



The EU – How does it work and what does it do (for us)

An overview of energy and climate policies

Liège (Be), 2 April 2019

*Dr Pierre Dechamps
Principal Policy Officer, Climate Action
Directorate General for Research and Innovation*



The EU – How does it work?

Neither the European Commission, nor any person acting on behalf of the Commission is responsible for the use which might be made of the information contained in this presentation. The views expressed here are those of the authors and do not necessarily reflect those of the European Commission.



The European Union in brief

At the core of the EU are the 28 Member States* that belong to the Union, and their citizens. The unique feature of the EU is that, although the Member States all remain sovereign and independent states, they have decided to pool some of their 'sovereignty' in areas where it makes sense to work together.

In practice, this means that the Member States delegate some of their decision-making powers to the shared institutions they have created, so that decisions on specific matters of common interest can be made democratically at EU level.

Several institutions are involved in making decisions at EU level, in particular:

the European Parliament, which represents the EU's citizens and is directly elected by them;
the European Council, which consists of the Heads of State or Government of the EU Member States;
the Council, which represents the governments of the EU Member States; and
the European Commission, which represents the interests of the EU as a whole.

*On 29 March 2017 the United Kingdom provided formal notification under Article 50 of the Treaty on European Union of its intention to leave the European Union and Euratom.



Main policy areas

Migration and asylum	Borders and security	Economy, finance and the euro	Business and industry	Single market
Digital economy and society	Employment and social affairs	Education and training	Research and innovation	Regional policy
Transport	Agriculture and rural development	Maritime affairs and fisheries	Climate action	Environment
Energy	Foreign affairs and security policy	EU enlargement	European neighbourhood policy	Trade
International cooperation and development	Humanitarian aid and civil protection	Justice and fundamental rights	Public health	Food safety
Consumers	Banking and financial services	Competition	Taxation	Customs
Culture and media	Youth	Sport	Budget	Fraud prevention

Research and Innovation



The European Parliament

The European Parliament is elected by EU citizens in direct elections held every 5 years (most recently in 2014). Each Member State elects a number of Members (MEPs); seats are allocated on the basis of the population of each Member State. The Parliament meets in both Brussels and Strasbourg. The current European Parliament President is Antonio Tajani.

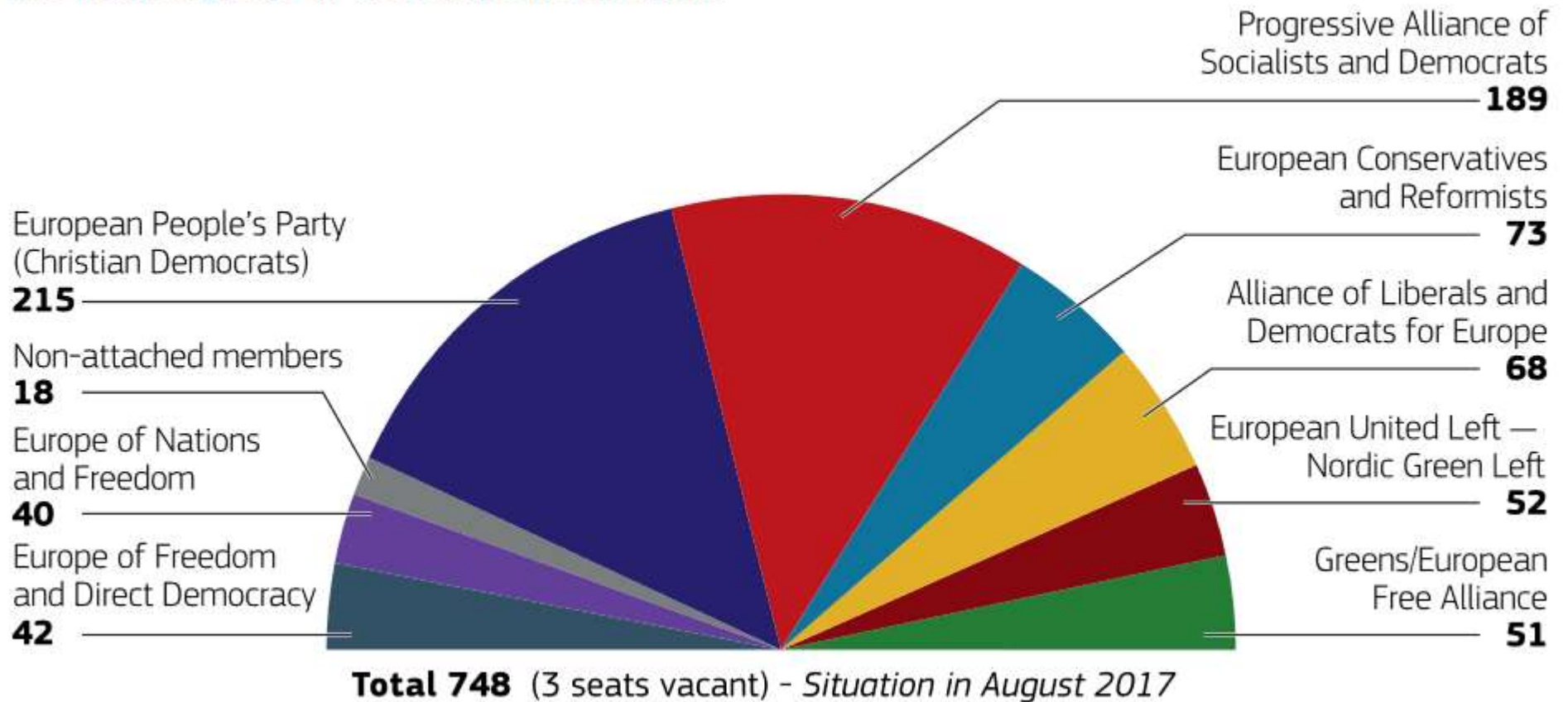
MEPs organise themselves into political groups, and also into committees that examine proposals for new legislation in different policy areas.

In terms of decision-making, the Parliament is responsible for the following:

- Approving, amending or rejecting EU laws, together with the Council of the European Union, based on European Commission proposals. The Parliament also shares with the Council equal responsibility for adopting the EU budget (proposed by the European Commission).
- Deciding on international agreements.
- Deciding on enlargements of the EU.
- Electing the President of the Commission, based on a proposal from the Member States, and then approving the full Commission.
- Reviewing the Commission's work programme and requesting that it propose legislation.



The political groups in the European Parliament





The Council

Together with the European Parliament, the Council is the main decision-making body of the EU. It is also known as the Council of the European Union. In the Council, government ministers from each Member State meet to discuss, amend and adopt laws and to coordinate policies. The ministers have the authority to commit their governments to the actions agreed on in the meetings. The presidency of the Council rotates among the EU Member States every 6 months, and is responsible for chairing all Council meetings and setting the agendas.

- negotiates and adopts EU laws, together with the EP, based on proposals of the European Commission;
- coordinates EU countries' policies;
- develops the EU's foreign and security policy, based on European Council guidelines;
- concludes agreements between the EU and other countries or international organisations;
- adopts the annual EU budget jointly with the European Parliament.

The ministers who attend are those that deal with the policy being discussed. For example, environment ministers meet in the Environment Council.

Decisions usually require a qualified majority, which is defined as 55 % of the Member States representing at least 65 % of the total EU population. To block a decision at least four countries are needed, representing at least 35 % of the EU's population. However, certain topics like foreign policy and taxation require a unanimous vote and a simple majority is required for procedural and administrative issues.



The European Commission

The European Commission is the main institution that runs the day-to-day business of the EU. It is the only EU institution that can propose.

The Commission is composed of the College of 28 Commissioners, one from each EU Member State, and including the President (since 2014, Jean-Claude Juncker) and Vice-Presidents.

Once the Commission President is nominated, the Council of the European Union nominates the other 27 Members of the Commission in agreement with the nominated President, and the 28 Members as a single body are then subject to a vote of approval by the European Parliament.

The staff of the Commission are the equivalent of the civil service in a Member State, and are organised into departments, known as directorates-general and services, similar to ministries at national level.

The decisions of the Commission are made based on the collective responsibility of the College of Commissioners.

In general decisions are made by consensus, but votes can also take place. In this case, decisions are made by simple majority, with every Commissioner having one vote. The relevant directorate-general then takes up the subject. This is usually done in the form of draft legislative proposals.



European
Commission



**JEAN-CLAUDE
JUNCKER**

PRESIDENT



**FRANS
TIMMERMANS**

FIRST VICE-PRESIDENT

*Better Regulation, Interinstitutional Relations,
Rule of Law and the Charter of Fundamental Rights*



**FEDERICA
MOGHERINI**

VICE-PRESIDENT

*HIGH REPRESENTATIVE
of the Union for Foreign Affairs and Security Policy*



**ANDRUS
ANSIP**

VICE-PRESIDENT
Digital Single Market



**MAROŠ
ŠEFCOVIČ**

VICE-PRESIDENT
Energy Union



**VALDIS
DOMBROVSKIS**

VICE-PRESIDENT

*Euro and Social Dialogue
Financial Stability
Financial Services
and Capital Markets Union*



**JYRKI
KATAINEN**

VICE-PRESIDENT
*Jobs, Growth, Investment
and Competitiveness*



**GÜNTHER
OETTINGER**

*Budget &
Human Resources*



**JOHANNES
HAHN**

*European Neighbourhood
Policy and Enlargement
Negotiations*



**CECILIA
MALMSTRÖM**

Trade



**NEVEN
MIMICA**

*International
Cooperation
and Development*



**MIGUEL ARIAS
CAÑETE**

*Climate Action and
Energy*



**KARMENU
VELLA**

*Environment, Maritime
Affairs and Fisheries*



**VYTENIS
ANDRIUKAITIS**

Health and Food Safety



**DIMITRIS
AVRAMOPOULOS**

*Migration, Home Affairs
and Citizenship*



**MARIANNE
THYSSEN**

*Employment,
Social Affairs, Skills and
Labour Mobility*



**PIERRE
MOSCOVICI**

*Economic and Financial
Affairs, Taxation and
Customs*



**CHRISTOS
STYLIANIDES**

*Humanitarian Aid
and Crisis Management*



**PHIL
HOGAN**

*Agriculture
and Rural Development*



**VIOLETA
BULC**

Transport



**ELŻBIETA
BIENKOWSKA**

*Internal Market, Industry,
Entrepreneurship and
SMEs*



**VĚRA
JOUROVÁ**

*Justice, Consumers
and Gender Equality*



**TIBOR
NAVRACSCIS**

*Education, Culture, Youth
and Sport*



**CORINA
CREȚU**

Regional Policy



**MARGRETHE
VESTAGER**

Competition



**CARLOS
MOEDAS**

*Research, Science
and Innovation*



**JULIAN
KING**

Security Union



**MARIYA
GABRIEL**

*Digital Economy
and Society*

European Commission 2014-19

#teamJunckerEU

Research and
Innovation

10 priorities

-  01 A new boost for jobs, growth and investment.
-  02 A connected digital single market.
-  03 A resilient Energy Union with a forward-looking climate change policy.
-  04 A deeper and fairer internal market with a strengthened industrial base.
-  05 A deeper and fairer Economic and Monetary Union (EMU).
-  06 A reasonable and balanced free trade agreement with the United States.
-  07 An area of Justice and Fundamental Rights based on mutual trust.
-  08 Towards a new policy on migration.
-  09 Europe as a stronger global actor.
-  10 A Union of democratic change.



Sources: European Parliament, European Commission



EU Decisions

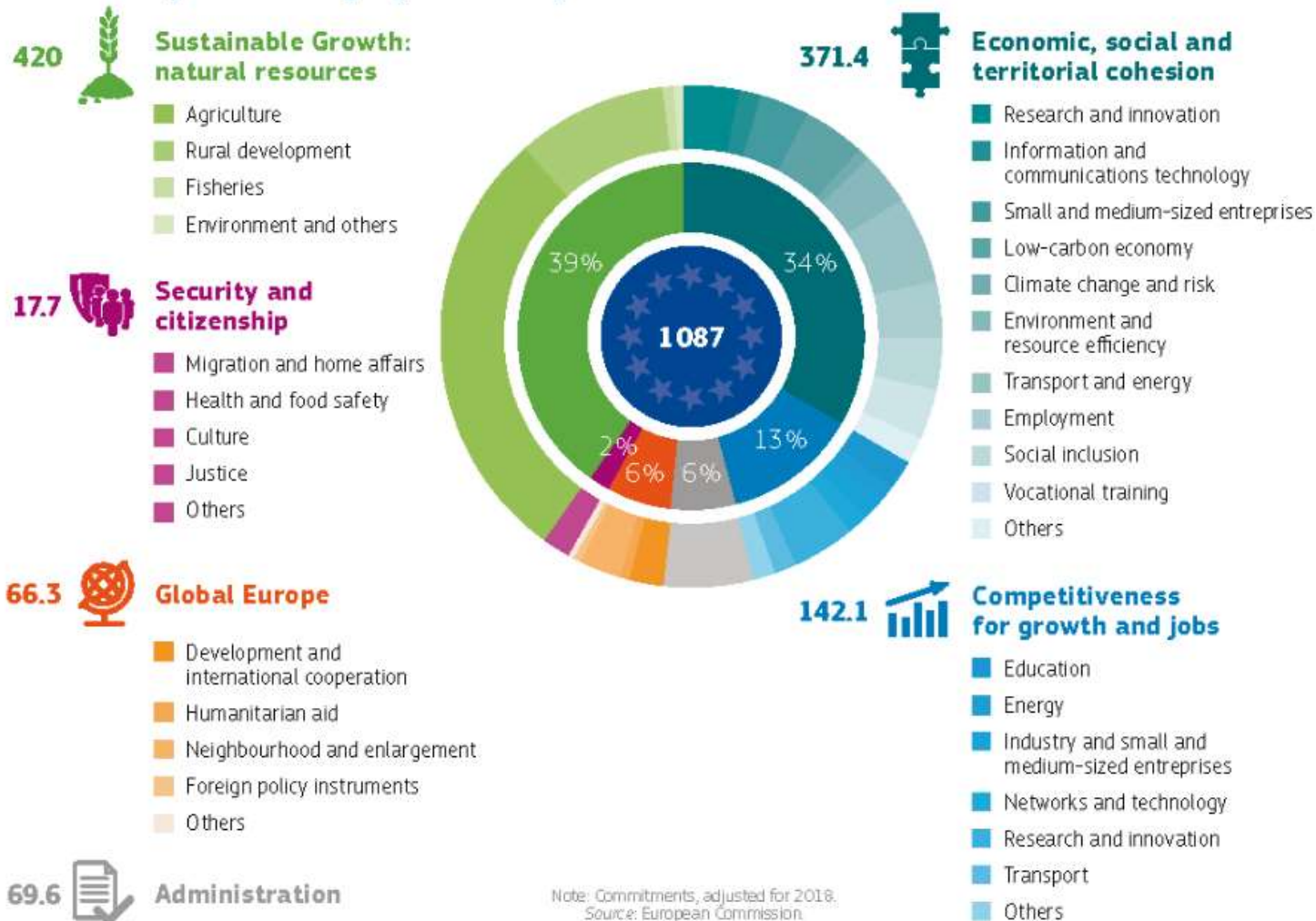
Various institutions take part in the EU's decision-making process, with the European Parliament, the Council and the European Commission at the forefront.

