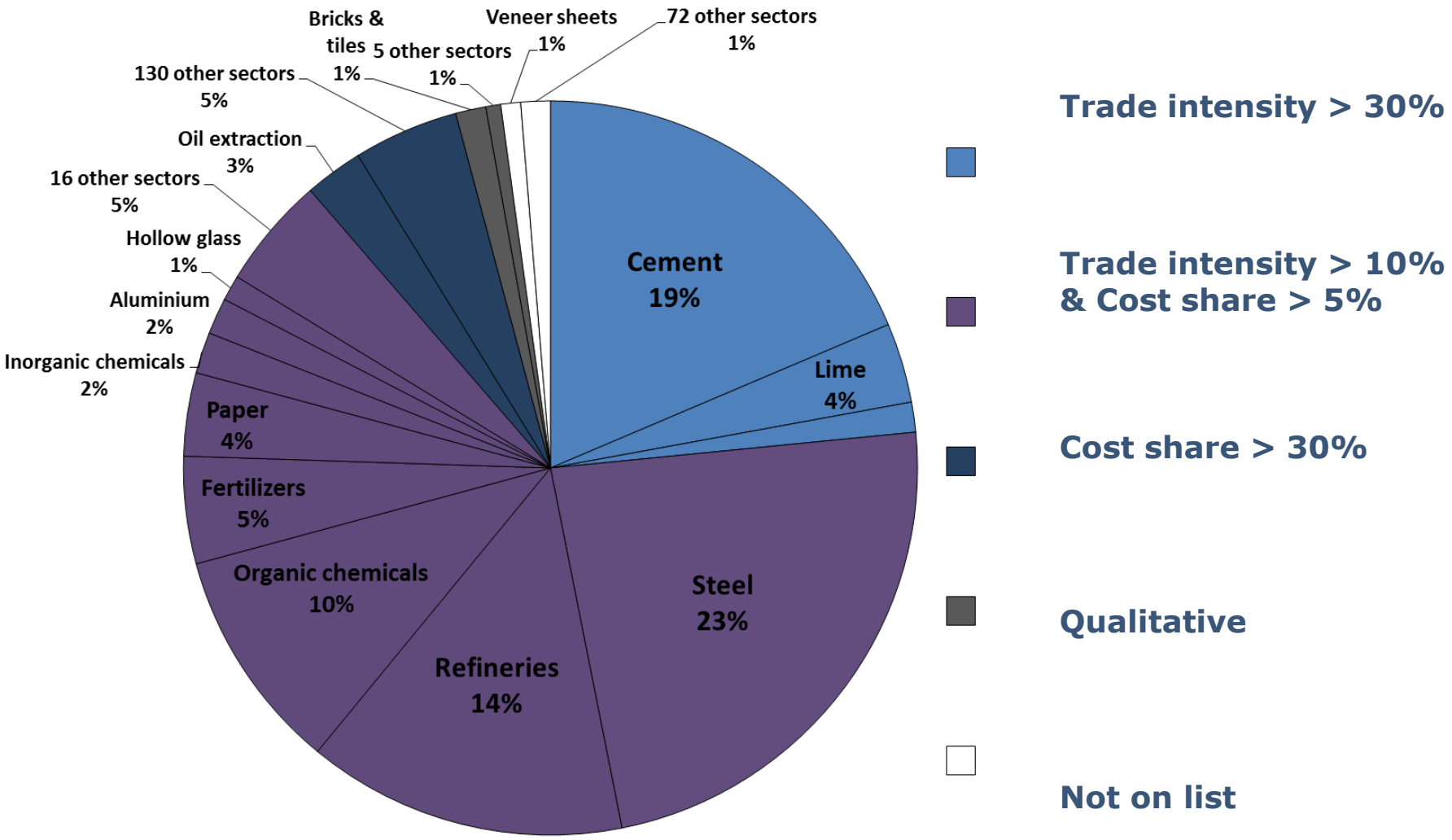
Free allocation for industry

- Over **6 bn allowances** will be given to industry for free (with a buffer of 450 mio allowances)

Update of benchmark values for free allocation

- Product benchmarks are based on **average GHG emissions of the best performing 10% of EU installations** determine the level of free allocation to each installation
- Current benchmarks relate to 2007-2008 and are outdated
- Updates for the values of all 54 benchmarks to preserve ambition level on the basis of data from 2016-2017 (for 2021-2025) and from 2021-2022 (for 2026-2030)

