Association for European Life Science Universities (ICA)
Rectors and Deans Forum 2021

EU vision and policies toward climate neutrality for the land sector
and the role of the CAP policy in ensuring the viability of farmer's income and food security

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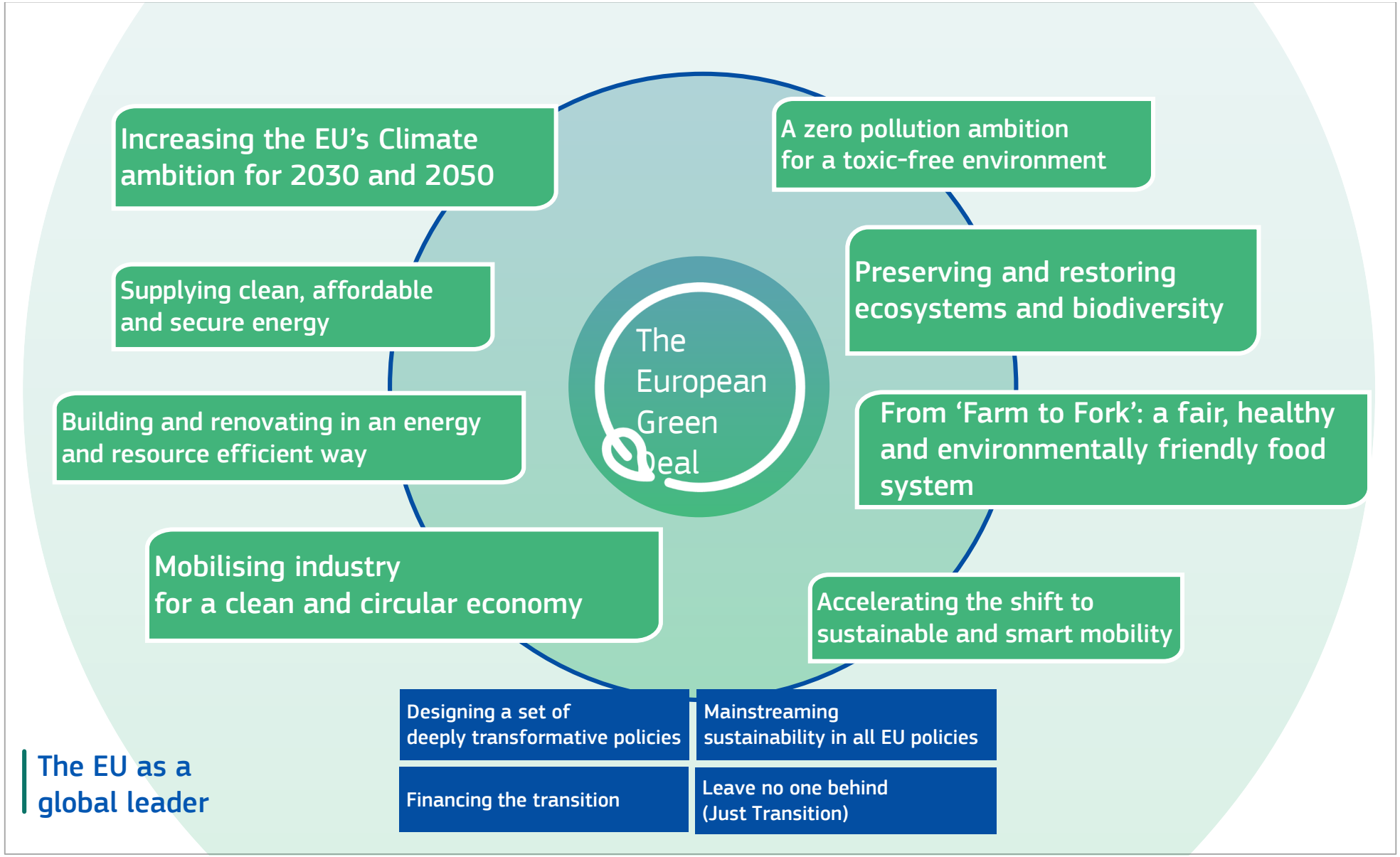
The **European Green Deal**

European Commission



A step-change in climate ambition

European Commission

Increasing the EU's Climate ambition for 2030 and 2050

- European '**Climate Law'** enshrining the 2050 climate neutrality objective in legislation by March 2020
- **Comprehensive plan** to increase the EU's climate target for 2030 to at least 50% and towards 55% in a responsible way by October 2020
- **Review and revise where needed all relevant legislative measures to deliver on this increased ambition** by June 2021

- A new EU **Strategy on Adaptation** in 2020/2021

The EU as a global leader

A European Climate Pact

European Commission
1.134.199 follower
2 giorni •

Deal on the Climate Law!

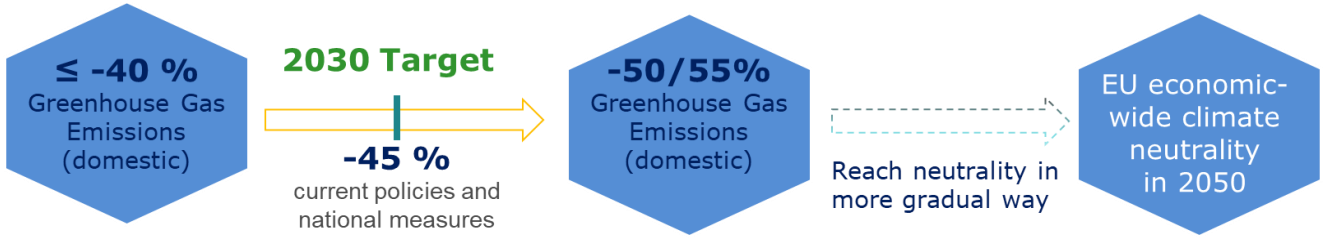
The European Climate Law turns our European Green Deal targets into legal obligations:
📉 reducing net greenhouse gas emissions by at least 55% by 2030
🌎 reaching climate neutrality by 2050

Today's deal between the co-legislators also introduces:
✅ a process for setting a 2040 climate target
✅ a commitment to negative emissions after 2050
✅ the establishment of European Scientific Advisory Board on Climate Change
✅ stronger provisions on adaptation to climate change

Climate neutrality will shape the EU's green recovery and a socially just green transition.