Usually the European Commission proposes new legal acts that are then adopted by the Parliament and the Council. On some occasions, the Council may do this alone.

There are several types of legal acts, which are applied in different ways.

- A regulation is a law that is applicable and binding in all Member States directly. It does not need to be passed into national law by the Member States, although national laws may need to be changed to avoid conflicting with the regulation.
- A directive is a law that binds the Member States, or a group of Member States, to achieve a particular objective. Usually, directives must be transposed into national law to become effective. Significantly, a directive specifies the result to be achieved: it is up to the Member States individually to decide how this is done.
- A decision can be addressed to Member States, groups of people or even individuals. It is binding in its entirety. Decisions are used, for example, to rule on proposed mergers between companies.
- Recommendations and opinions enable the EU institutions to express a view to Member States, and in some cases to individual citizens, that is not binding and does not create any legal obligation on the person or entity addressed.

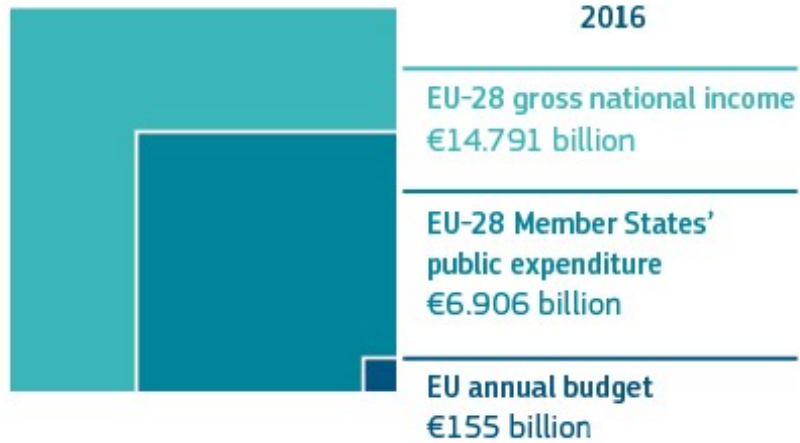
Areas financed by the EU budget (2014-2020) in billion EUR



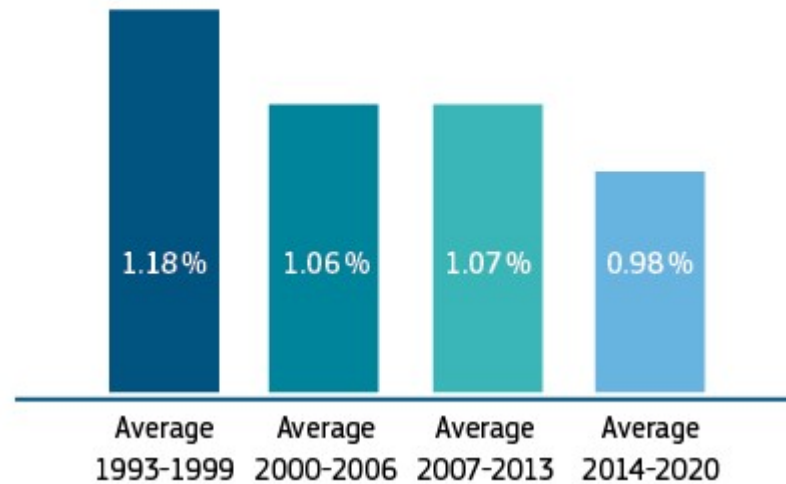
Note: Commitments, adjusted for 2018.
Source: European Commission.



The EU budget compared to overall EU income and public spending



The size of the EU budget as a percentage of gross national income





An overview of energy and climate policies



Outline

- ❖ Initial objectives - The 2008 Energy and Climate Change Package
- ❖ A Policy Framework for Climate and Energy from 2020 to 2030
- ❖ Initial Long-term Vision and Objective - The 2050 Roadmap of 2011
- ❖ « A Clean Planet for All » Communication
- ❖ International Climate negotiations

Neither the European Commission, nor any person acting on behalf of the Commission is responsible for the use which might be made of the information contained in this presentation. The views expressed here are those of the authors and do not necessarily reflect those of the European Commission.



Energy - Legal Basis – Art 194 - consolidated version of the TFEU

1. In the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to:

- (a) ensure the functioning of the energy market;
- (b) ensure security of energy supply in the Union;
- (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy; and
- (d) promote the interconnection of energy networks.

2. Without prejudice to the application of other provisions of the Treaties, the European Parliament and the Council, acting in accordance with the ordinary legislative procedure, shall establish the measures necessary to achieve the objectives in paragraph 1. Such measures shall be adopted after consultation of the Economic and Social Committee and the Committee of the Regions.

Such measures shall not affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, without prejudice to Article 192(2)(c).

3. By way of derogation from paragraph 2, the Council, acting in accordance with a special legislative procedure, shall unanimously and after consulting the European Parliament, establish the measures referred to therein when they are primarily of a fiscal nature.



Climate - Legal Basis – Art 191 to 193 - consolidated version of the TFEU

1. Union policy on the environment shall contribute to pursuit of the following objectives:

- preserving, protecting and improving the quality of the environment,
- protecting human health,
- prudent and rational utilisation of natural resources,
- promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.

2. Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

In this context, harmonisation measures answering environmental protection requirements shall include, where appropriate, a safeguard clause allowing Member States to take provisional measures, for non-economic environmental reasons, subject to a procedure of inspection by the Union.



Climate - Legal Basis – Art 191 to 193 - consolidated version of the TFEU

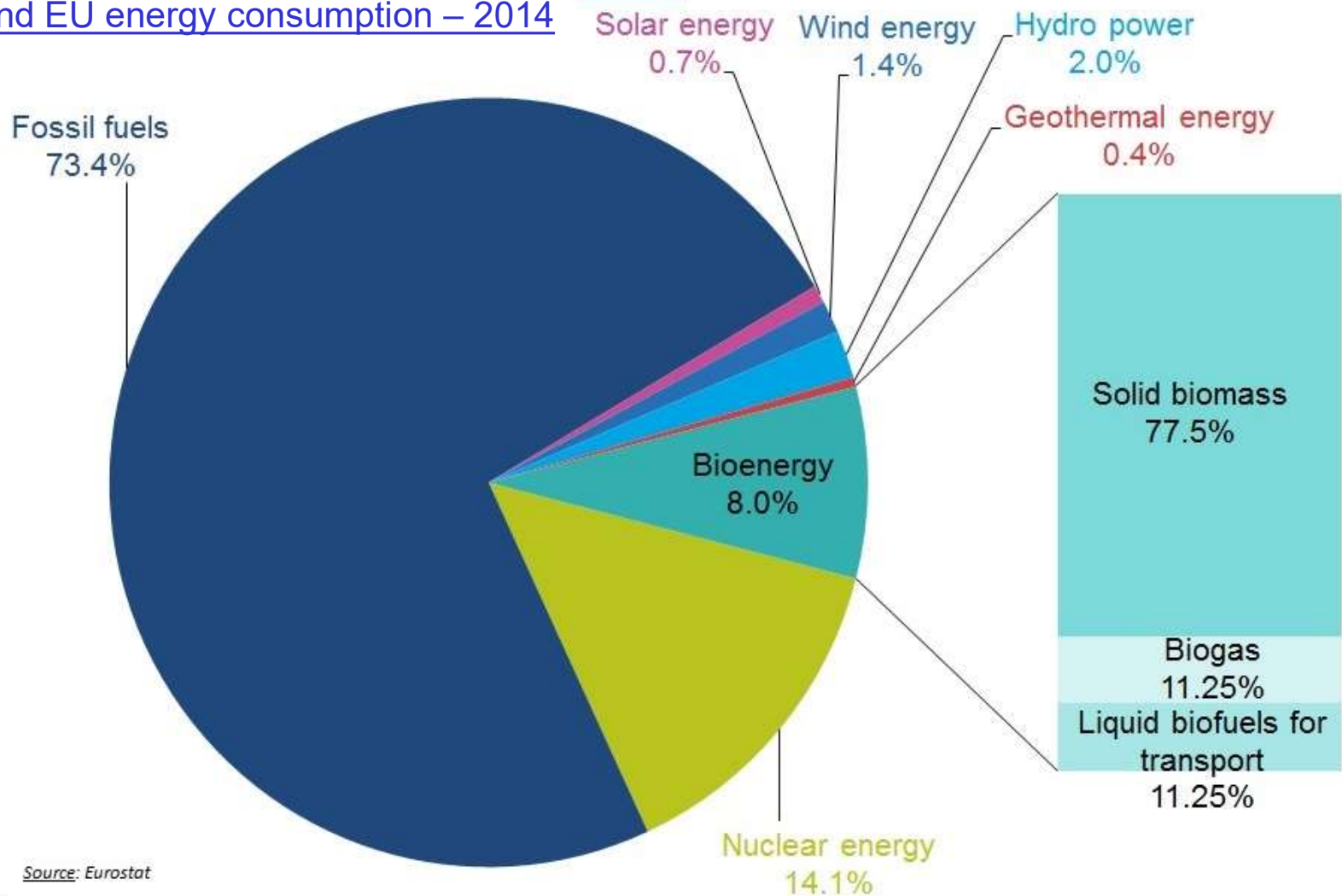
3. In preparing its policy on the environment, the Union shall take account of:

- available scientific and technical data,
- environmental conditions in the various regions of the Union,
- the potential benefits and costs of action or lack of action,
- the economic and social development of the Union as a whole and the balanced development of its regions.

4. Within their respective spheres of competence, the Union and the Member States shall cooperate with third countries and with the competent international organisations. The arrangements for Union cooperation may be the subject of agreements between the Union and the third parties concerned.

The previous subparagraph shall be without prejudice to Member States' competence to negotiate in international bodies and to conclude international agreements.

Gross inland EU energy consumption – 2014



Source: Eurostat



Unbundling - Towards Efficient Energy Markets

Objective: a complete and well functioning internal market in electricity and natural gas

- effective separation of supply and production activities from the network operation – now “third way”
- further harmonisation of powers and enhanced independence of the national energy regulators
- creation of a mechanism for transmission systems operators to improve the coordination of network operation and grid security, cross-border trade and grid operations
- greater transparency in energy market operations



Initial objectives

- The 2008 Energy and Climate Change Package



The Energy and Climate Change Package

Adopted at the end of 2008:

20% GHG emissions in 2020, compared to 1990 (legally binding)

ETS sectors, and non-ETS sectors

20% share of renewables by 2020 (legally binding)

20% more energy efficiency by 2020

including 10% RES derived fuels in transport

+

The CO₂ Geological Storage Directive

+

Inclusion of CCS in the ETS phase III

= The legal framework for a carbon constrained economy, a low carbon growth



CO2 in the Emission Trading Scheme

Objective: To improve the functioning of the ETS

- ⊙ A better definition of the “combustion installation”
- ⊙ The inclusion of greenhouse gases other than CO₂
- ⊙ The inclusion of petrochemicals, ammonia and aluminium
 - ⊙ A market covering 150 million tons of CO₂ equivalent per year
- ⊙ Auctioning the emission allowances for the power sector from 2013
 - ⊙ A potential revenue of 30000 to 50000 million €/yr for Member States, 20% of which must be re-injected in low greenhouse gas technologies
- ⊙ The inclusion of CO₂ capture and storage from 2013 in the ETS
 - ⊙ With a specific directive on the geological storage of CO₂
- ⊙ Specific arrangements for energy intensive industries to maintain their competitiveness if there is no global climate change agreement in place by 2011...

Evolution of ETS Prices





CO2 outside of the ETS

Objective: To decrease the greenhouse gas emissions not covered by the ETS by 10% by 2020

■ « burden » sharing between the Member States on the basis of their CO2 emissions in 2005 and of their GDP projections

■ Examples: DE : -14% FR : -14% UK : -16% PL : +14%

■ Reporting and verifications mechanisms for the above

■ The possibility to use CDMs

■ Limited to 3% per year of the CO2 emissions of the country in 2005 if there is no international agreement in place by 2011

■ Unlimited if there is an international agreement



Renewables

Objective: to get to 20% RES by

•« Burden » sharing between the Member States, basis of shares of RES in 2005 and GDP projections

•Examples:

- DE: 5.8% in 2005, 18% in 2020
- FR: 10.3% in 2005, 23% in 2020
- UK: 1.3% in 2005, 15% in 2020
- PL: 7.2% in 2005, 15% in 2020