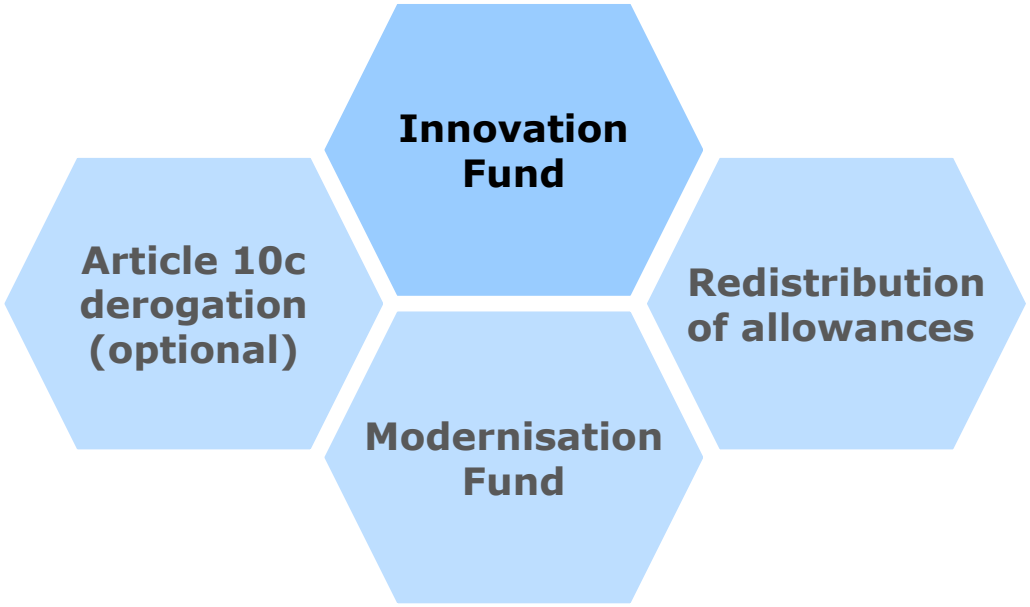
Share of free allocation based on carbon leakage list 2015-19



Key condition 2: redistribution of revenues to low-carbon innovation and modernisation

Support for carbon capture and storage (CCS) and renewables as well as breakthrough technologies in industry in all Member States

Support modernisation of energy sector through free allocation to the power sector in 10 lower income Member States



10% of allowances to be auctioned redistributed to lower income Member States

Support modernisation of energy systems and just transition in 10 lower income Member States

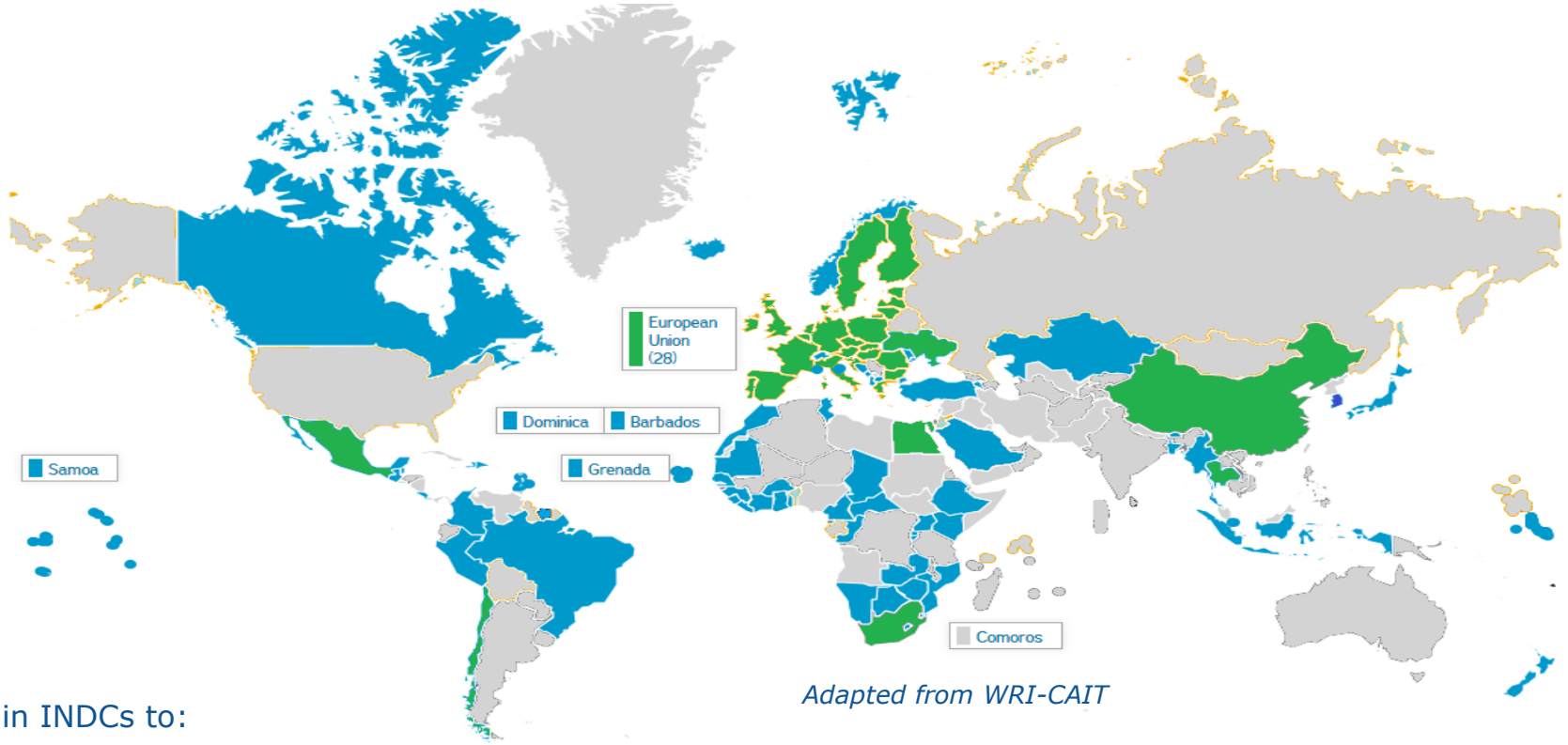
The Innovation Fund

Innovation Fund

- Initial endowment: **450 million allowances** (2021-2030)
- Increase with **NER 300 monetary leftovers** (later 2018)
- **50 million allowances** from MSR added in 2020
- Potential increase from free allocation 'buffer': **50 million allowances** added after 2025 to Innovation Fund if not needed for free allocation