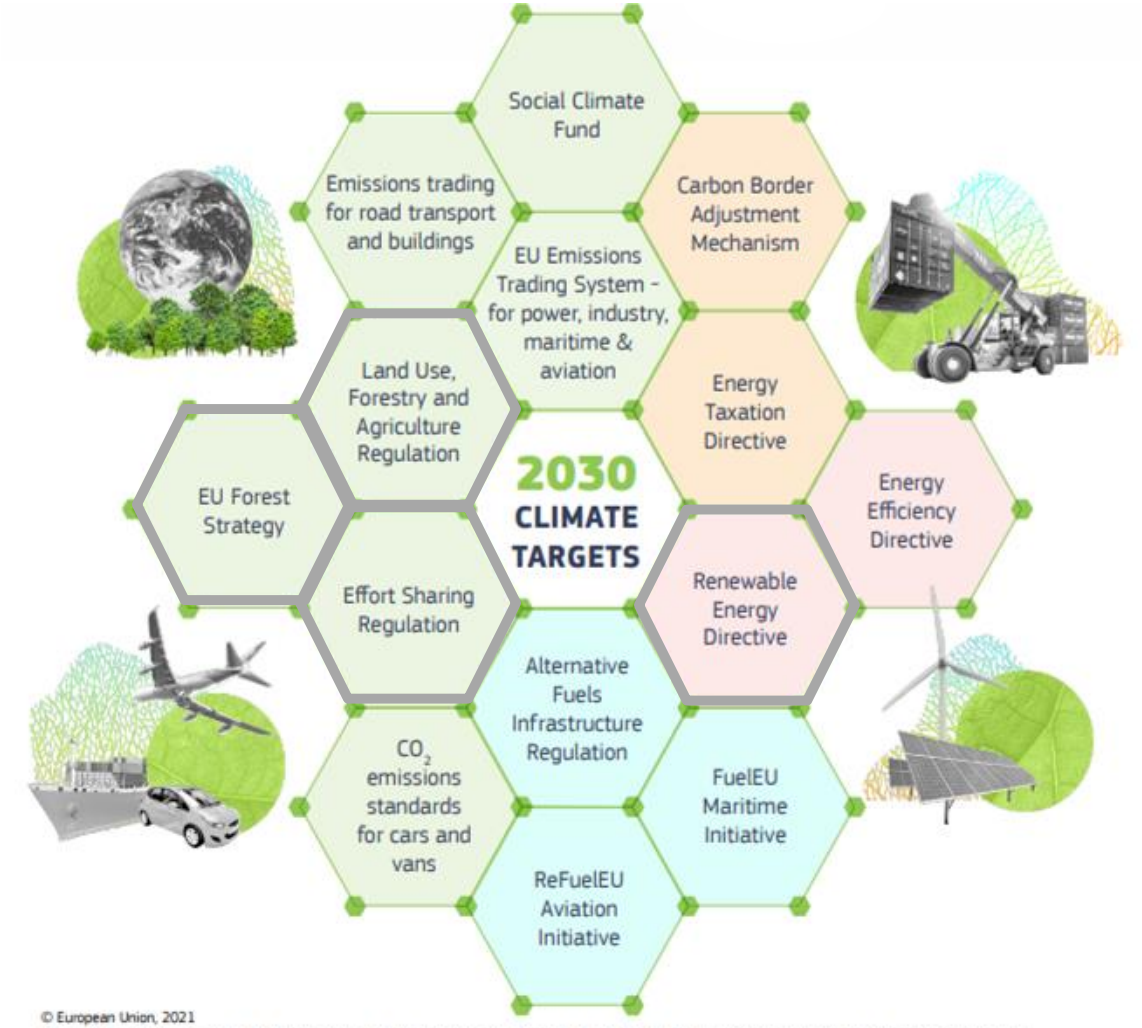
More here → https://europa.eu/!dn66PW

#EUGreenDeal #EuropeanUnion #ClimateAction



'Fit for 55'

On 14 July 2021, the Commission presented proposals for revision of main pieces of legislations to deliver EU's 2030 Climate Target (-55%) on the way to climate neutrality.



Targets

- Stronger ETS including in aviation
- Extending ETS to maritime, road transport, and buildings
- Updates Energy taxation Directive
- New Carbon Border Adjustment Mechanism
- Updated ESR
- Updates LULUCF Regulation
- Updated Renewable Energy Directive

Rules

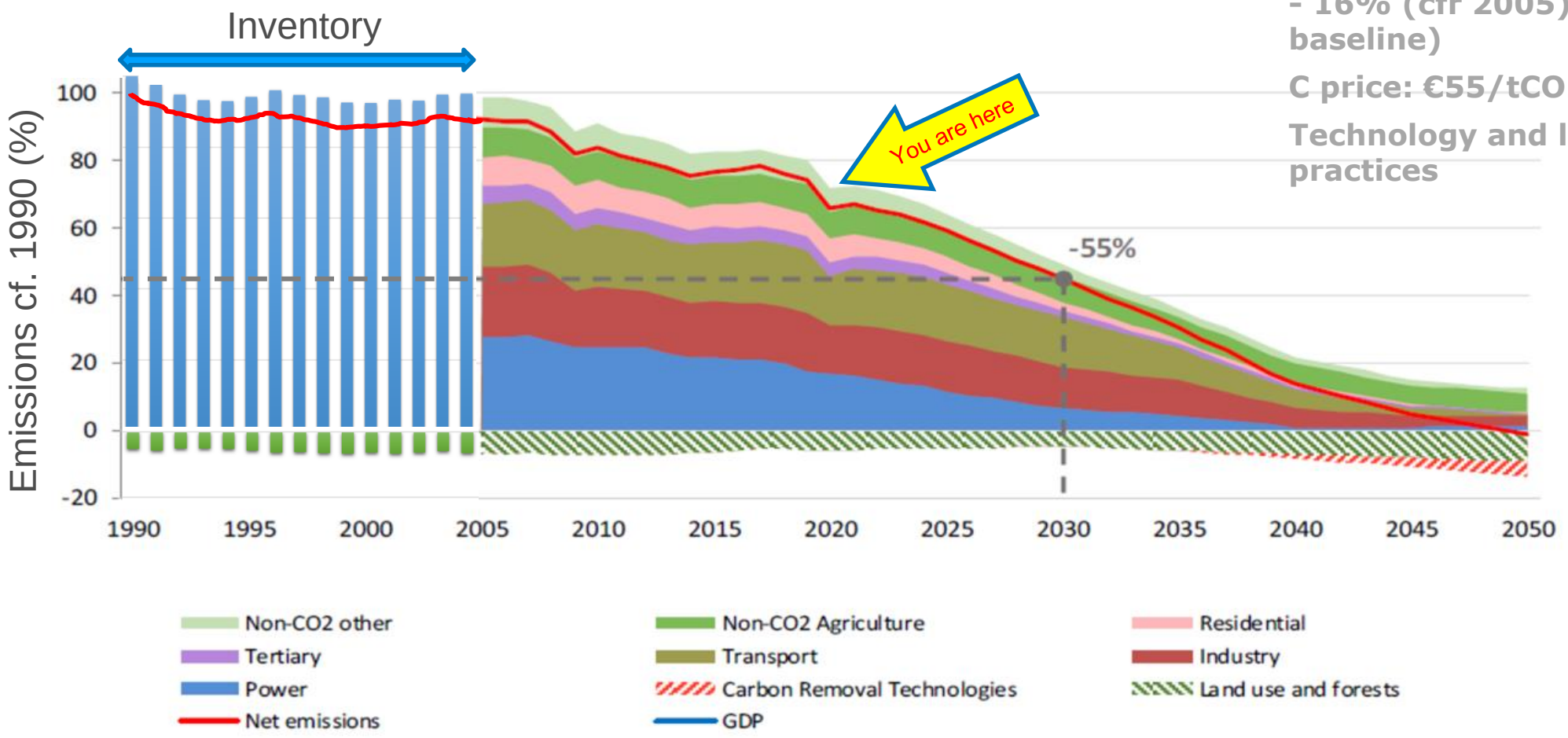
- Stricter CO2 performance for car & vans
- New infrastructure for alternative fuels
- ReFuelEU: more sustainable aviation fuels
- FuelEU: cleaner maritime fuels