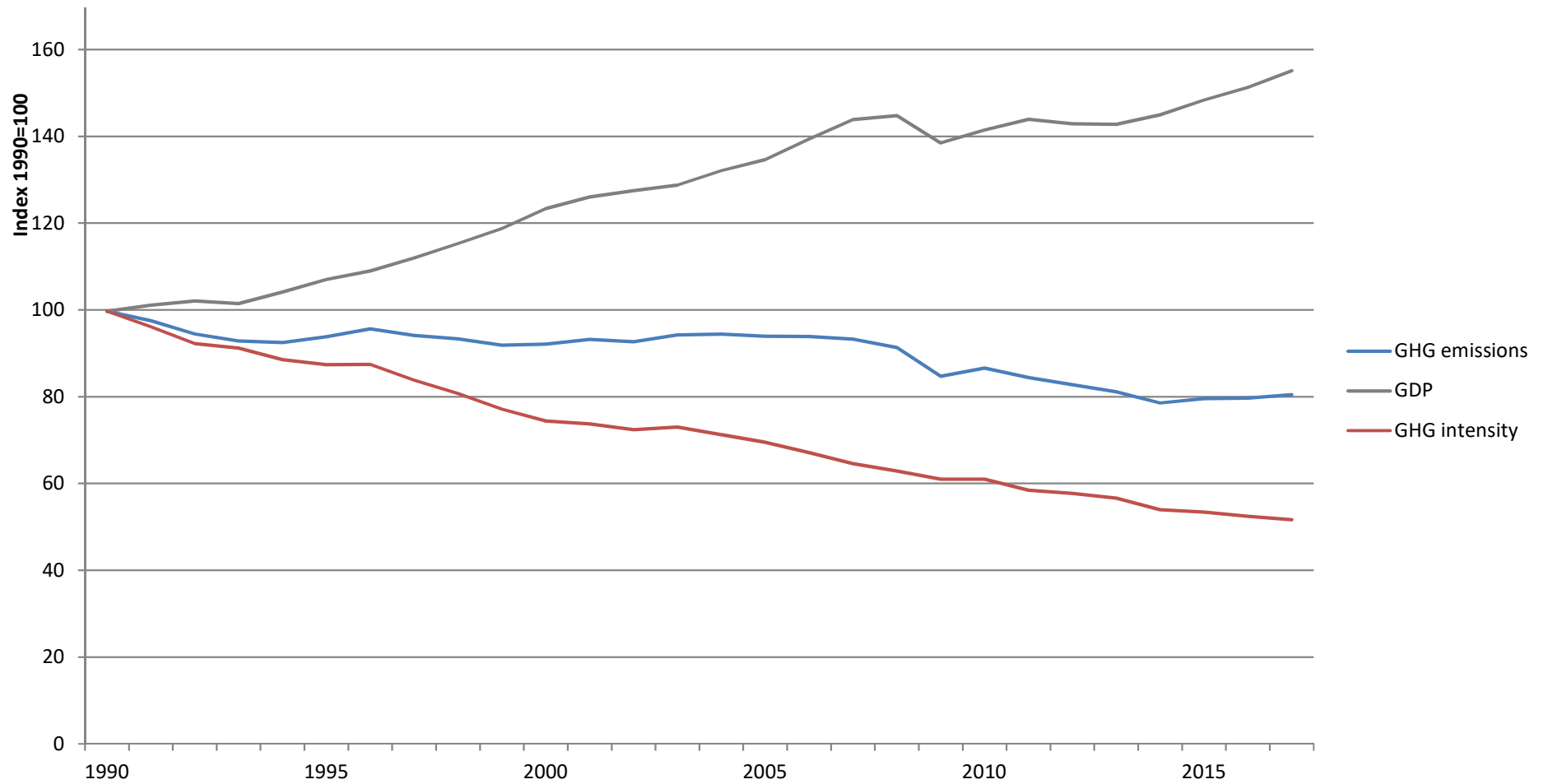
•Possibility of "statistical transfers" between Member States

•A specific 10% target for sustainable renewables derived fuels in transport

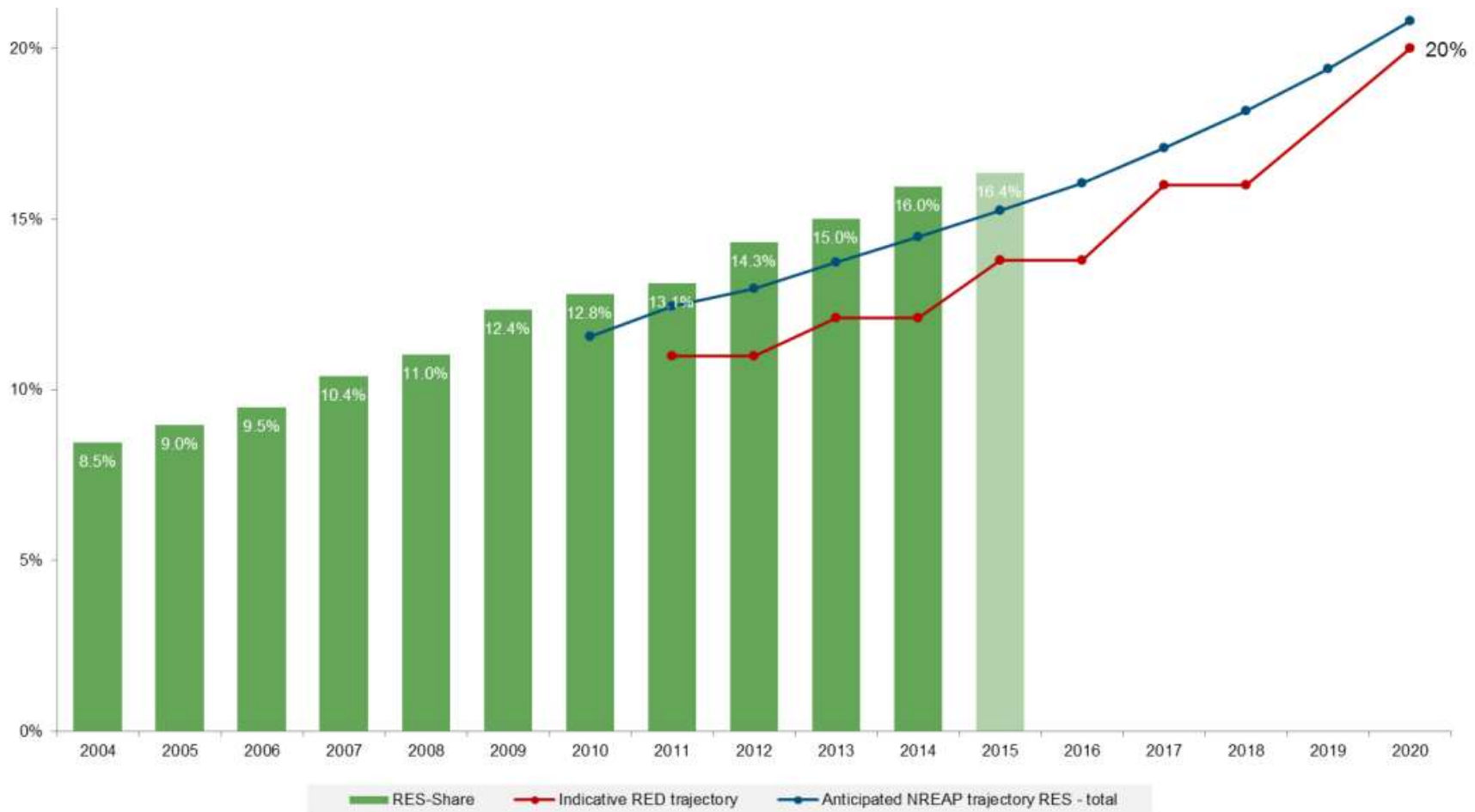
•Looks like we are on track to the 202 objective, but we will not get there without additional measures (it would plateau to less than 20%)



The EU is gradually decarbonising

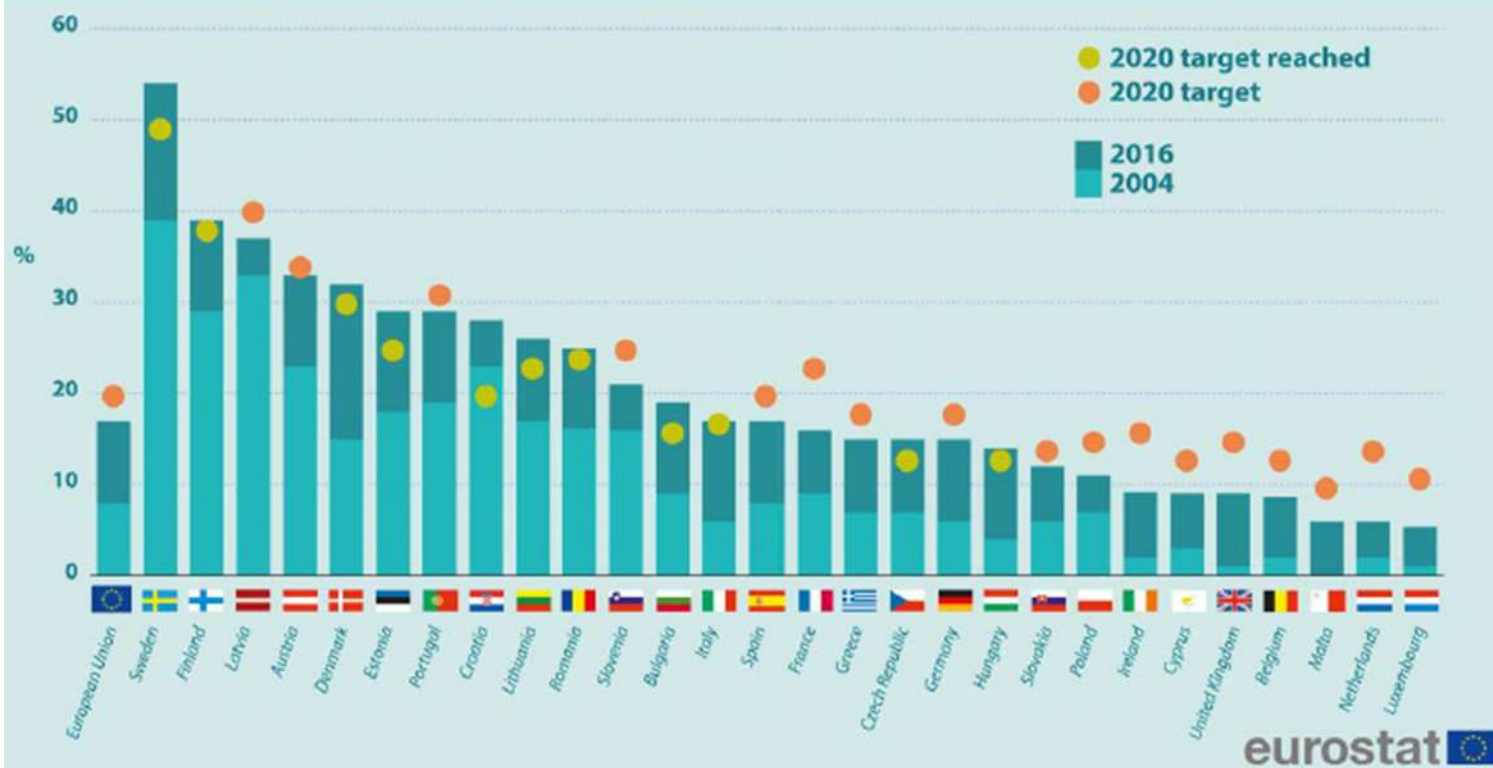


Renewable energy shares in the European Union vs. Renewable Energy Directive and National Renewable Energy Action Plan Trajectories



Share of energy from renewable sources in the EU Member States

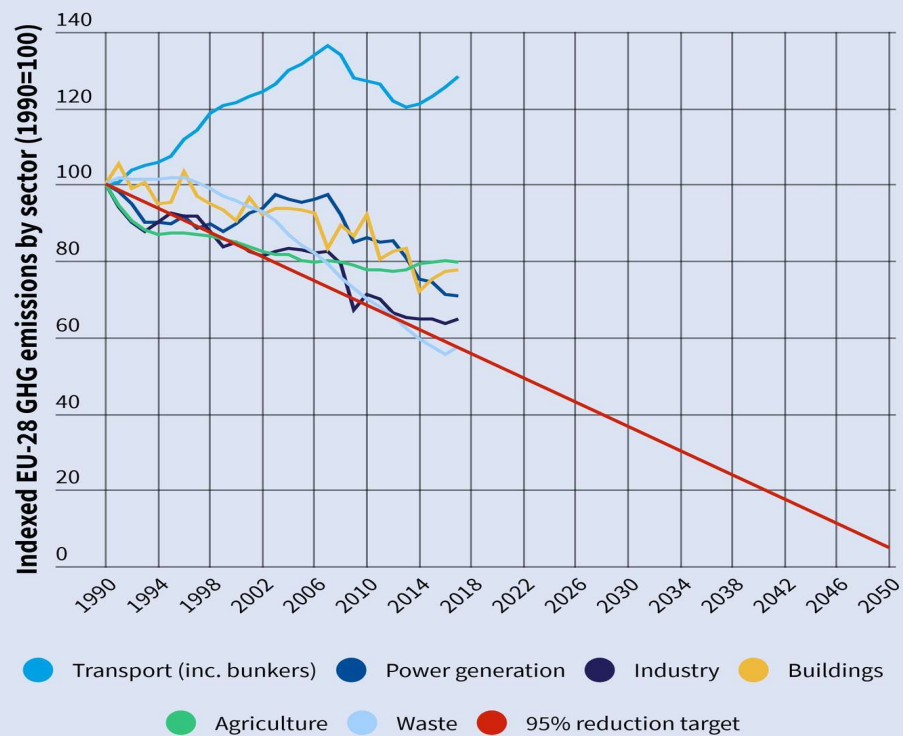
(in % of gross final energy consumption)





European
Commission

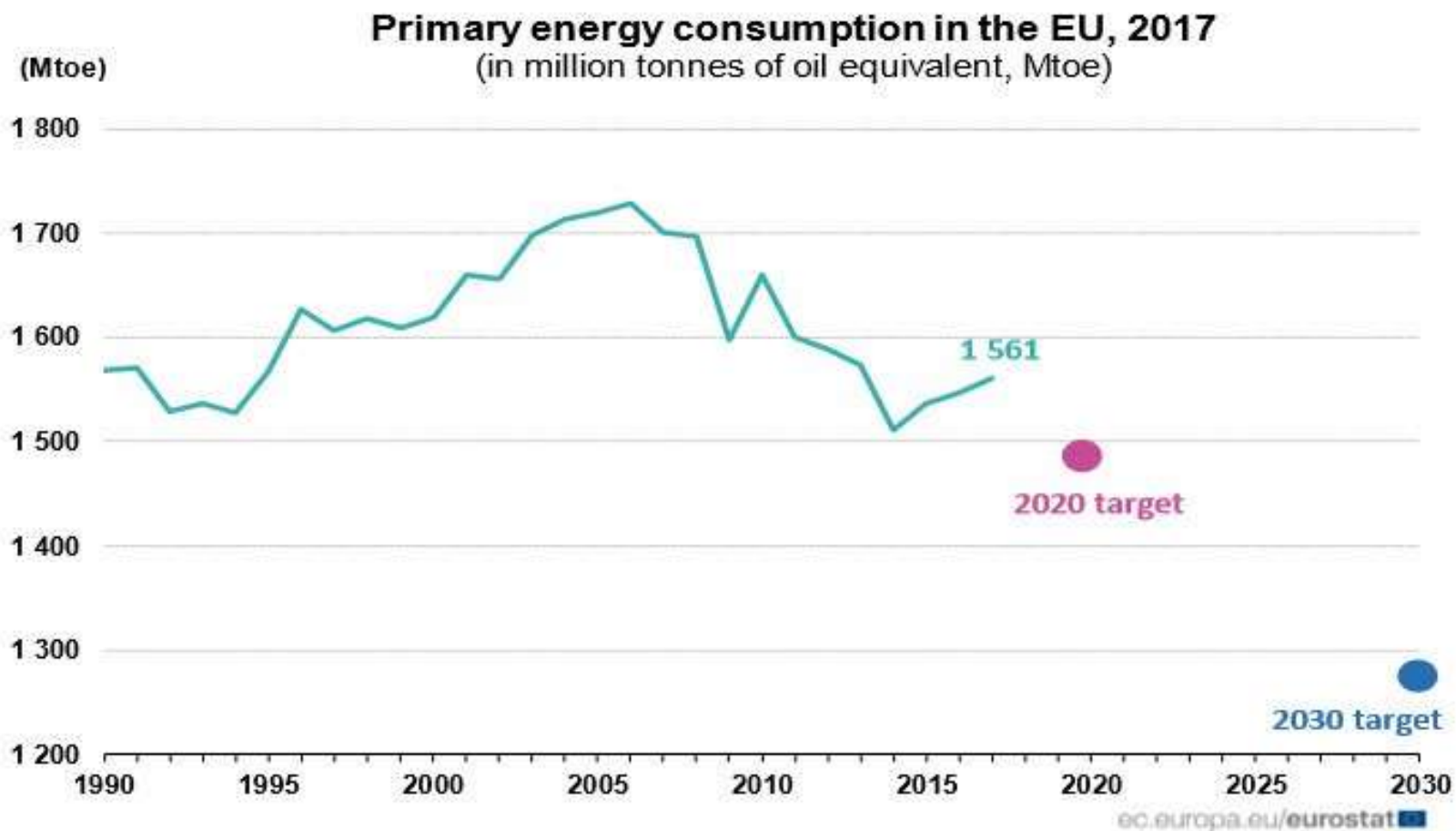
Off track: transport taking wrong turn to reach EU climate targets