The Innovation Fund can provide also significant resources to industry to invest in low-carbon innovation and reduce emissions

INDCs : References to carbon pricing



Adapted from WRI-CAIT

Ref. in INDCs to:

- Domestic ETS and carbon taxes
- Planned / possible use of int'al market mechanisms
- No specific references or no INDC yet

Florence Process: policy dialogue

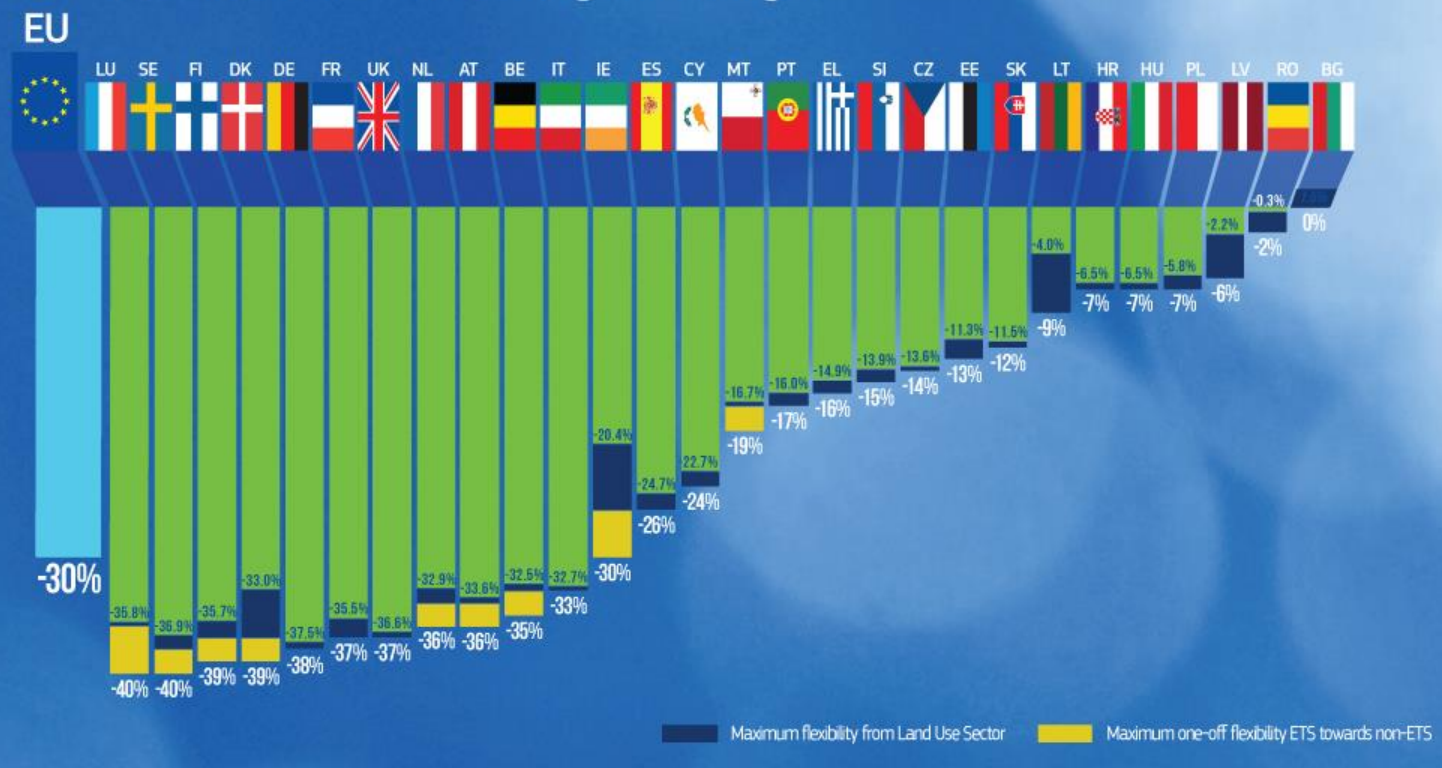
- **High Officials from EU, California, Canada, China and New Zealand, …**
- **Comparing notes and political experience with a view of strengthening convergence**
- **Issues:**
  - International competitiveness
  - Past experience and potential role of offsets, eg CORSIA
  - Internal re-distribution mechanisms
  - Strengthening modernisation of the energy sector
  - Stimulating innovation and structural change