Support measures

- Using revenues and regulations to promote innovation, build solidarity and mitigate impacts for the vulnerable, notably through the new Social Climate Fund and enhanced Modernization and Innovation Funds.

Pathway to climate neutrality in the impact assessment

- The impact assessment showed that 55% by 2030 can be achieved in a responsible way
- Economic growth can be decoupled from resource use
- All economic sector should contribute



Agriculture non-CO2 GHG

- 16% (cfr 2005); (8% cfr baseline)

C price: €55/tCO2eq

Technology and land-based practices

Non-CO_2 agriculture

Net-zero

Land use and forest

Carbon removal tech

List of mitigation options considered in the IA models

Neutrality can be reached by different combinations between LULUCF and non-CO2 agricultural mitigation practices.
Different mitigation potentials are related to carbon prices.
Carbon removals have low mitigation costs (EUR 10 per ton). For examples, fallowing histosols show very high mitigations already at low carbon prices.

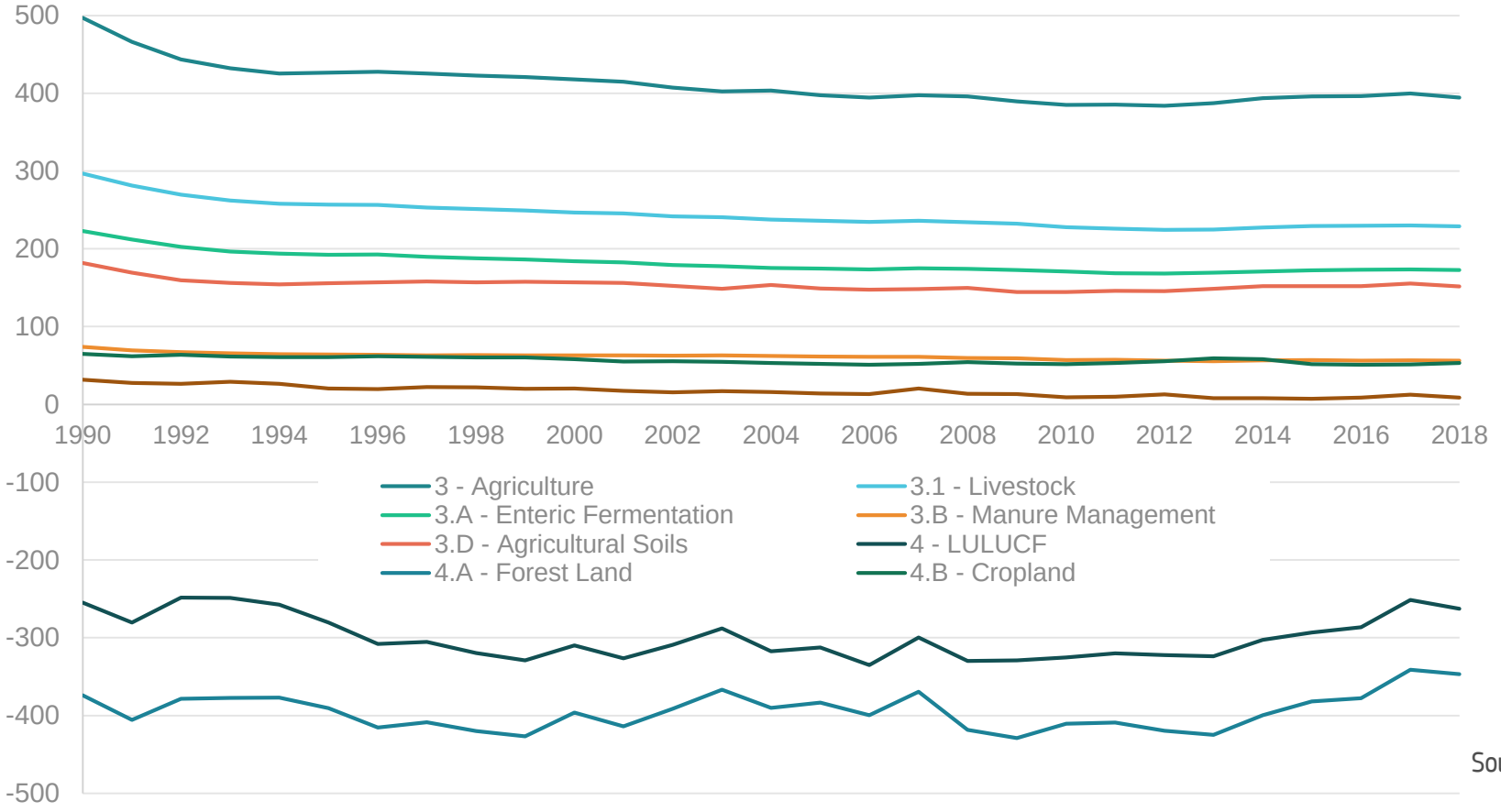
Mitigation options for non-CO2 emission reductions