Source: Transport & Environment from Member States' reporting to the UNFCCC (1990-2016 data) and EEA's approximated EU greenhouse gas inventory (2017 data)



Energy efficiency objective



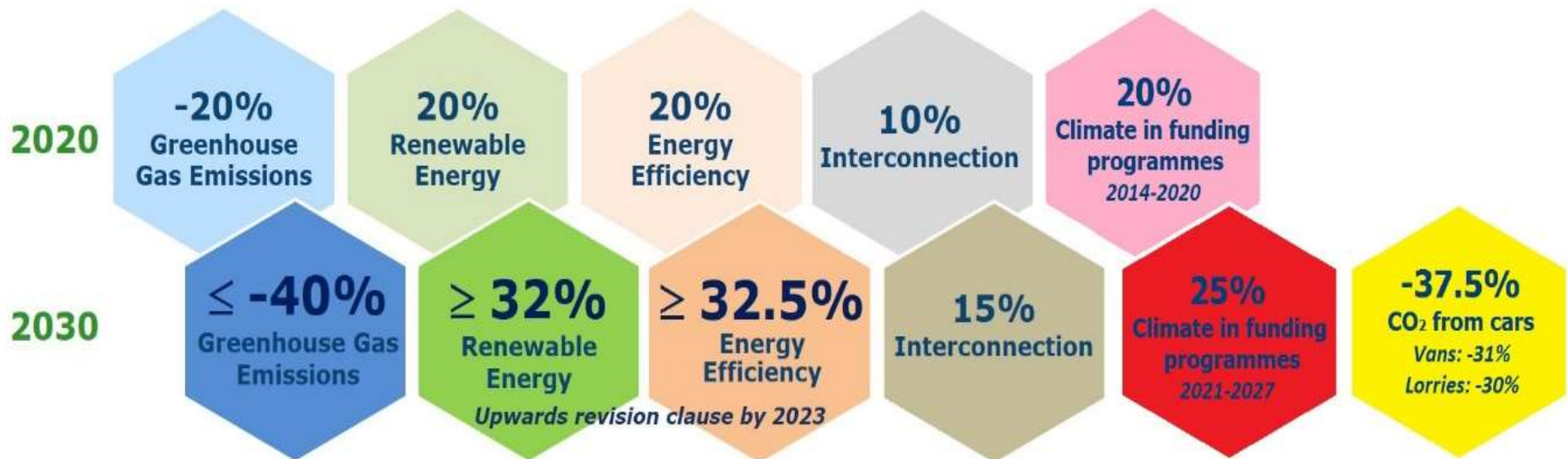


A Policy Framework

for Climate and Energy from 2020 to 2030

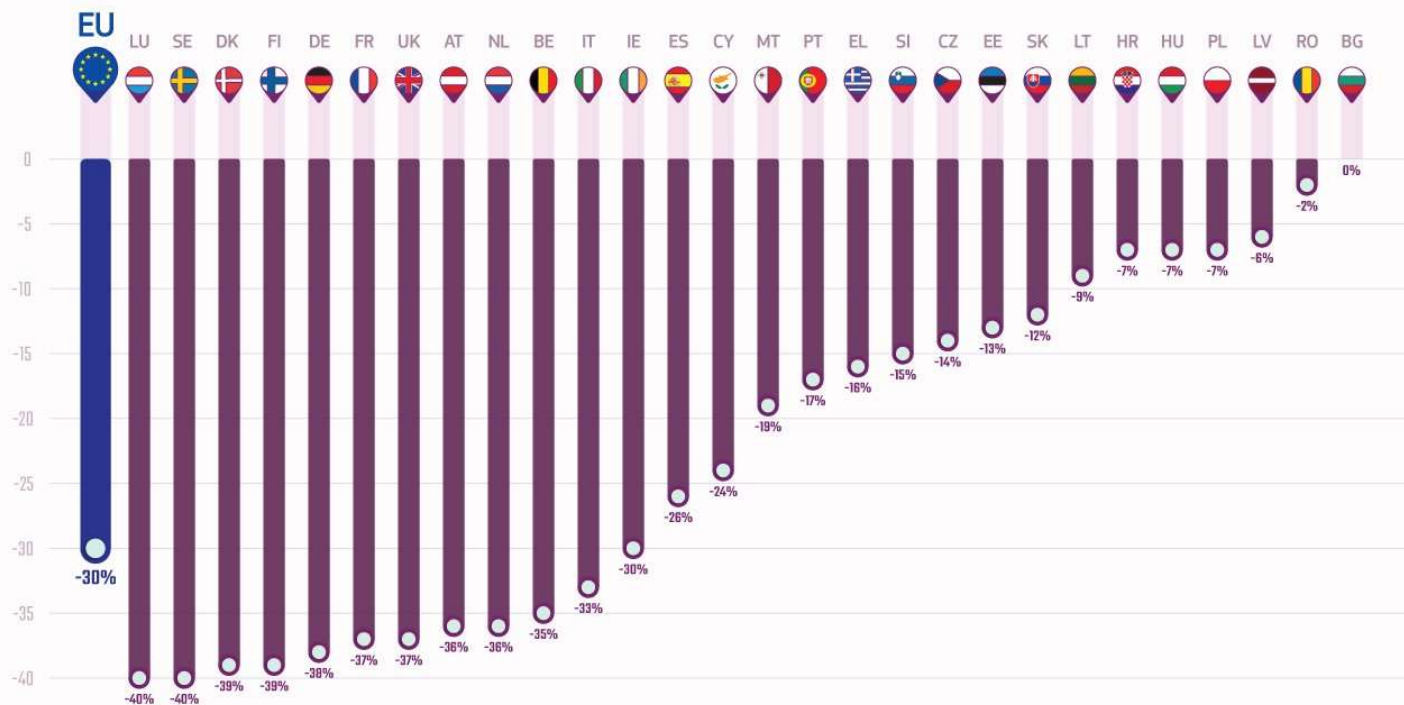


2030 Framework – the Structure



Member State specific emission reduction targets for 2030 compared to 2005, for sectors outside the EU Emissions Trading System

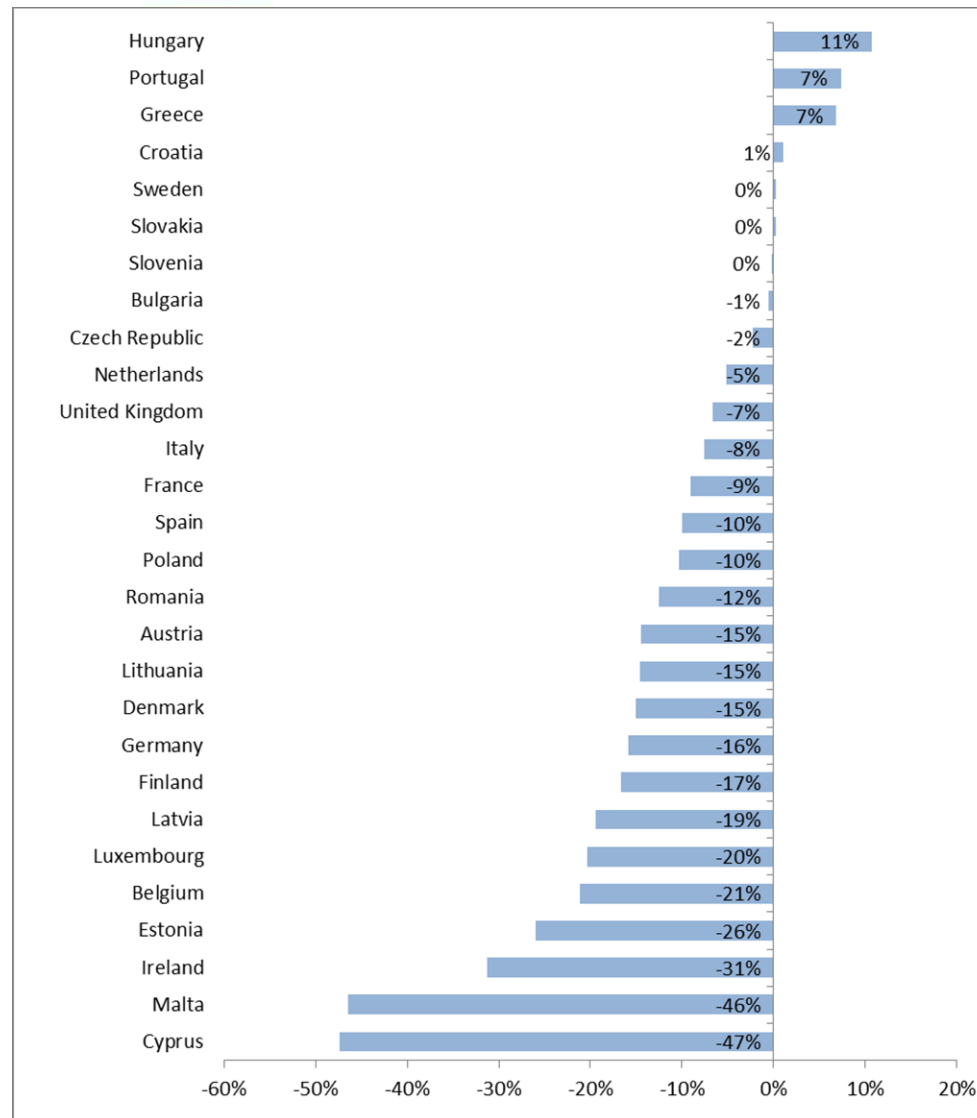
Directive adopted 14/5/2018





Gap between projected 2030 emissions and 2030 targets under the Effort Sharing Regulation in % of 2005 emissions.

Positive values indicate overachievement of the targets while negative values indicate a deficit.



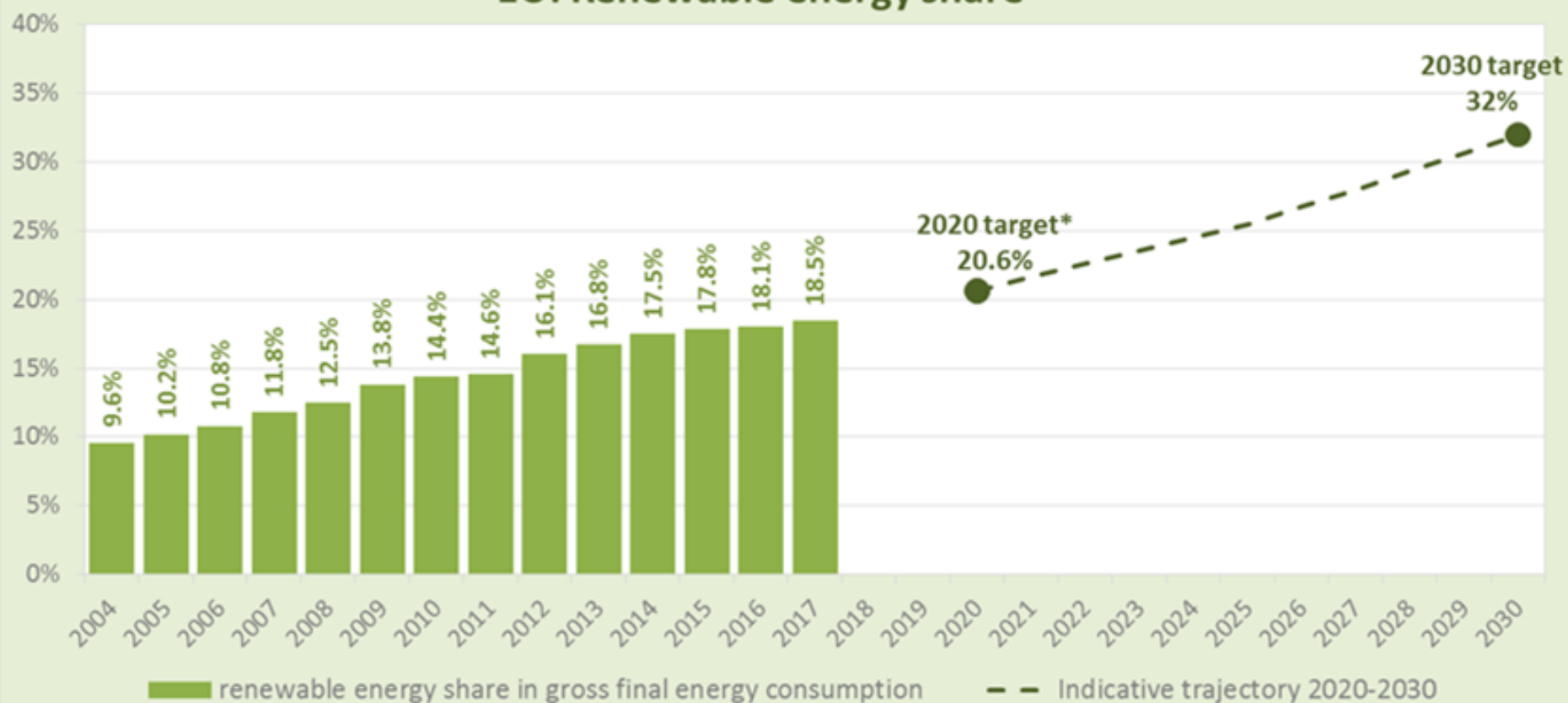


Renewable objective for 2030: 32% (agreed on June 14)