2. For small emitters: binding 2030 targets for Member States

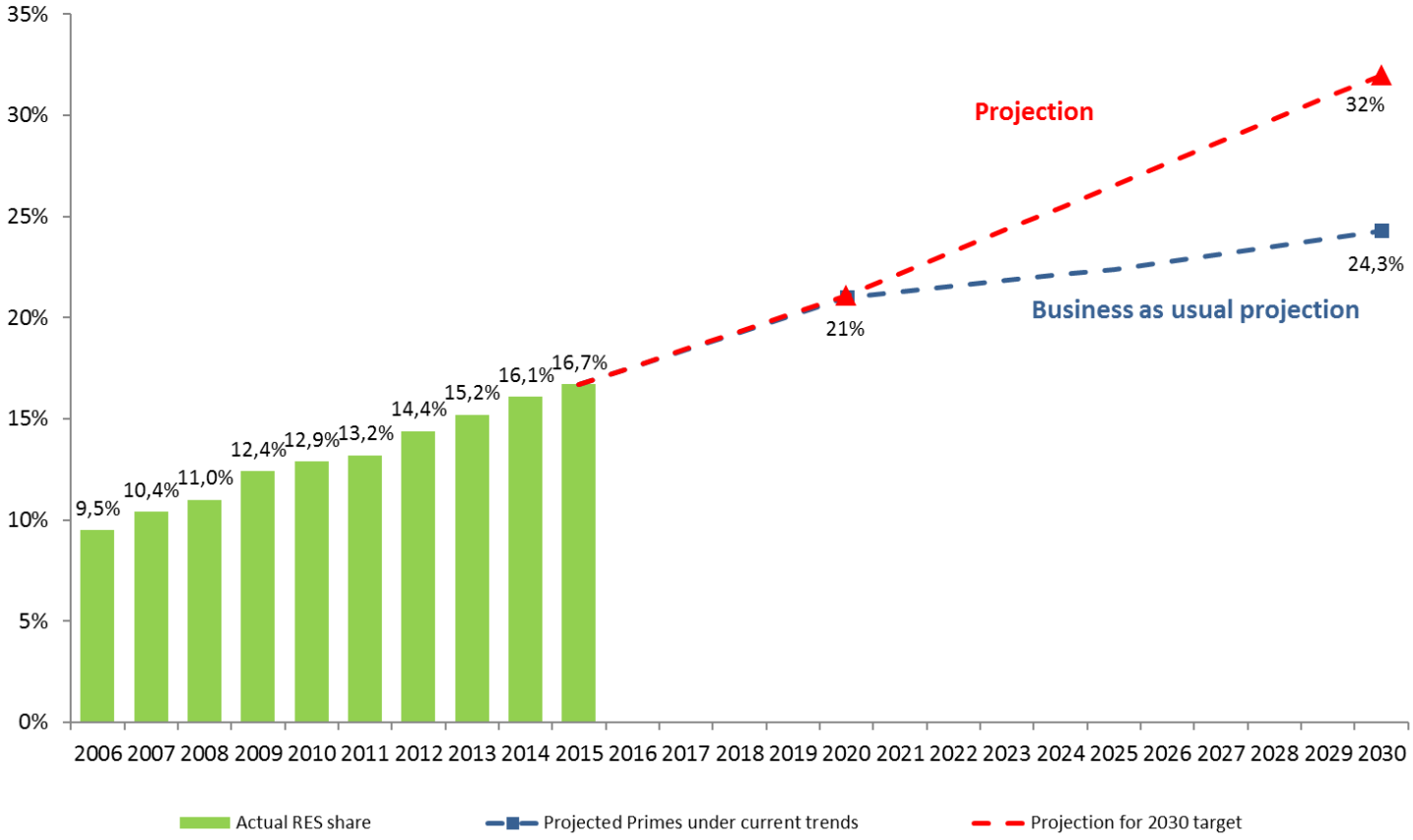
- **Range of 0 to -40% (compared to 2005)**
- **Based on GDP/capita**
- **Adjustments for cost-efficiency within group of high income Member States**
- **Limited access to ETS (100 million tons)**
- **Limited use of lulucf credits (280 million tons)**

2. Climate Action Regulation

Member States' specific emission reduction targets by 2030 compared to 2005 for sectors outside of the EU Emissions Trading System and new flexibilities for reaching those targets.