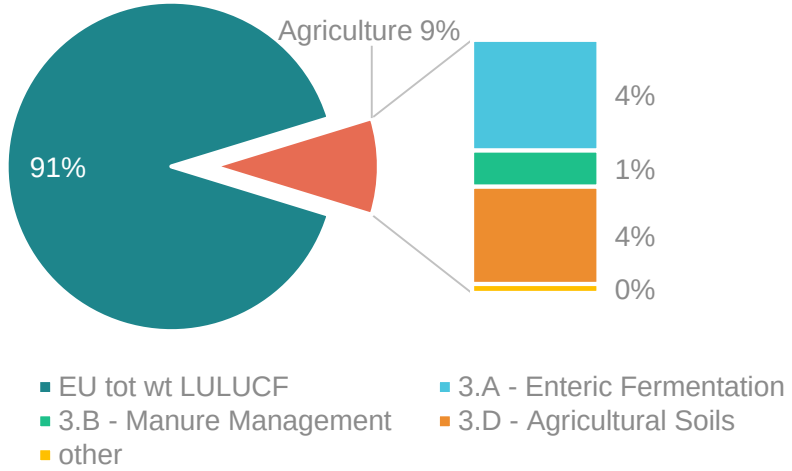
- Ban of burning agriculture waste (CH4)
- Breeding through selection: enhance productivity, fertility and longevity to minimize kg CH4/kg milk (CH4)
- Farm-scale anaerobic digestion with biogas recovery (CH4)
- Feed additives and/or changed feed management practices (CH4)
- Intermittent aeration and alternative hybrids (CH4)
- Intermittent aeration, alternative hybrids and sulphate amendments (CH4)
- Abandoning agricultural use of org soils (N2O)
- Nitrification inhibitors (N2O)
- Precision farming (N2O)
- Variable rate technology (N2O)

LULUCF mitigation options:

- Reduction of deforestation area
- Increase of afforestation area
- Change of rotation length of existing managed forests in different locations
- Change of the ratio of thinning versus final felling
- Change of harvest intensity (amount of biomass extracted in thinning and final felling activity)
- Change of harvest locations.

EU27 GHG emissions from Agriculture





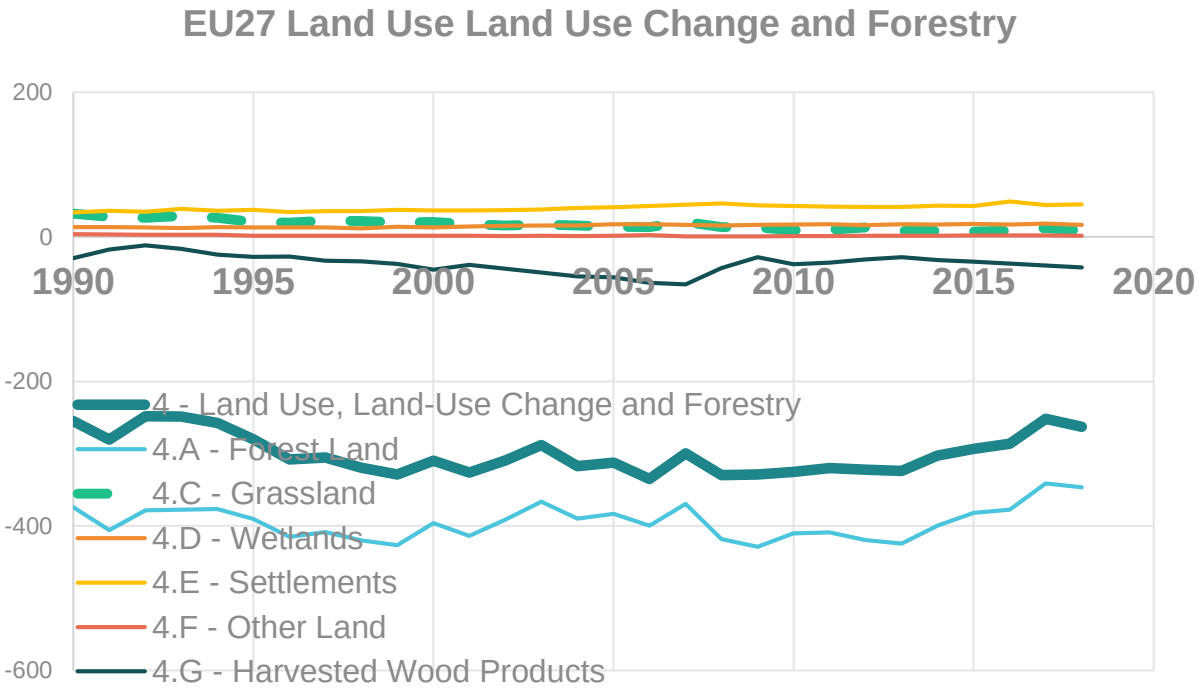
Sources: EEA greenhouse gas - data viewer. Total GHG without LULUCF