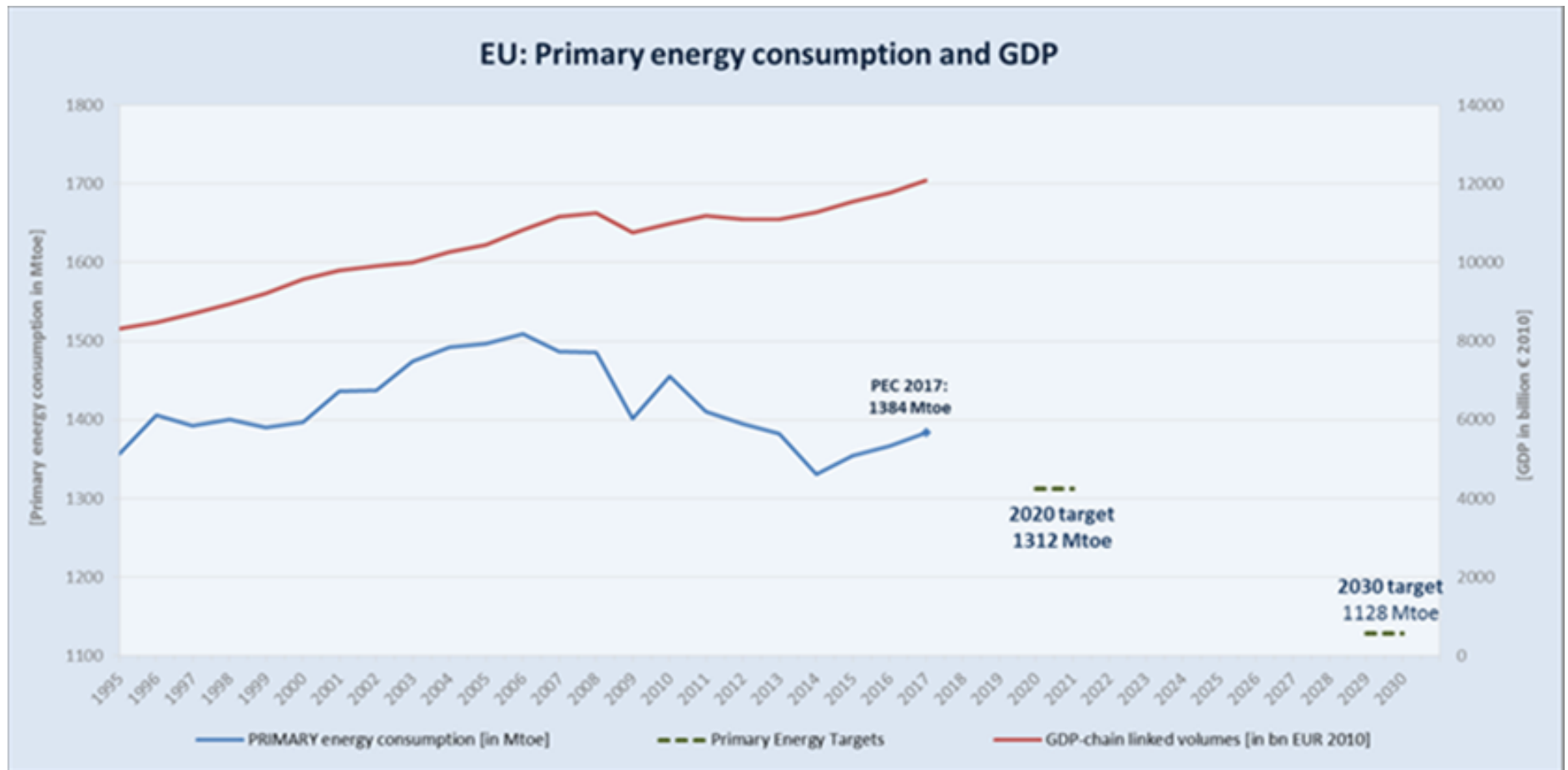
- This means more than 50% RES in electricity capacity by the same date
- With large quantities of variable RES
- Hence more storage required to allow system flexibility
- No burden sharing, legally binding to the EU as a whole

Energy efficiency objective: 32,5% (agreed on June 19)

EU: Renewable energy share



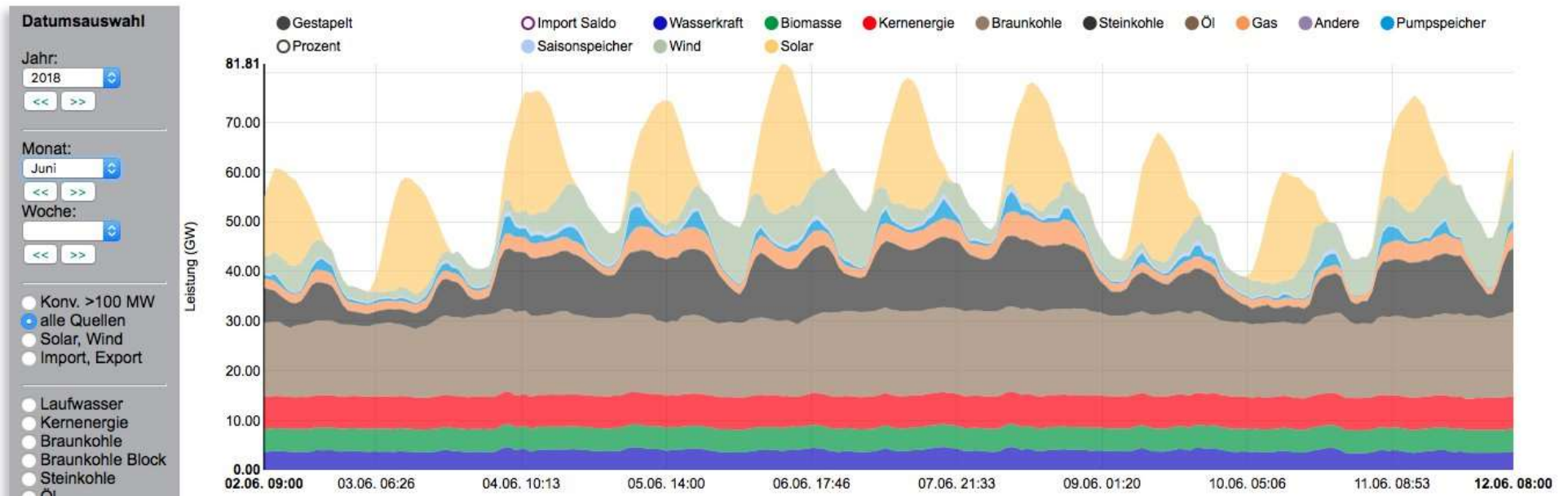
* Estimated EU-level renewable energy share based on EU27 Member State's national binding targets for 2020 and Commission estimates of the gross final energy consumption of energy in each EU27 Member State in 2020.



Power generation – the challenge

Power Generation in Germany in the last weeks as an example of the flexibility needs
 wind and solar called 'intermittent' are in fact 'predictable'
 hydro storage already playing a role
 hard coal no longer base load, but lignite still is

Stromproduktion in Deutschland im Juni 2018





Air quality and other issues

- Refining capacity closed down in Europe, 2 mbbbl/day from 2008 to 2016
 - Importance for the security of supply
 - Need and capacity to innovate
- Diesel Vs gasoline debate, perception, markets
- Euro 6 limits, comparable for diesel and gasoline
- New emission test methodologies, WLTC, real driving emissions
- EURO 6 limits in comparison to EV emissions (brakes etc)
- Emergence of Low Emission Zones, more than 200 across the EU



Initial Long-term Vision and Objective

- The 2050 Roadmap of 2011

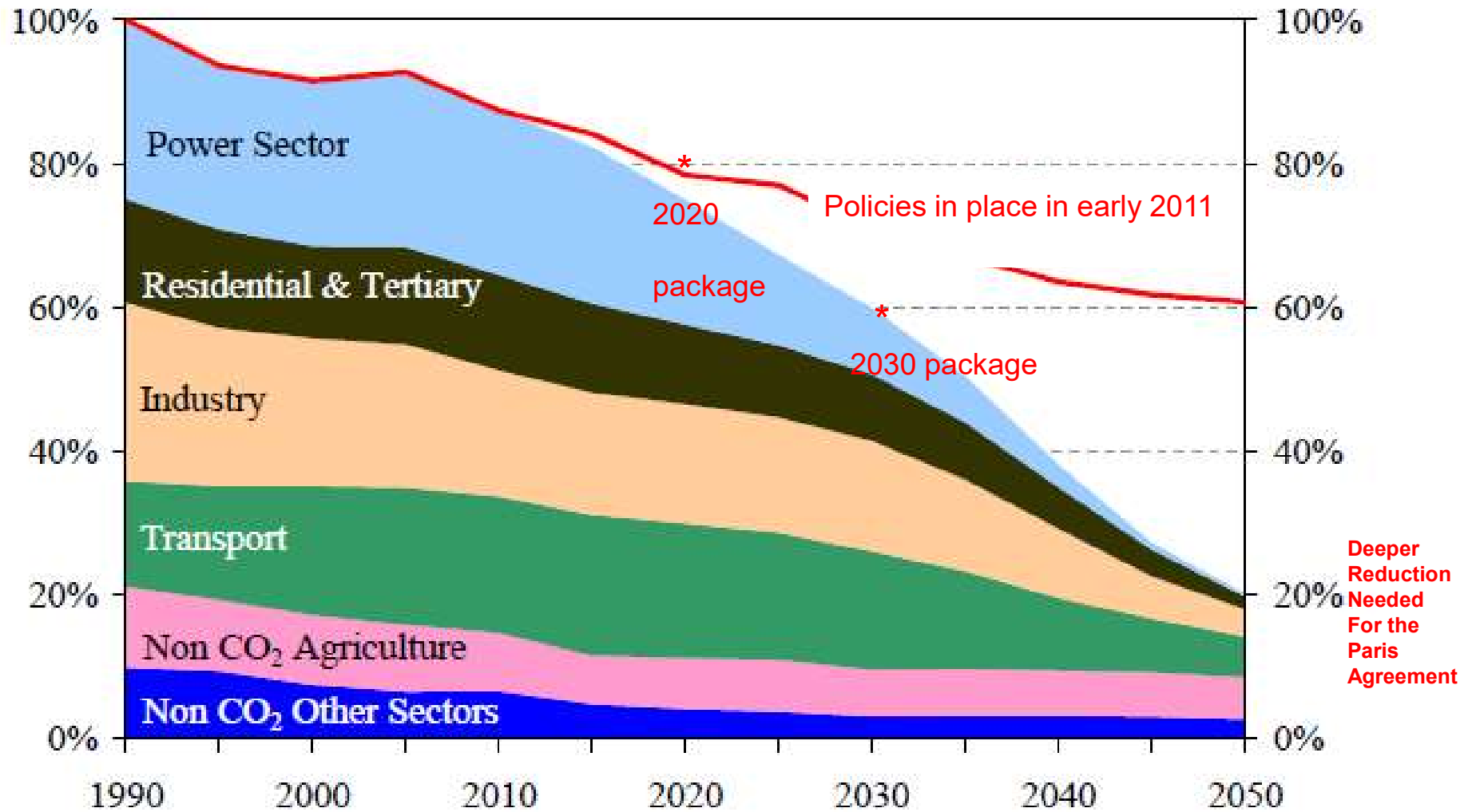


Energy Roadmap 2050 – COM(2011)112

- Reduction of energy sector emissions by 85% by 2050
- Energy costs rising to 2030, coming down thereafter
- 5 scenarios
 - high efficiency
 - diversified supply technologies
 - high RES
 - delayed CCS (not commercial by 2030)
 - no nuclear
- RES more than 50% of supply in all scenarios
- CCS providing 20-30% of GHG reductions in 2050



A Sectorial Approach



« A Clean Planet for All » Communication

Climate challenges

- Global warming already reached at 1°C
- 18 of the warmest years in the last 2 decades and extreme heat waves in EU for 4 of the last 5 years
- Real impact on EU economy & environment
- IPCC warns about global eco-systems in danger already at 2°C
- Climate change undermines security and prosperity in the broadest sense

Arctic region

Temperature rise much larger than global average
 Decrease in Arctic sea ice coverage
 Decrease in Greenland ice sheet
 Decrease in permafrost areas
 Increasing risk of biodiversity loss
 Some new opportunities for the exploitation of natural resources and for sea transportation
 Risks to the livelihoods of indigenous peoples

Atlantic region

Increase in heavy precipitation events
 Increase in river flow
 Increasing risk of river and coastal flooding
 Increasing damage risk from winter storms
 Decrease in energy demand for heating
 Increase in multiple climatic hazards

Mountain regions

Temperature rise larger than European average
 Decrease in glacier extent and volume
 Upward shift of plant and animal species
 High risk of species extinctions
 Increasing risk of forest pests
 Increasing risk from rock falls and landslides
 Changes in hydropower potential
 Decrease in ski tourism

Coastal zones and regional seas

Sea level rise
 Increase in sea surface temperatures
 Increase in ocean acidity
 Northward migration of marine species
 Risks and some opportunities for fisheries
 Changes in phytoplankton communities
 Increasing number of marine dead zones
 Increasing risk of water-borne diseases

Boreal region

Increase in heavy precipitation events
 Decrease in snow, lake and river ice cover
 Increase in precipitation and river flows
 Increasing potential for forest growth and increasing risk of forest pests
 Increasing damage risk from winter storms
 Increase in crop yields
 Decrease in energy demand for heating
 Increase in hydropower potential
 Increase in summer tourism

Continental region

Increase in heat extremes
 Decrease in summer precipitation
 Increasing risk of river floods
 Increasing risk of forest fires
 Decrease in economic value of forests
 Increase in energy demand for cooling

Mediterranean region

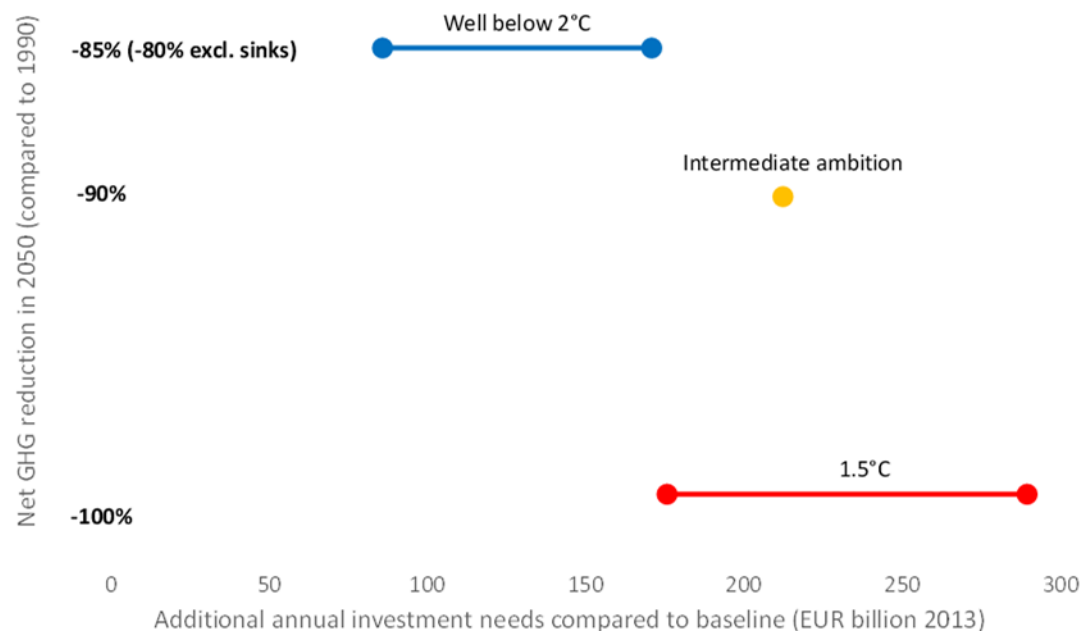
Large increase in heat extremes
 Decrease in precipitation and river flow
 Increasing risk of droughts
 Increasing risk of biodiversity loss
 Increasing risk of forest fires
 Increased competition between different water users
 Increasing water demand for agriculture
 Decrease in crop yields
 Increasing risks for livestock production
 Increase in mortality from heat waves
 Expansion of habitats for southern disease vectors
 Decreasing potential for energy production
 Increase in energy demand for cooling
 Decrease in summer tourism and potential increase in other seasons
 Increase in multiple climatic hazards
 Most economic sectors negatively affected
 High vulnerability to spillover effects of climate change from outside Europe





Increased Investment in the EU economy

- Modernising and decarbonising the EU's economy will stimulate significant additional investment
- From 2% of EU GDP invested in the energy system today to 2.8% (up to € 575 bn per annum) to achieve a net-zero greenhouse gas emissions economy
- Positive for growth and jobs, with GDP higher by up to 2% in 2050
- Co-benefits: energy imports down, public health, etc.