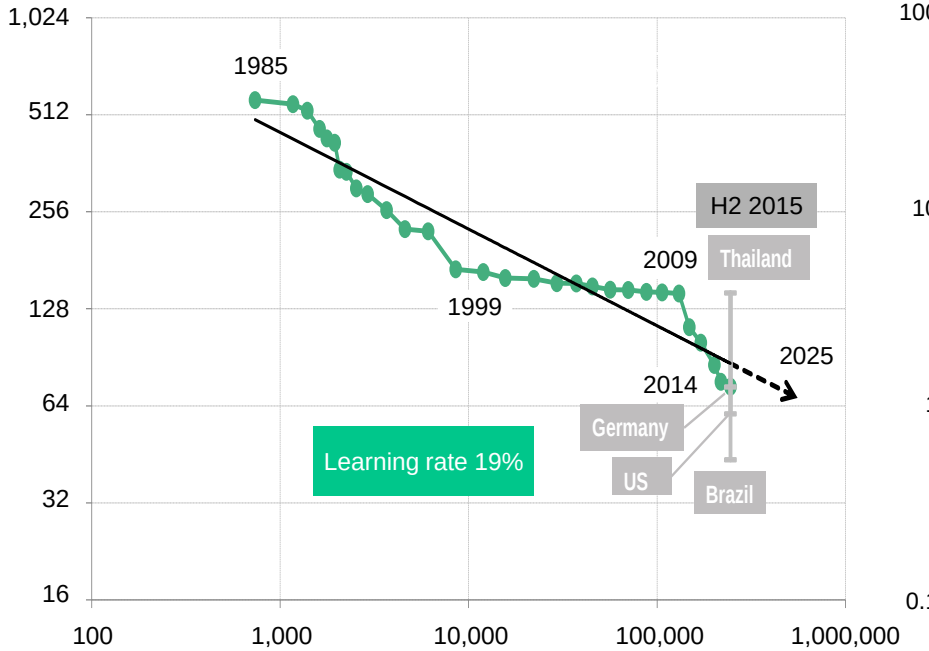


3. Renewable Energy



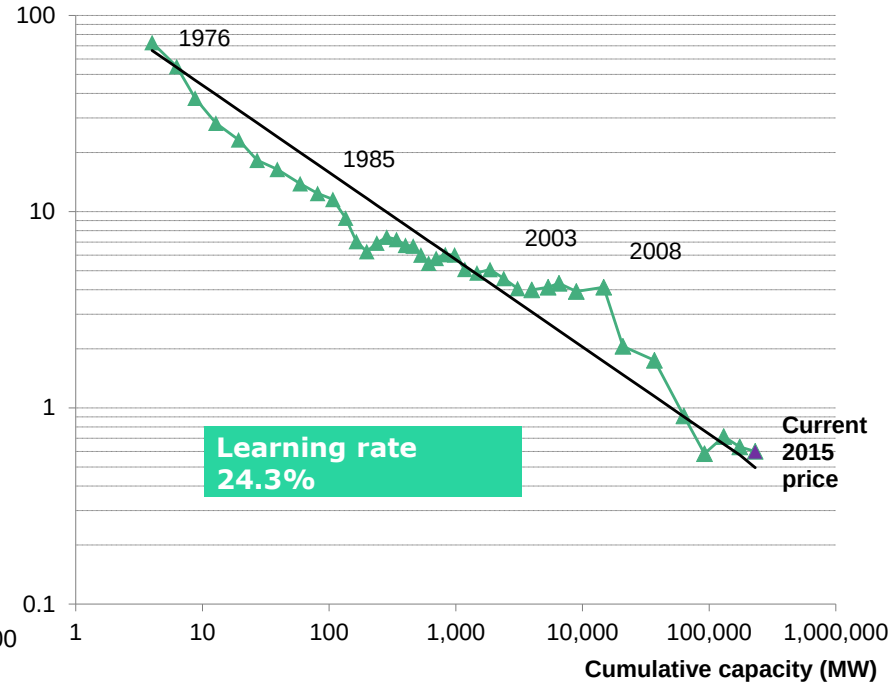
Renewables policies contribute to reduce technology cost

Onshore Wind Levelised Cost ($/MWh)



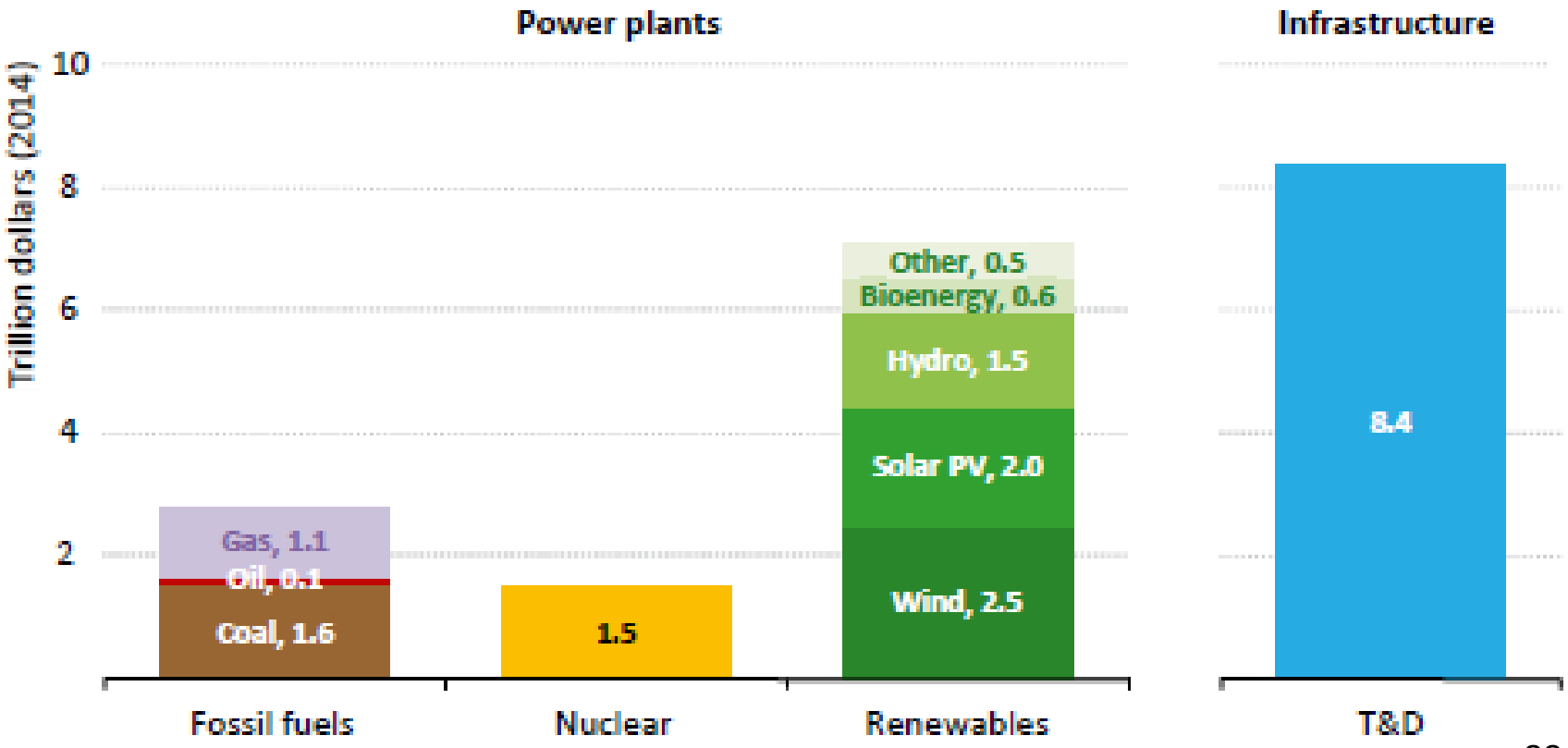
Note: Pricing data has been inflation corrected to 2014. It is assumed the debt ratio of 70%, cost of debt (bps to LIBOR) of 175, cost of equity of 8% Source: Bloomberg New Energy Finance