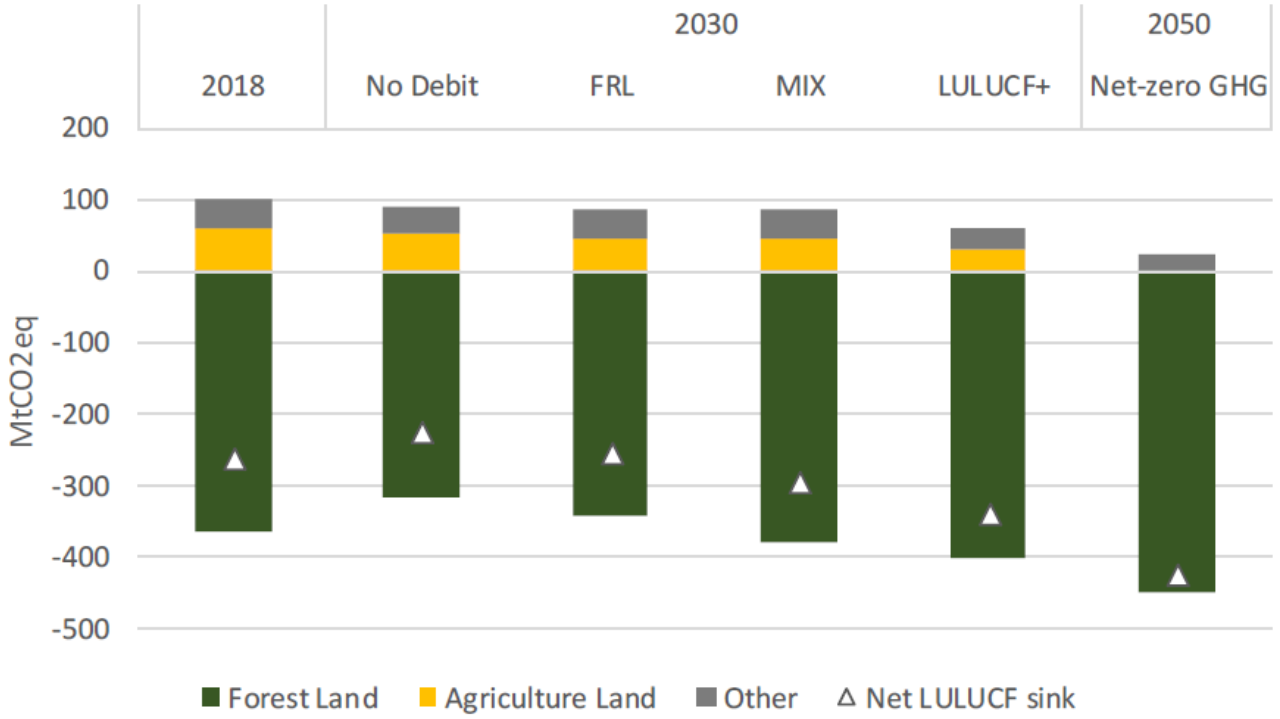
European Commission

Crucial role of the LULUCF in the coming years

Role of grassland in mitigation potential?
Role of forests, their age, their management?
Role of arable lands in in sequestering more carbon?
Role of farm management decisions?
Role of biomass in the bioeconomy?
> necessity of studies and research applied to specific conditions

- Significantly increase of the sink capacity is required, while providing biomass for renewables and bioeconomy (e.g. use of the harvested biomass in buildings), and face natural disturbances.
- Main contribution is from forest.
- Energy crops (perennials) a possibility to reduce pressure on forest sink.





State of play/challenges

Decreasing carbon removals in forests, soils, and wood products

(19% of net removals in 2013 were lost in only five years)

Impact of natural disturbances

Forest maturity

Insufficient current ESR target. Stable (inc. non-CO2) emissions from livestock, fertiliser use, soils.

Insufficient integration of the land sector into climate policies, Agriculture and LULUCF sectors are covered by two different pieces of legislation

Complex compliance rules under LULUCF and Effort-Sharing Regulation

Technical complexity of Forest Reference Levels (modelling difficulties)

Monitoring and reporting systems are not granular enough to pick up action (e.g. in CAP).

Lack of resources and skills in MS, low awareness of existing datasets

Achieving the higher targets

Simpler, more transparent and effective compliance rules and targets > move to reported data

Increase EU carbon removals to at least 310 Mt by 2030 > single EU target for the sink

Climate neutral EU land sector by 2035

Increase net carbon removals by 20%

- Rewetting of drained peatlands
- Afforestation and reforestation
- Soil management
- Agroforestry
- Carbon Storage Products,
- Harvested Wood Products

Reduce non-CO2 emissions by 20%

- Precision farming
- Efficient fertiliser use
- Anaerobic digestion
- Feed additives and breeding

European Commission

Some considerations on new LULUCF target

ESR higher 2030 target: Impact assessment modelled a reduction of 20% for agriculture in 2035 (land neutrality) from current level.

LULUCF 2030 target = **15% higher than the current** level of sink

Assuming agriculture is able to reduce emissions by 20%, LULUCF should increase the sinks by 20% to reach neutrality in 2035

Big challenge to protect the current sink, as it has been decreasing substantially

(e.g. the EU27 sink in 2013 was -324 Mt CO2eq, in less than 7 years we lost more than 62 Mt CO2eq, higher than what we need to reach 310 MtCO2eq in 10 years).

Policy

New proposal for a Regulation on Land Use, Forestry, and Agriculture

July 2021

EU-target of net carbon removals of at least 310 Mt in 2030

Climate-neutrality for the land-sector by 2035

Simplified governance for Member States‘ planning and target compliance

How to bring better incentives to farmers and foresters and create a better business model for them?

Policy Communication on Carbon farming
14 December 2021

Certification of carbon removals
Commission proposal in Q4 2022

European Commission

Carbon farming initiative (Farm to fork strategy)

Carbon farming

- Climate
- Increase SOC in mineral soils and grasslands
- Protection/restoration of C-rich soils
- Increase storage in biomass

CAP

- **CAP Recommendation and Strategic Plans**
- **40% climate mainstreaming**
- **Incentives through CAP**
  - **'Green architecture'**
  - **Research and Innovation**
  - **Horizon Europe/Soil Mission**
  - **Cooperation (EIP-AGRI)**
  - **Farm Advisory Service (+AKIS)**