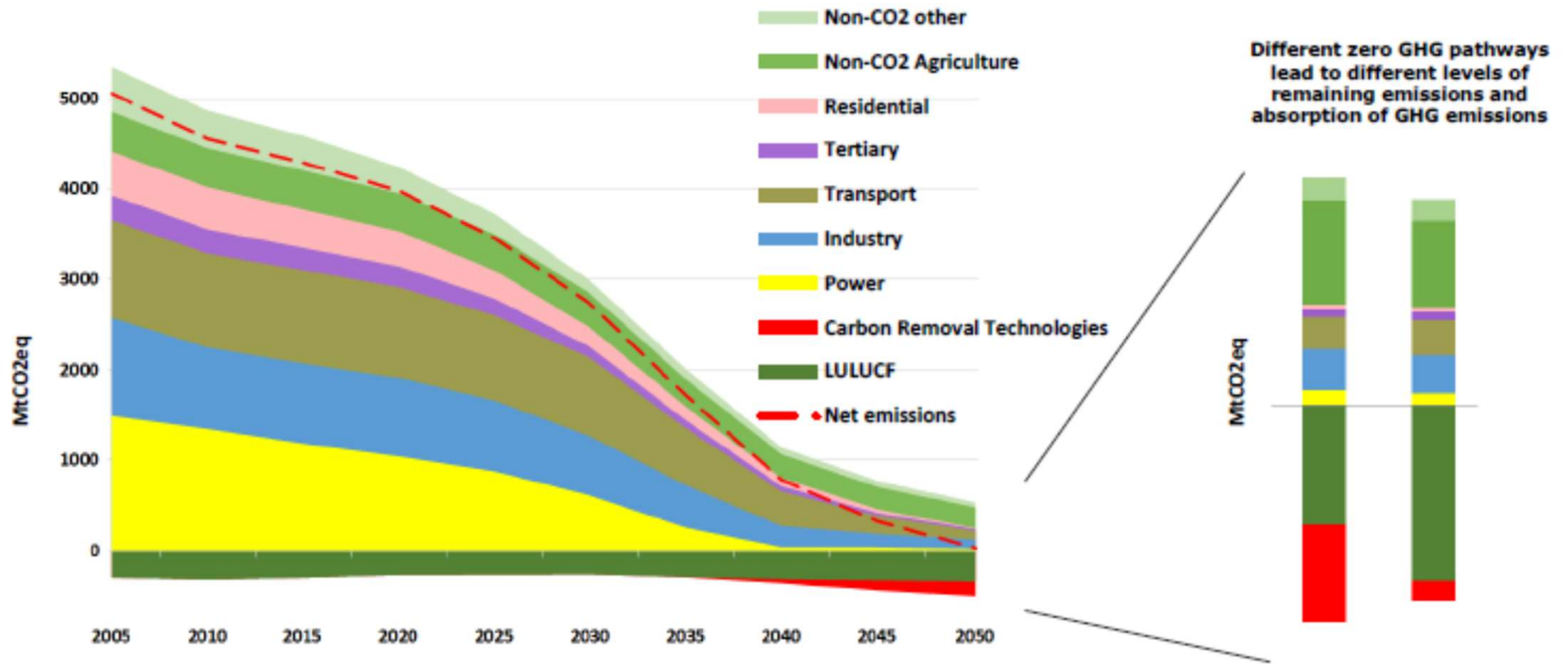
7 Building Blocks

1. Energy efficiency
2. Deployments of renewables
3. Clean, safe & connected mobility
4. Competitive industry and circular economy
5. Infrastructure and inter-connections
6. Bio-economy and natural carbon sinks
7. Tackle remaining emissions with carbon capture and storage

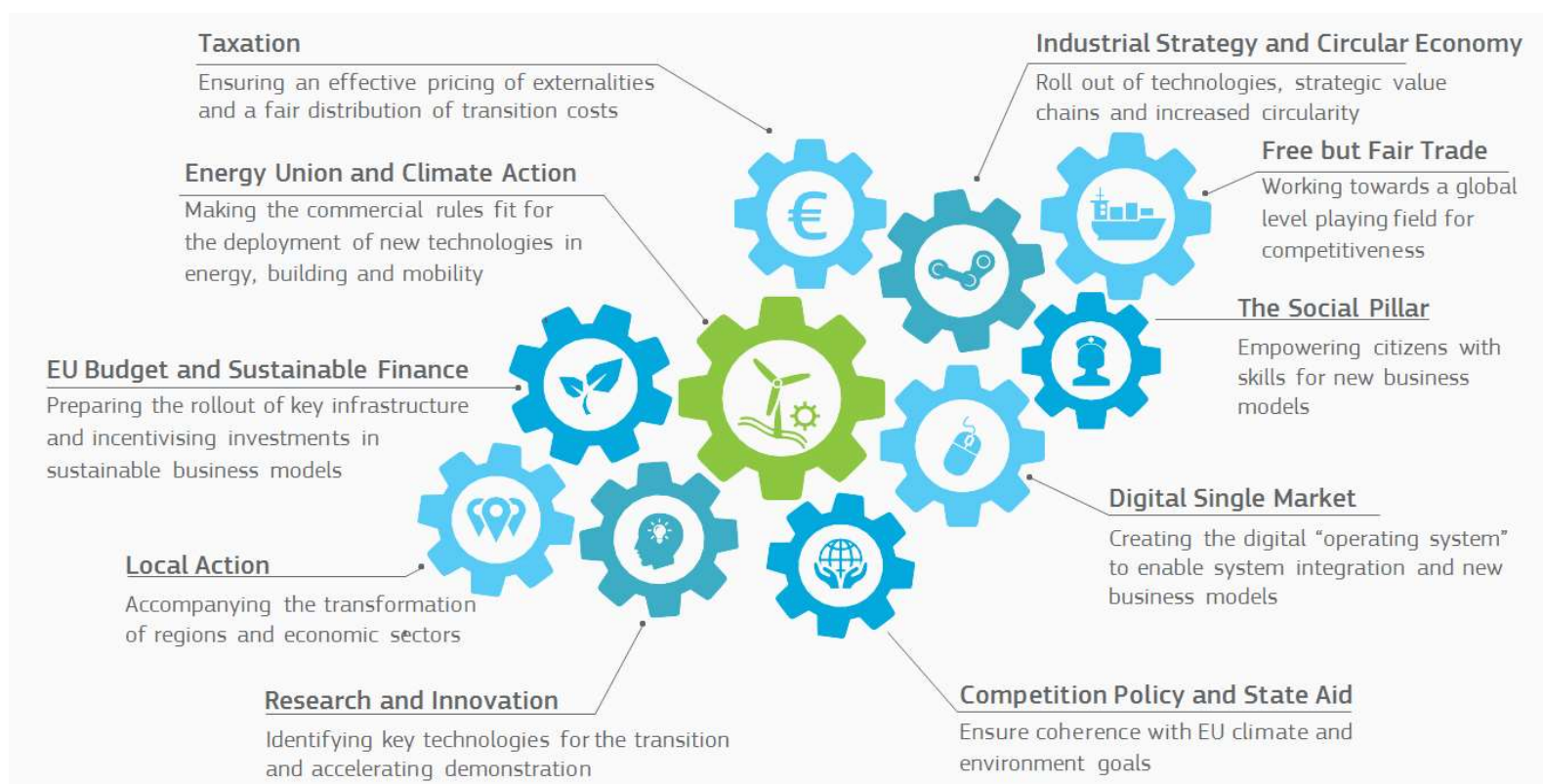




European Commission



Enabling framework crucial to deliver transformation





International climate change negotiations



Global climate policy

- * 1992: UNFCCC ("prevent dangerous anthropogenic interference")
- * 1997: Kyoto
- * 2009: Copenhagen (2°C)
- * 2015: Paris ("well below 2°C", pursue 1.5°C)
- * 2018: EU [#SR15](#)
("1.5°C...without...overshoot")

How about reducing emissions?





"The era of procrastination, of half-measures, of soothing and baffling expedients, of delays, is coming to its close. In its place we are entering a period of consequences."

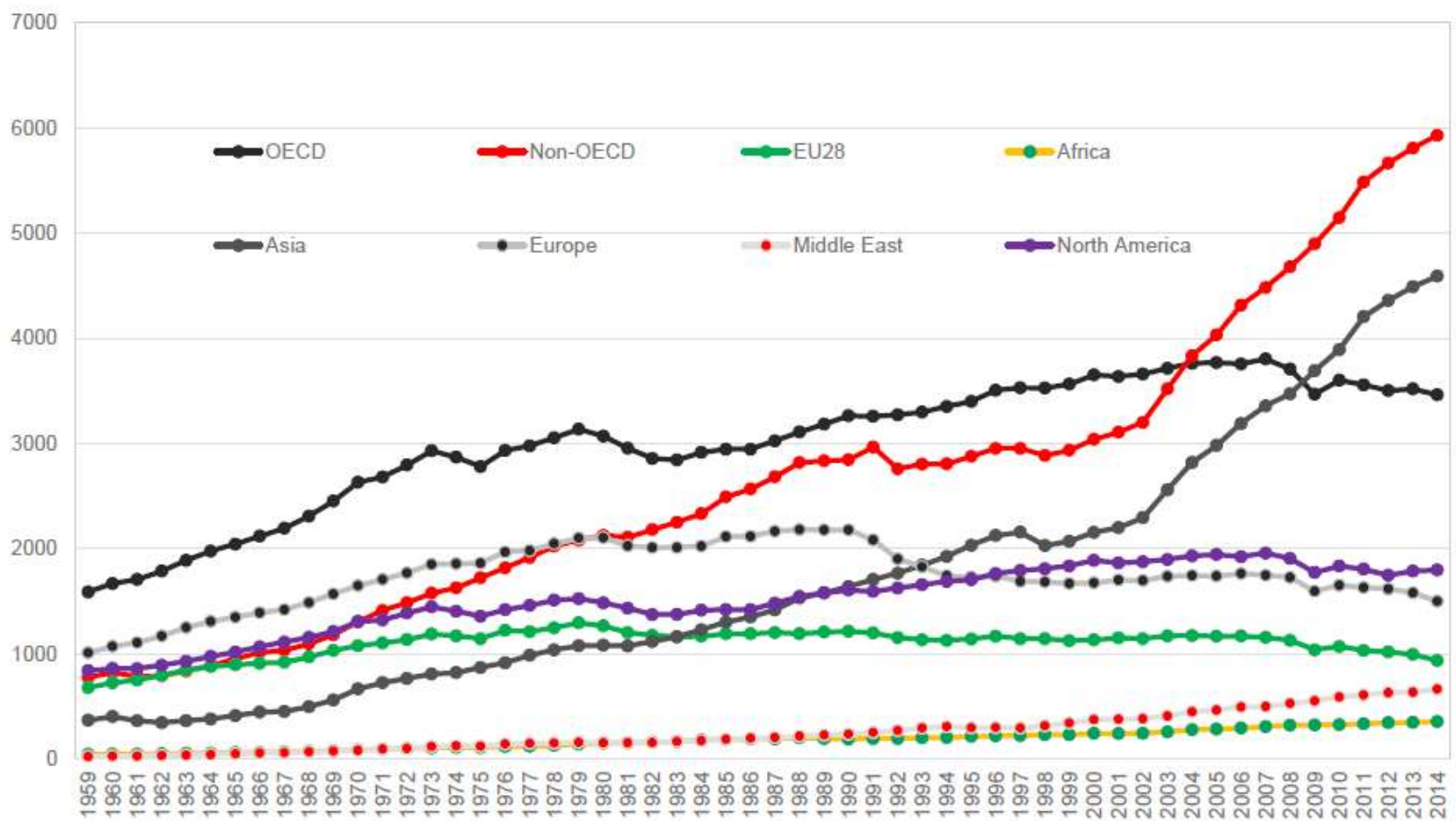
Churchill, 1936, (about the Nazis)