Solar PV Module Cost ($/W)

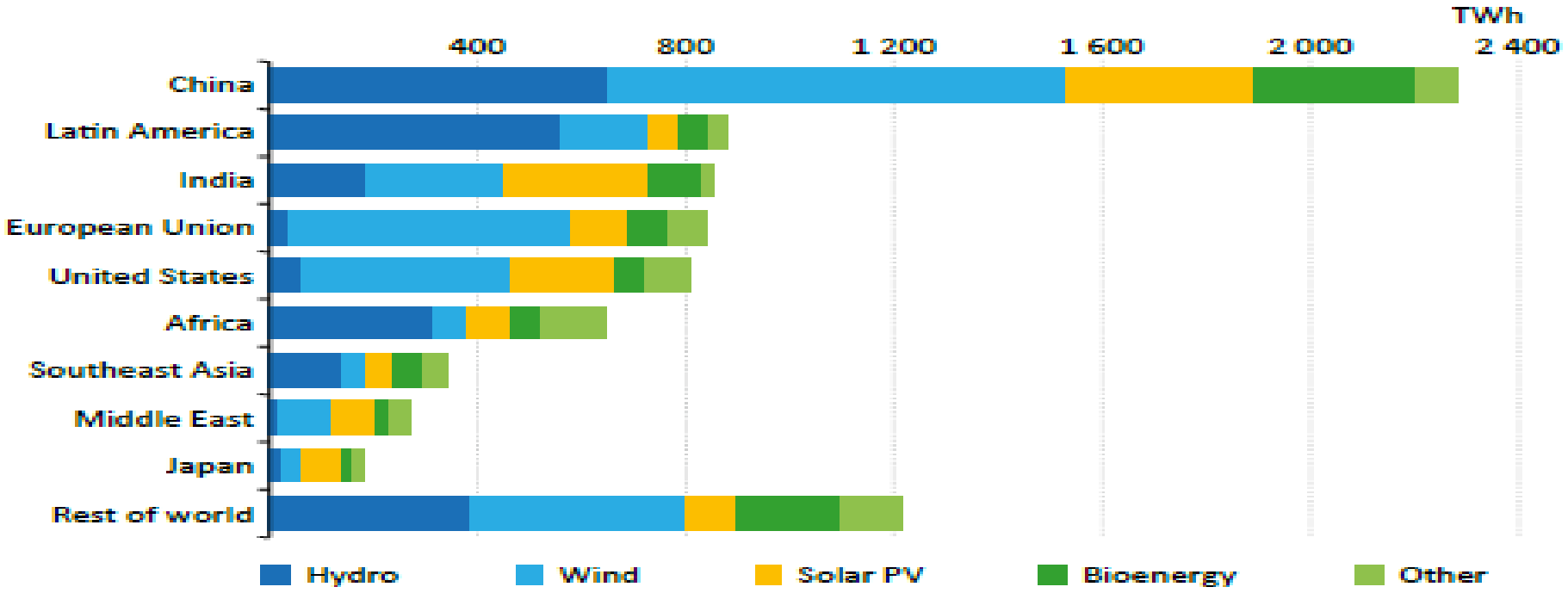


Note: Prices are in real (2015) USD. 'Current price' is $0.61/W Source: Bloomberg New Energy Finance, Maycock

Global cumulative investment in the power sector with INDCs 2015 – 2040 (IEA WEO2015)



Growth in renewable electricity generation with INDCs 2013-2040 (IEA WEO2015)



Note: Other includes geothermal, concentrating solar power and marine.