Certification of carbon removals

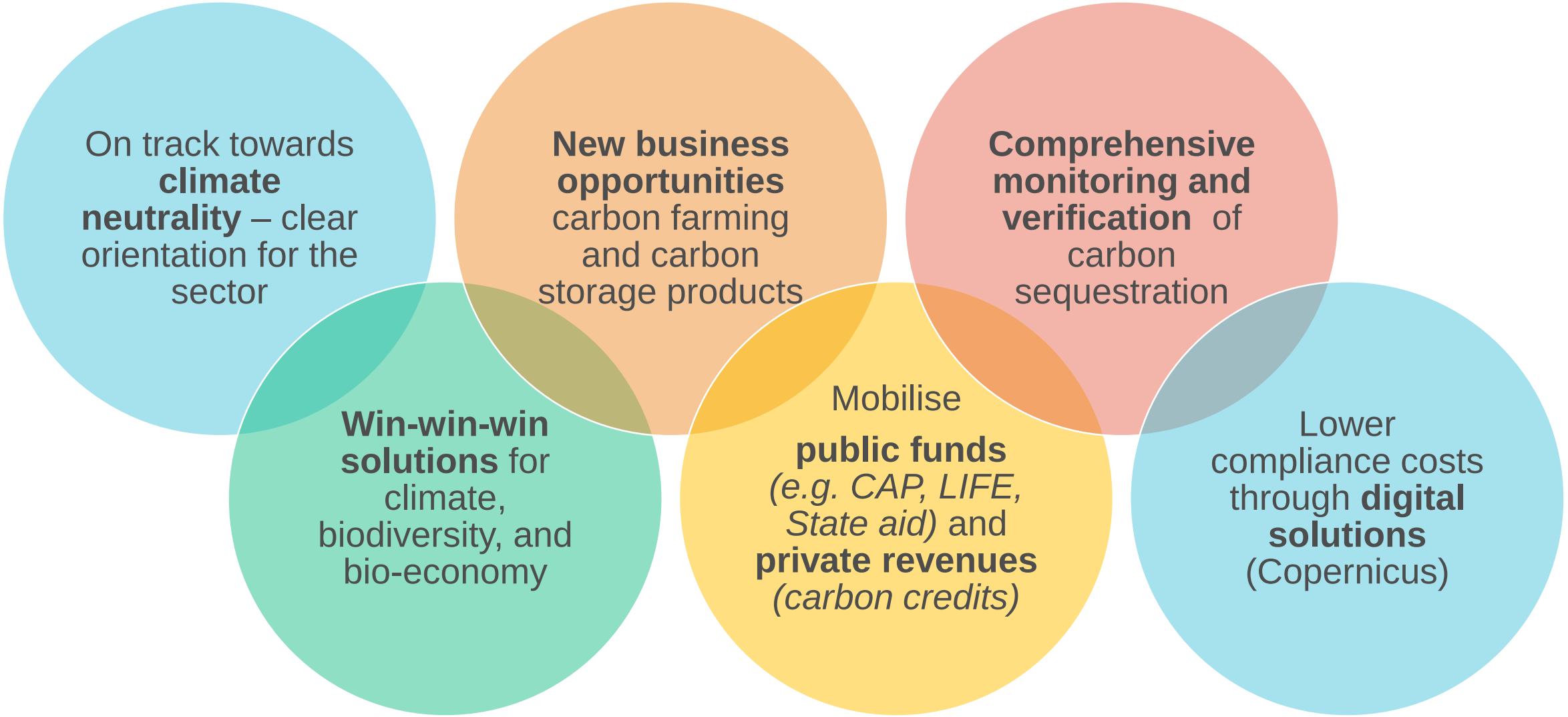
- **EU-wide standards for carbon removals**
- **Voluntary and regulatory carbon markets**
- **Nature-based and technological**
- **Other (e.g. product standards)**

Restoring sustainable carbon cycles (Communication)

European Commission

https://ec.europa.eu/clima/news/commission-sets-carbon-farming-initiative-motion_en

Environmental benefits and business opportunities



Open questions

- Design dimensions

  Governance, Coverage & eligibility, Baseline & additionality, MRV (high costs and uncertainty), Transparency and reporting

- Specific challenges for Soil Organic Carbon

  Non-permanence, saturation of soil with carbon, effects of extreme events

  Results of the implementation of good practices

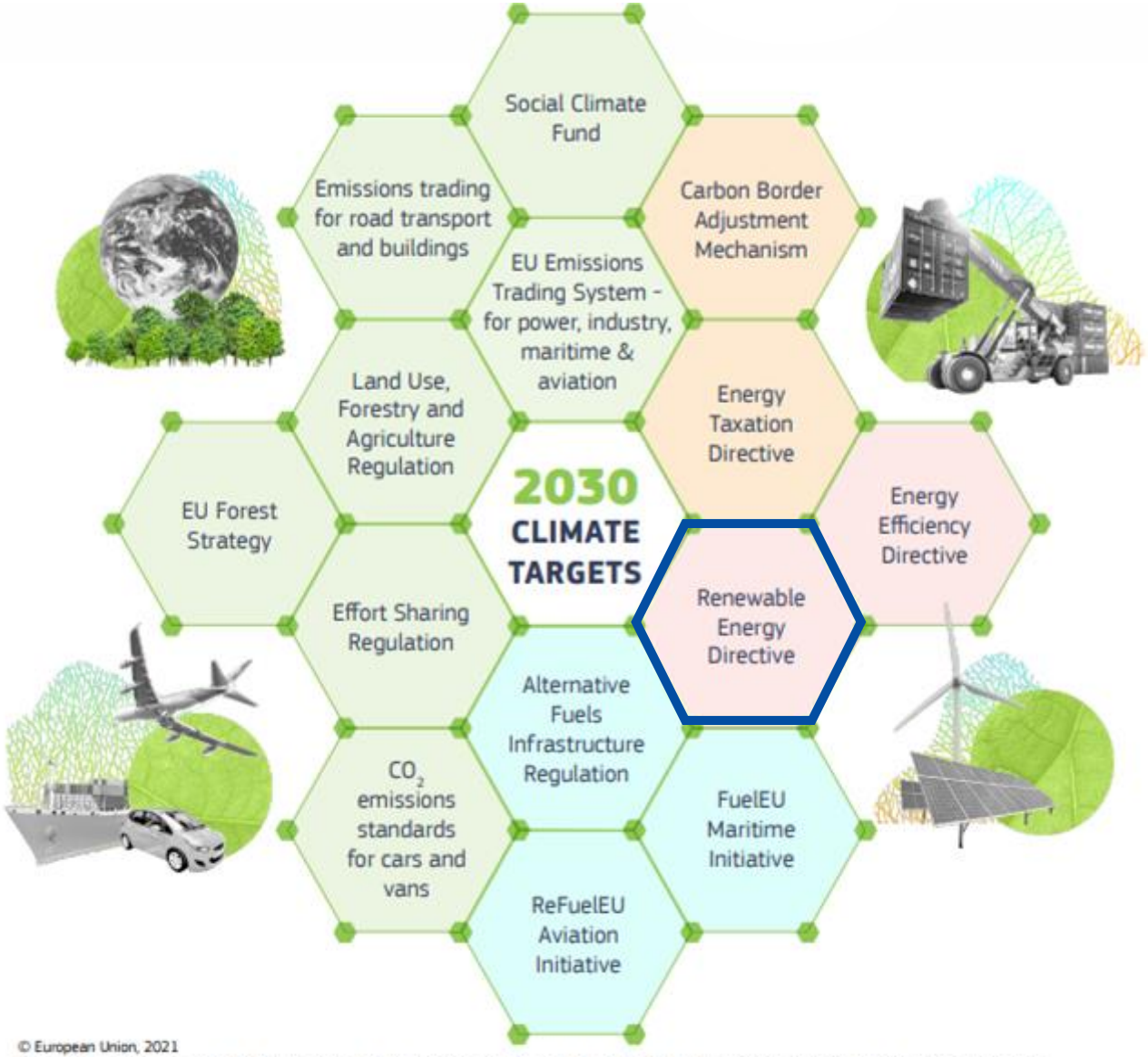
- Reward mechanism (action-based or result based)

- The role of voluntary markets, NGOs, foundations, research programmes, and of specific schemes in MS
- The role of CAP

  It supports good practices for soil in conditionality, ecoschemes and RDP.