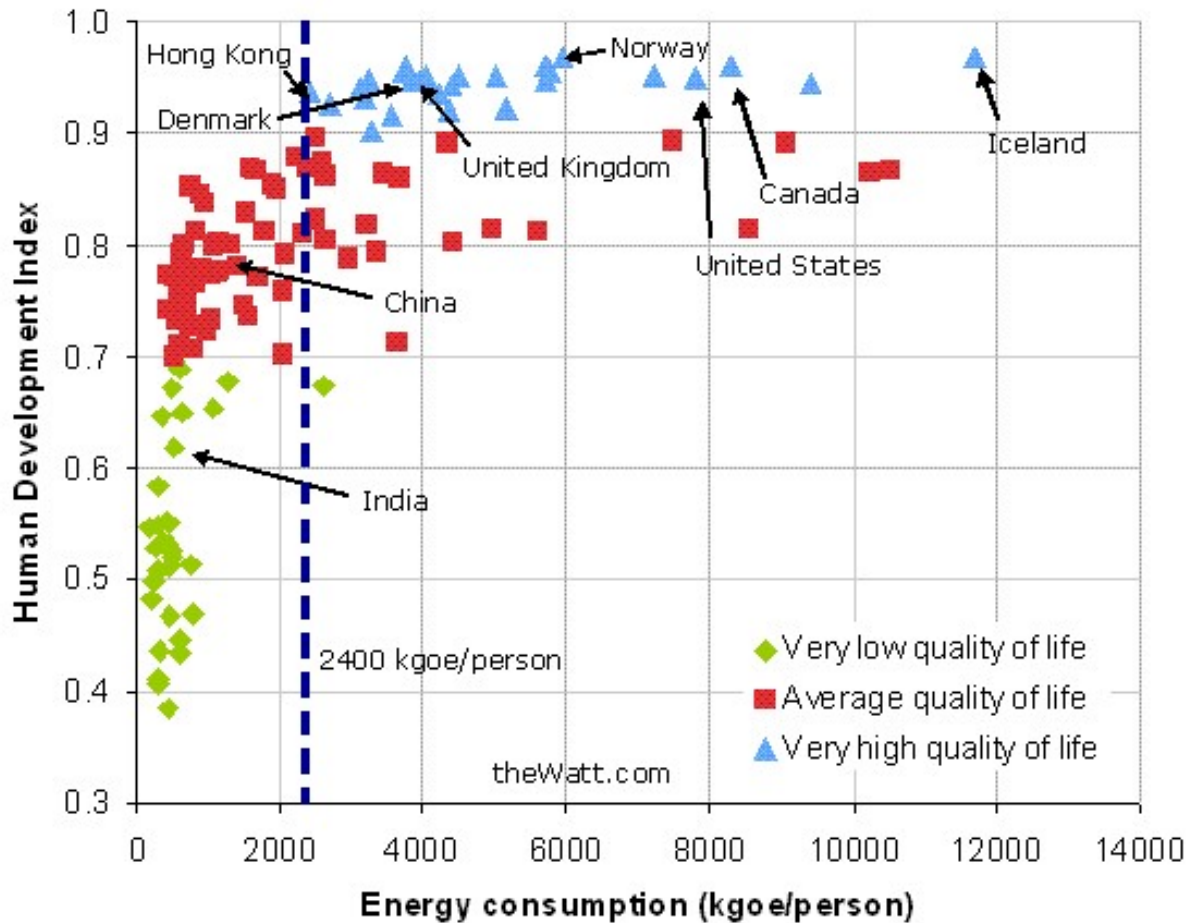


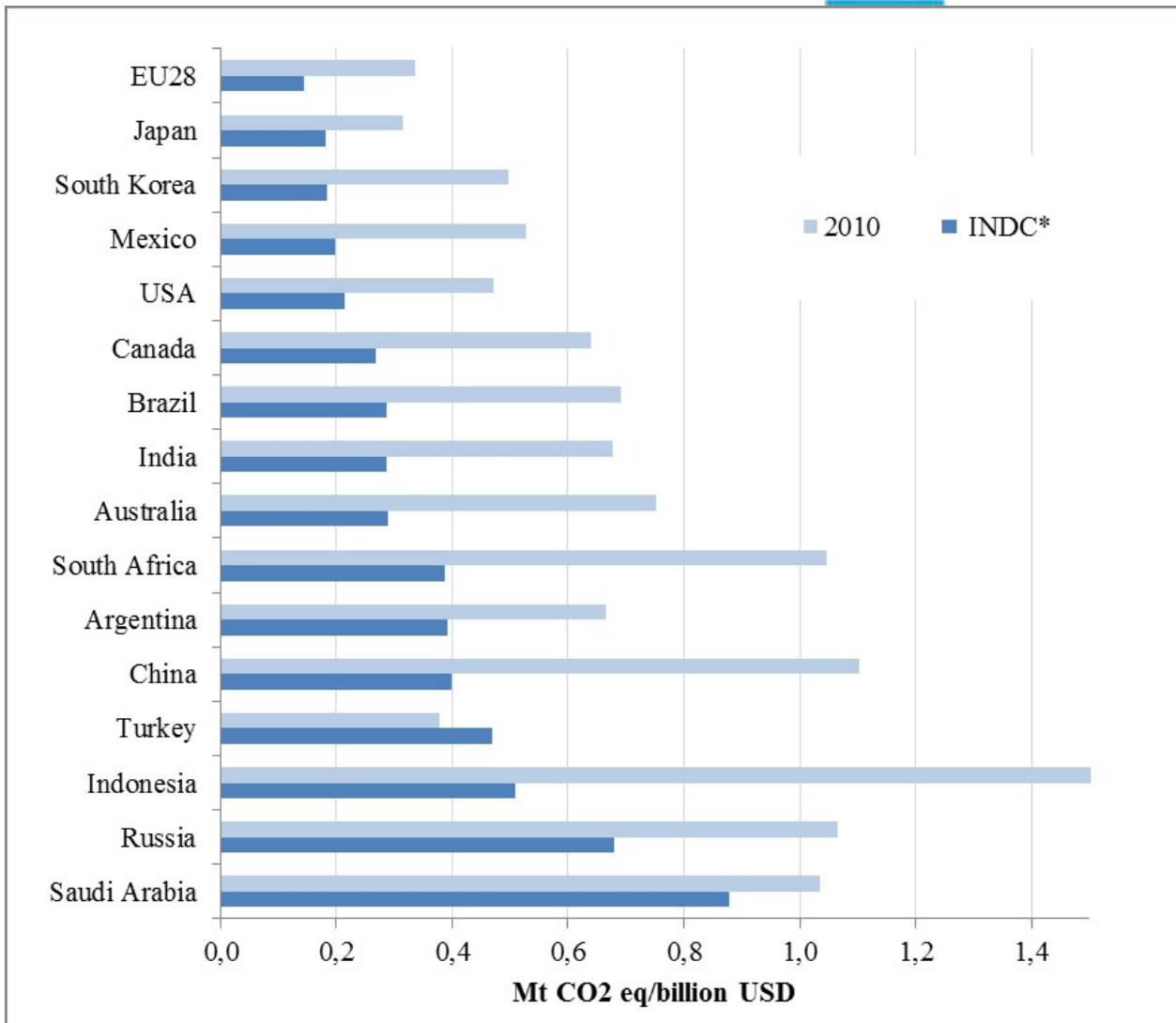
International Context

Territorial Emissions, UNFCCC Data - Values in MtC/year. Own Analyses



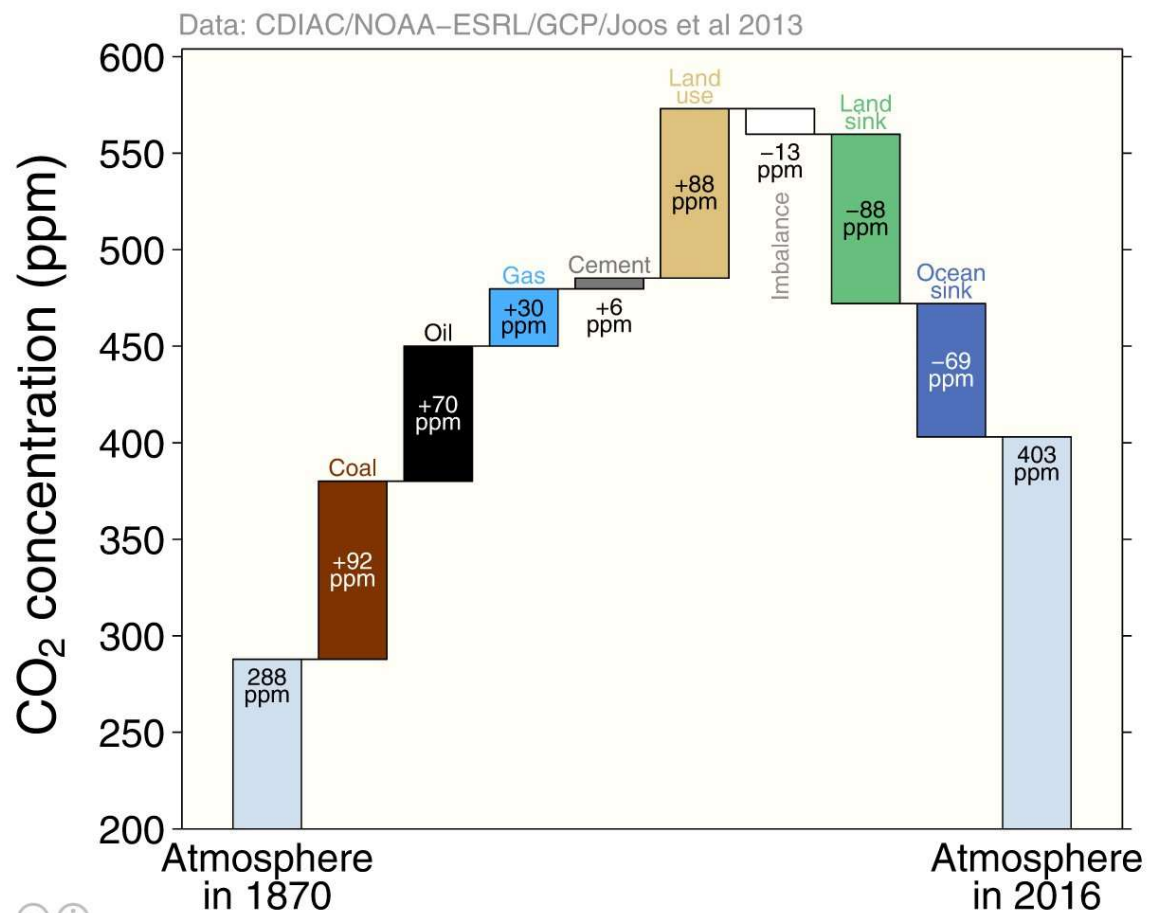
Energy and HDI - graph dating back 2003 but still very useful
Similar graph for CO2 emissions with the blue line around 5 tons per capita



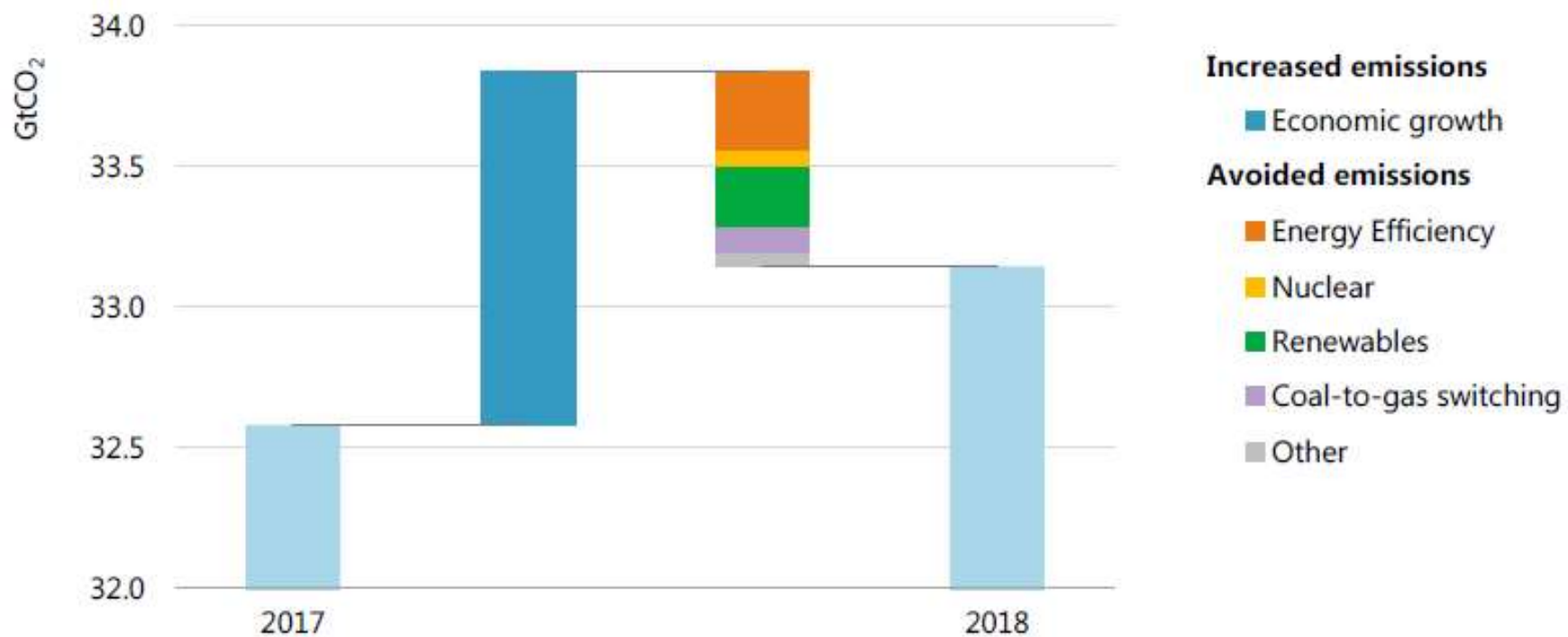


GHG emissions intensities (MtCO₂ eq/billion USD)