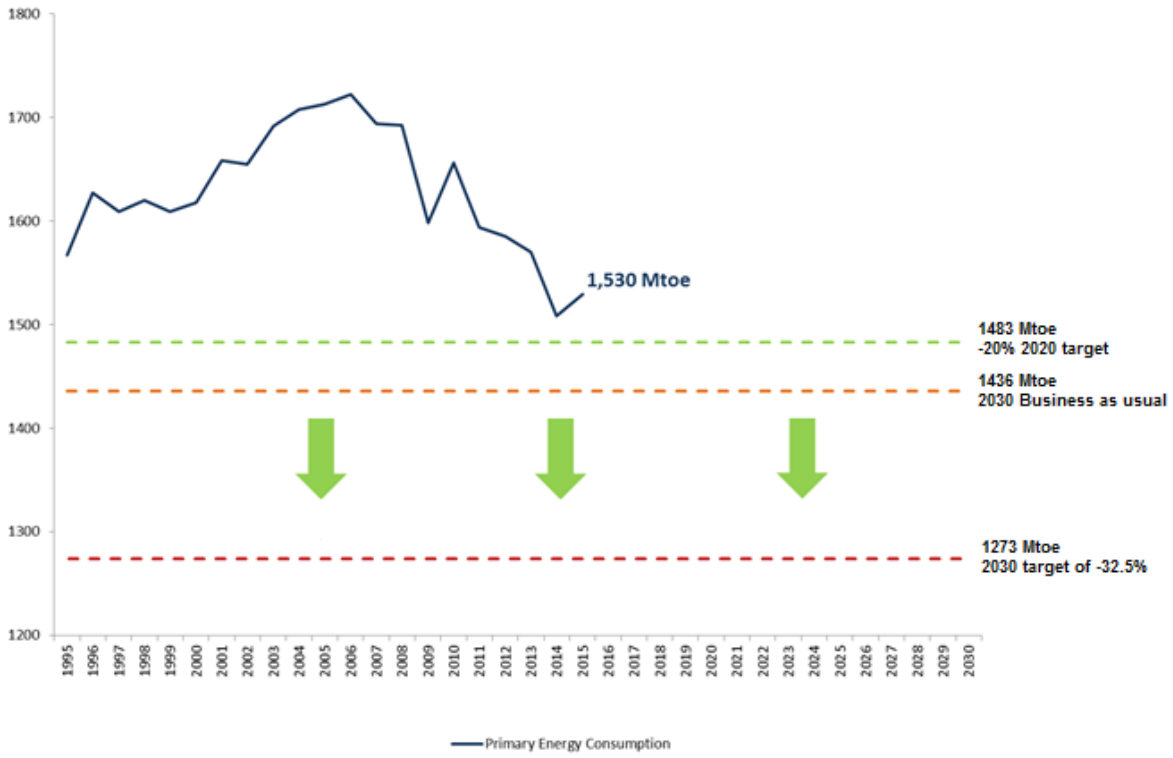
4 – A flexible European Electricity Market

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

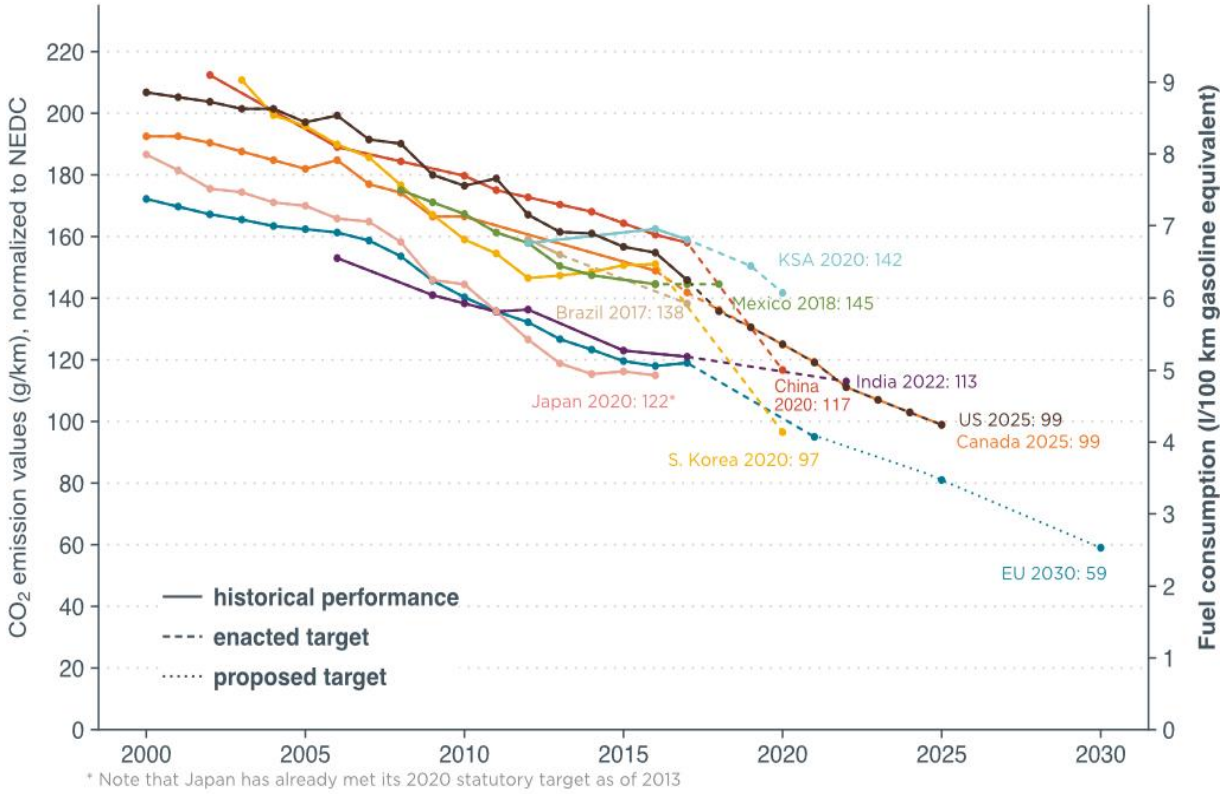
Promote **regional cooperation** and provide a true **European dimension to security of supply**