  The performance - based approach of the CAP proposal

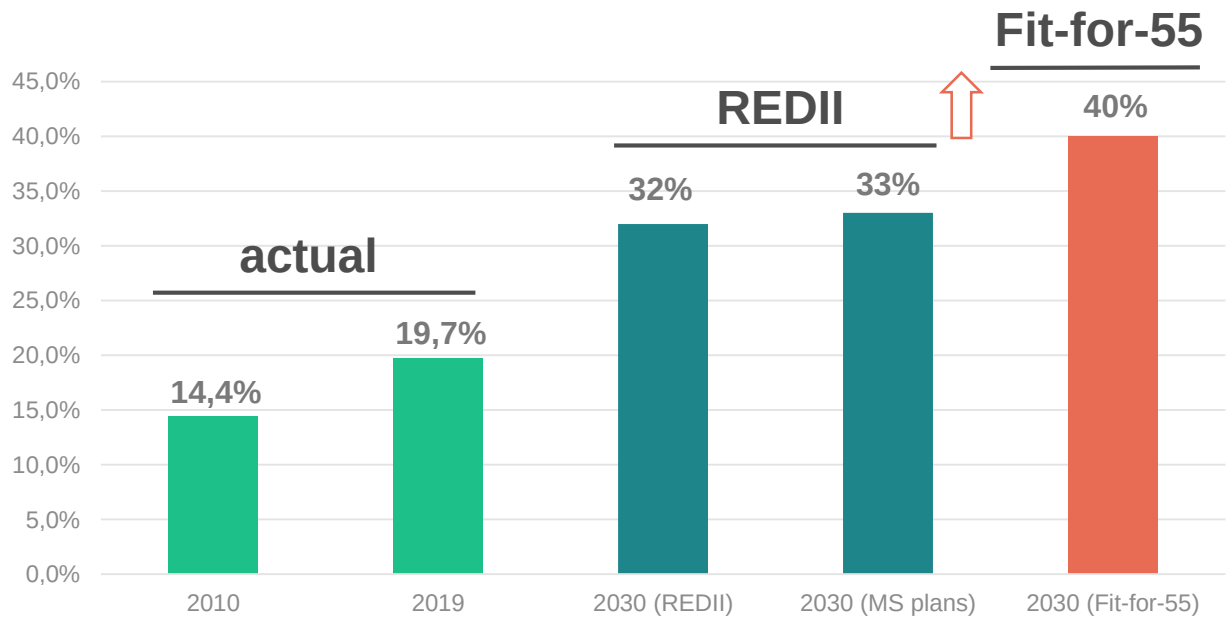
  More budget for climate and environment



European Commission

Overall ambition – the EU-level target

	REDII	REDII revision
Overall Renewable Energy Share (RES)	**At least 32%** EU binding MS contributions + indicative formula	**At least 40%** EU binding MS contributions + indicative formula



European Commission

Bioenergy sustainability: targeted strengthening EU criteria

	REDII (enhanced sustainability criteria being implemented)	**REDII revision** (targeted strengtening)
Sustainaiblity criteria (no-go areas)	**Land criteria for agricultural biomass** Biodiversity/climate criteria for forest biomass (risk-based approach)	**New land criteria for forest biomass:** No sourcing from primary and highly biodiverse forests, peatland and wetland Minimise large clear-cuts
Application of EU bioenergy & GHG saving criteria	Only applicable to heat and power installations equal or above **20 MW** **GHG saving criteria** only for new installations	Application also to small-scale installations equal or above e.g. **5 MW** **GHG saving criteria** apply also to **existing** installations
Cascading principle	MS required to design support schemes with the aim of **avoiding undue distortions** of the raw material market	MS to minimise distortions of biomass market **No support** for saw & veneer logs, stumps/roots Delegated Act on cascading use of biomass From 2026, no support for installations producing electricity with forest biomass*

\+ **Revised ETD (different taxation rates for sustainable/non-sustainable energy sources)**
Revised ETS (zero rating for biomass/biogas only if REDII compliant)
Revised Energy Efficiency Directive (EU and national energy savings obligations)

European Commission

* With certain exceptions for coal regions in transition

EU strategy to reduce methane emissions

European Commission @EU_Commission · Oct 14

Methane is the second most powerful greenhouse gas contributor and an important cause of air pollution, causing serious health problems.

Our Methane strategy adopted today will be key to reduce our greenhouse-gas emissions to at least 55% by 2030.

#EUGreenDeal

Energy4Europe @Energy4Europe · Oct 14

The EU #MethaneStrategy aims to **#reducemethane** in all relevant sectors: energy ⚡ agriculture 🚜 waste 🗑 with partner countries and mobilise an international coalition to support emission reduction. #EUGreenDeal

- news europa.eu/!uU86kn
- factsheet europa.eu/!dV78xc

Combine concrete cross-sectorial and sector-specific actions withih EU and promoting internationally