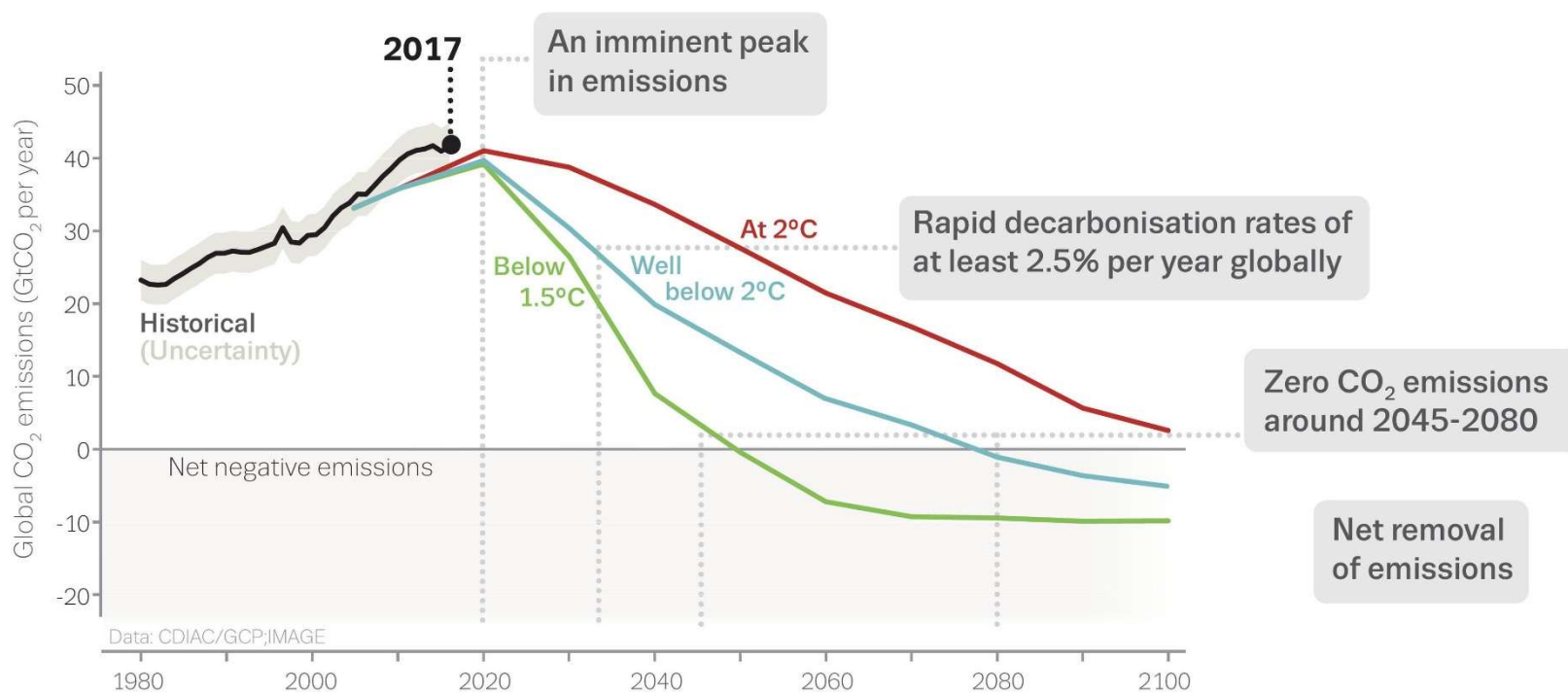
CO₂ Balance – 1870 to 2016



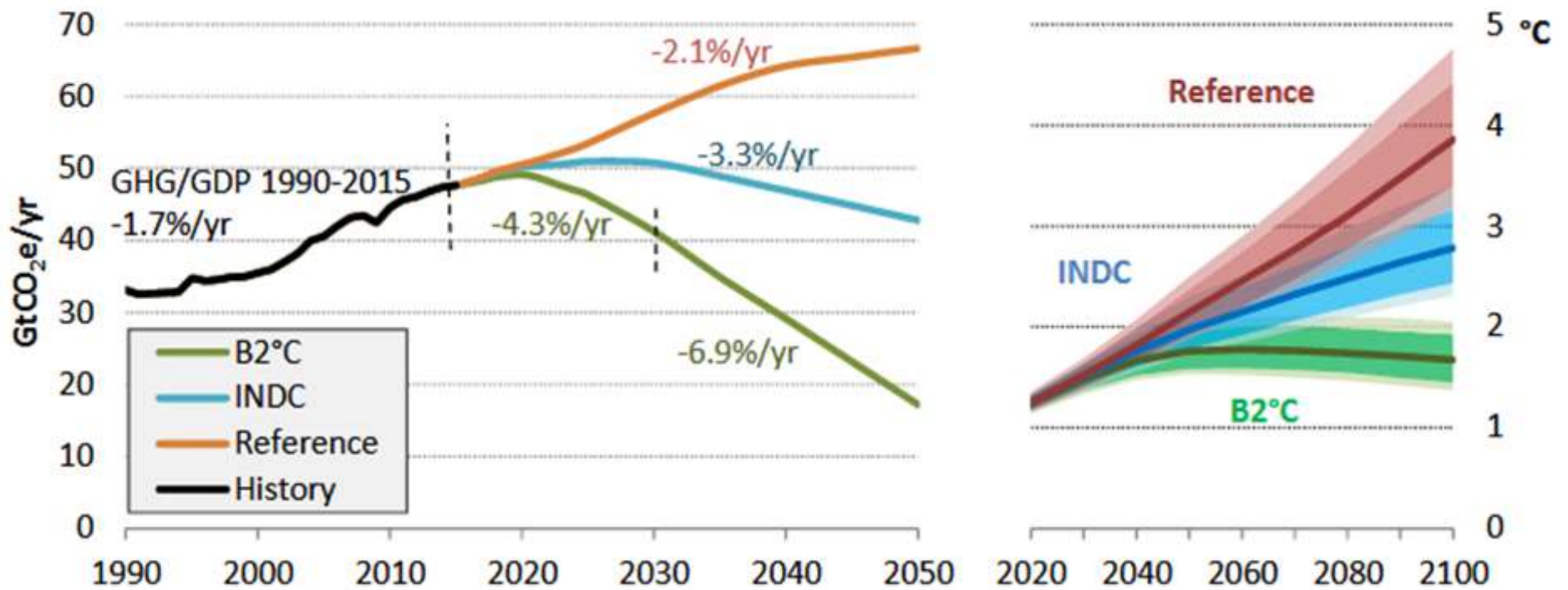
Global CO₂ emissions – changes from 2017 to 2018



Future **projected global CO₂ emissions** that meet the Paris Agreement temperature goal have these characteristics...

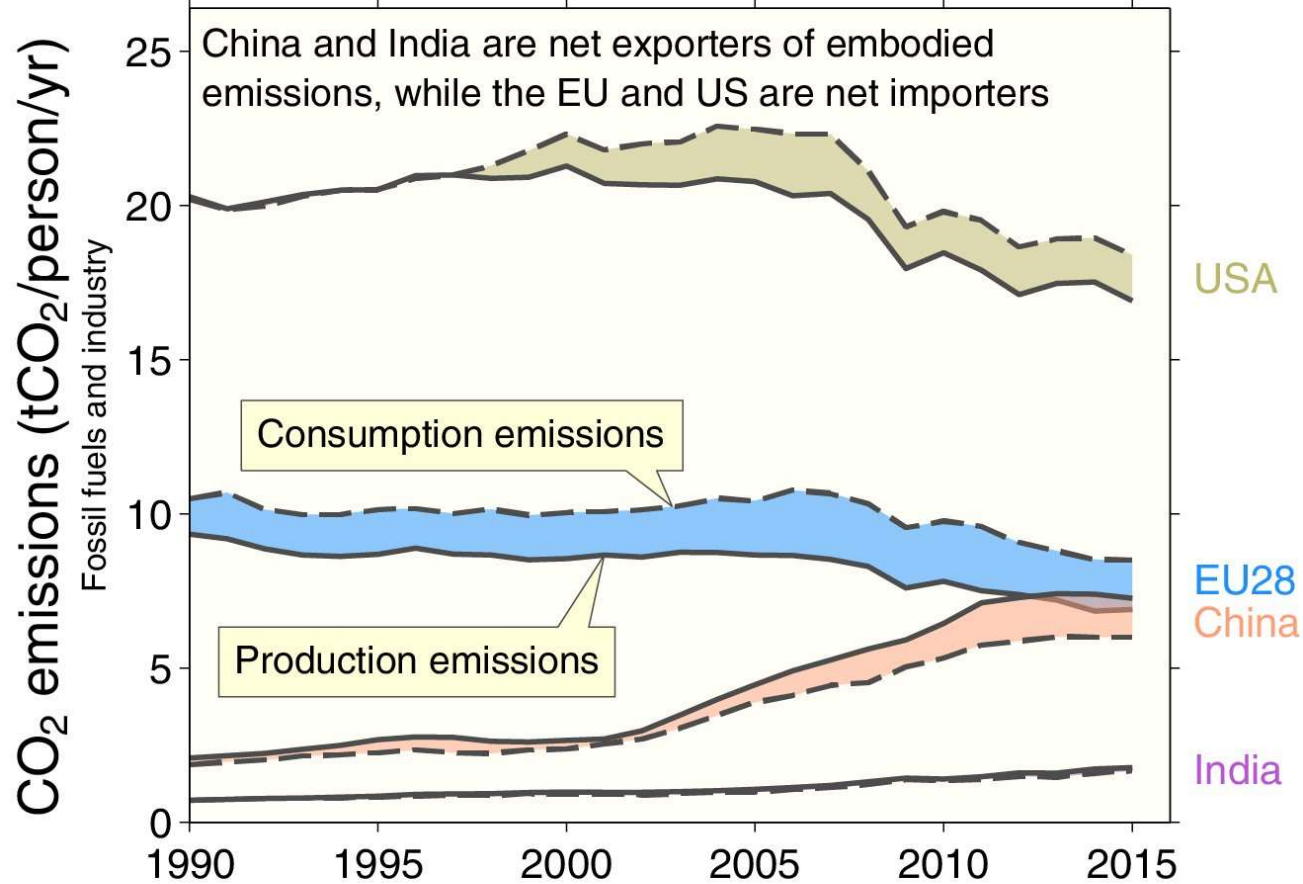


Left: world emissions (GtCO₂e) and percent change in emissions intensity per unit of GDP. Right: global average temperature change. Source: POLES-JRC model. The analysis was done based on the indicative nationally determined contributions (INDCs), now NDCs.



Consumption accounting Vs production accounting

Data: CDIAC/GCP/UN/Peters et al 2011





What did we achieve with the Paris Agreement ?

The transparency framework

Pre-Paris

Post-Paris

Multilateral climate regime

MITIGATION

MARKETS

FINANCE

CAPACITY BUILDING

LAND

ADAPTATION

RESPONSE MEASURES

TECHNOLOGY

SCIENCE

FACILITATION AND COMPLIANCE

Ambitious goals and a 5-yearly ambition cycle

2018 Dialogue

2023+
Global Stocktake

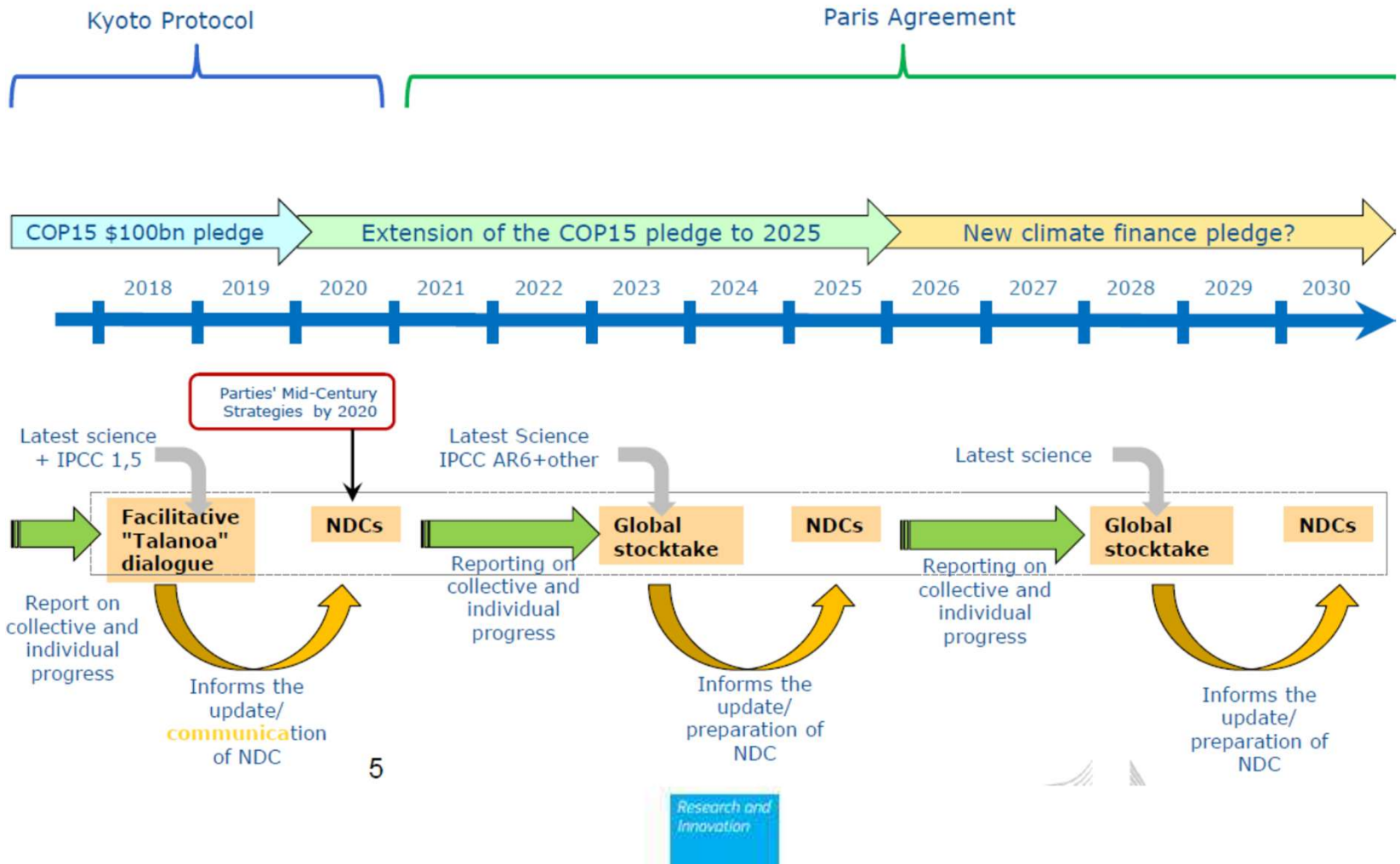
Universal Action by all Countries – Nationally Determined Contributions i.e. NDCs

Research and
Innovation



Interplay between the review mechanism and national action

TACKLING GLOBAL WARMING – THE PARIS AMBITION CYCLE





IPCC Special Report on 1,5°C– Key findings:

- **Human activities are estimated to have caused approximately 1,0°C of global warming.**
- **Impacts on natural and human systems have already been observed and will be more extreme at 1,5°C, but lower at 1,5°C than at 2°C.**
- **Limiting global warming to below 2°C or 1.5°C is still possible but requires greater global ambition than existing Paris Agreement pledges.**
- **Pathways to below 2°C require net zero CO2 emissions around 2070 (and net zero for all greenhouse gases by around 2100).**
- **1,5°C pathways to below 2°C require net zero greenhouse gas emissions around 2070.**



In Conclusion

The EU energy policies are based on the three interdependent pillars: security of supply, competitiveness and sustainability;

The EU has equipped itself back in 2008/9 with a coherent energy and climate package to face those challenges, with clear objectives for 2020;

We are now extending this approach, learning from the past, to 2030, in order to provide visibility to the actors;

Beyond this, a real holistic / systemic / societal approach is required.

The objective is clear : deep decarbonisation by 2050, fully consistent with the Paris Agreement, with a prosperous, modern and competitive economy.



THANK YOU FOR YOUR ATTENTION

Dr Pierre Dechamps
pierre.dechamps@ec.europa.eu

Neither the European Commission, nor any person acting on behalf of the Commission is responsible for the use which might be made of the information contained in this presentation. The views expressed here are those of the authors and do not necessarily reflect those of the European Commission.

Research and
Innovation