5. Energy Efficiency improvements



- Comprehensive policy framework (EED, EPBD, Eco-design,…)
- CO2&cars (130g/km in 2015, 95g/km in 2021, +/- 67g/km in 2030)
- Energy efficiency standards (light bulbs, appliances, electric motors…) & energy labelling (domestic appliances)
- Circular economy

CO2 emissions from cars

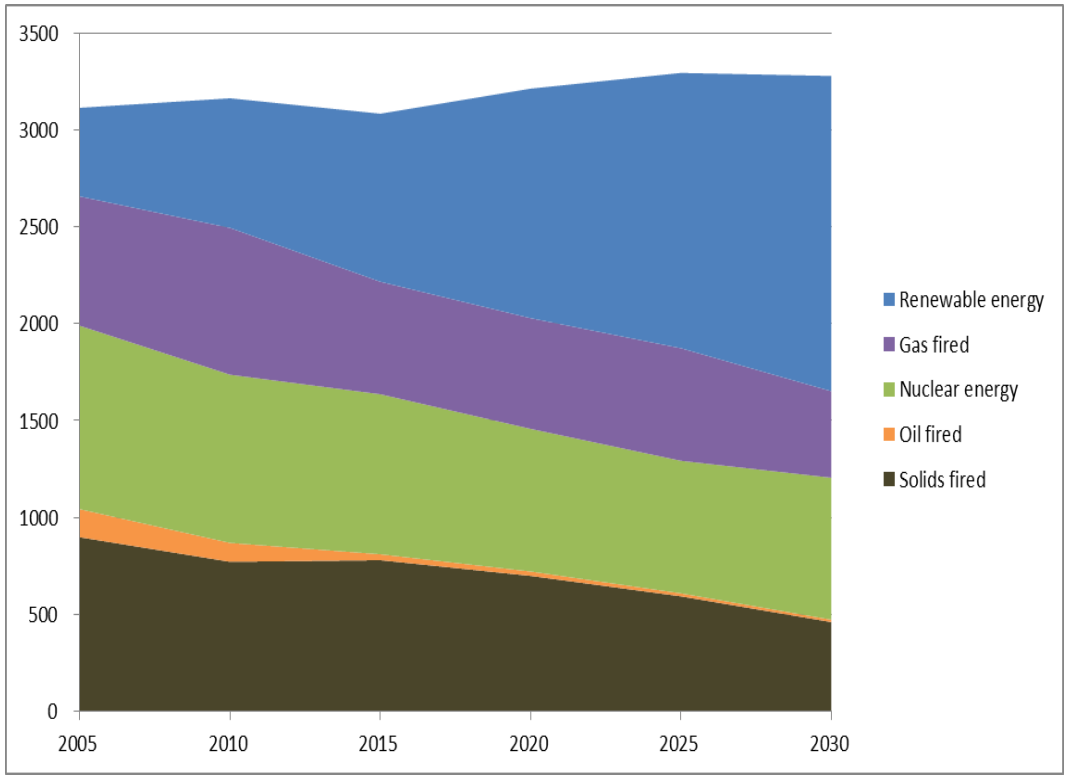


CO2&cars:

186g/km in 1995,
119g/km in 2015,
95g/km in 2021,
59g/km in 2030

EU power generation mix changes profoundly

- Significant development of renewable energy (mostly solar and wind), reaching up to 50% share
- Decline of electricity generation from solid fuels
- Gas-fired generation decreases until 2020, but increases thereafter



EU power generation (net) by fuel (Twh)

Source: PRIMES modelling, NTUA, E3M-Lab

EU Policy Experience (1)

- **All noses in the same direction**
  - *Paris Agreement*
  - *Role of European leaders (EU Council)*
- **Gradual introduction of policies/tightening up**
  - *2010s: Power generation: ETS, reduced coal and steep rise of renewables*
  - *2020s: Mobility: vehicles (cars, lorries), aviation, maritime*
  - *2030s: Industrial commodities (steel, cement, chemicals): trade questions?*
  - *Post 2030: Food production and consumption*
- **Putting a price on carbon is key**
  - *Efficiency/flexibility*
  - *Low cost options first*

EU Policy Experience (2)

- **Tackle distribution issues: turning potential losers into winners**
  - *Insert re-distribution into climate policies:*
    - *ETS: 1.5-2bn allowances redistributed towards low-income MS/regions*
    - *Effort sharing (and renewable) targets distributed according to GDP/cap*
  - *Recognise potential competitive problems of manufacturing industry*
    - *Put emphasis on low-carbon innovation (CCS, hydrogen, bio-chemistry…)*
  - *Mainstreaming climate into other policies:*
    - *Regional policy: e.g. coal mining regions*
    - *Energy, transport, industrial policy*
    - *Green Finance (public and private)*
    - *Social Policy (skills)*

Conclusions

- **The Paris Agreement (2015) is historically a unique chance to curb climate change globally to max 2°C**
  - Key: also emerging economies participating (China and others)
  - Problems: USA and Pres Trump
- **The real challenges:**
  - Implement what has been put in the Plans by the participating States
  - Implement Transparancy Rules agreed at COP24 in Katowice
- **EU adopted its policy for 2030: low carbon new technology is key**
  - Energy sector: less coal, more renewables, more energy efficiency
  - Challenges: transport/housing/industrial commodities/food

European Commission

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