Monitoring, reporting, verification, reduction in all sectors

Legislative proposal in 2021

European Commission

Allocation of CH_4 emissions in EU-27 and Globally

EU contributes to 5% of global methane emissions

41% global CH4 emissions from natural sources (biogenic), weatland, wildfire

5 - Waste management: 26%
Global: 20 – 26%
Share of CH4: 94%

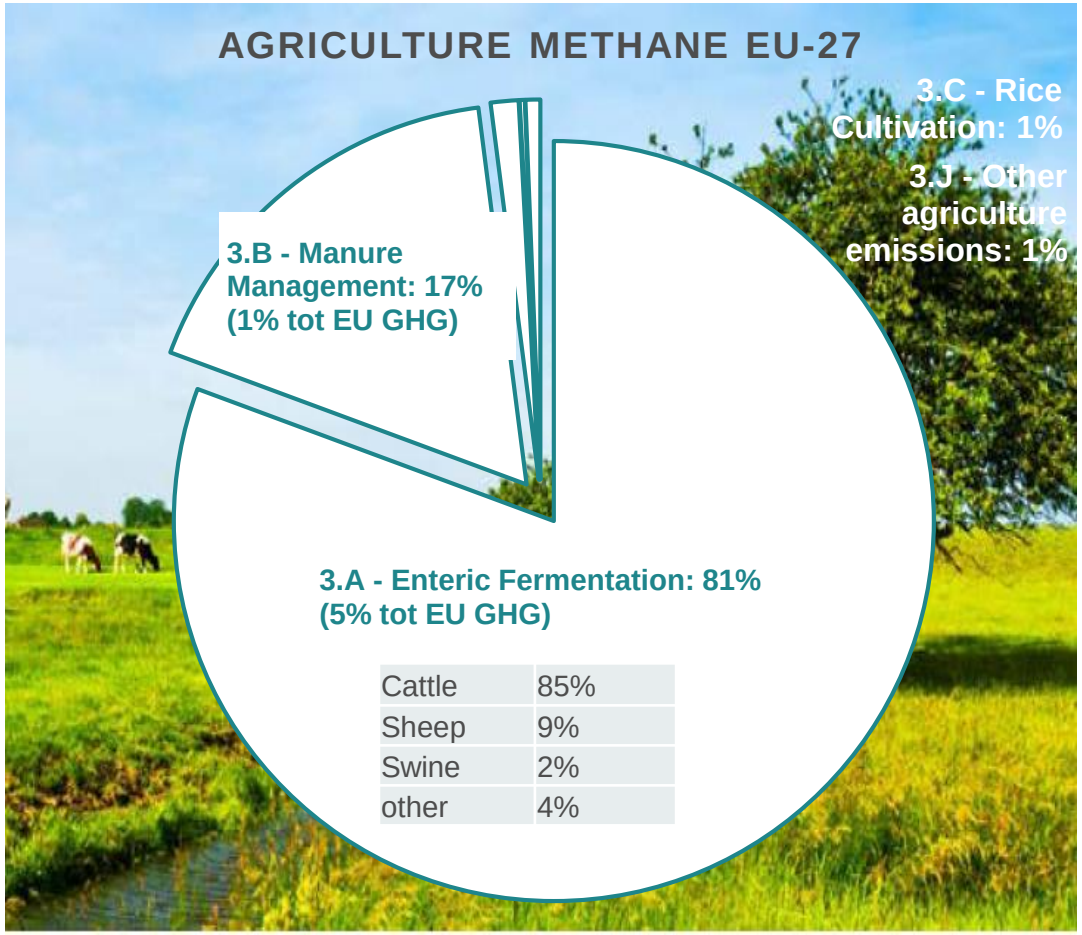
1 - Energy: 19%
Global: 19 – 30 %
Share of CH4: 3%

2 - Industrial Processes and Product Use 0%

4 – LULUCF:1%
Share of CH4: 2%

3 - Agriculture: 54%
Global: 40 – 53%
Share of CH4: 54%

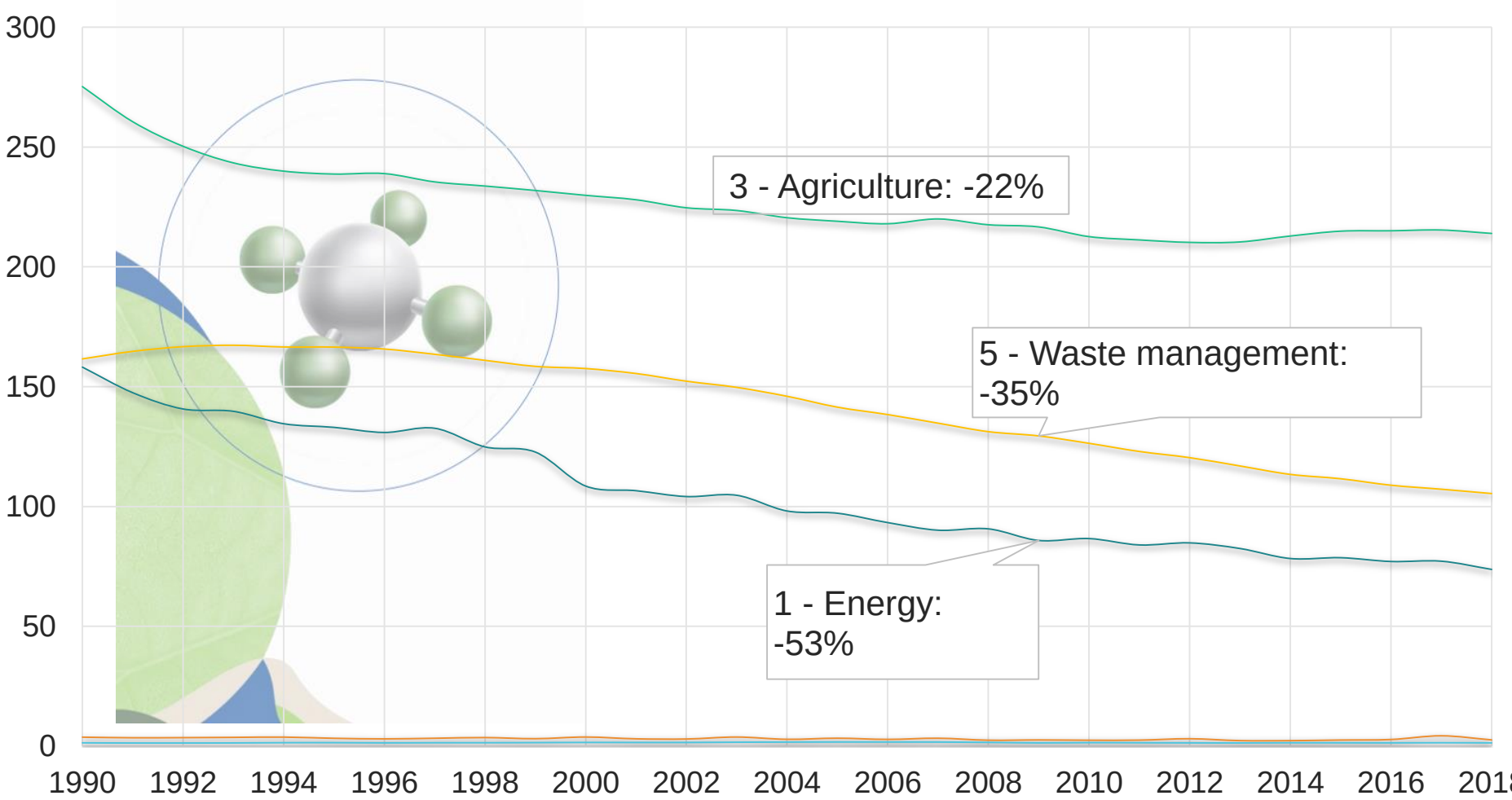
59% global is antropogenic



European Commission

European Environment Agency (EEA), (2018). EEA greenhouse gas - data viewer.
https://www.eea.europa.eu/ds_resolveuid/f4269fac-662f-4ba0-a416-c25373823292

Emissions trend of CH_4 in EU-27 (Mt CO2eq)



European Commission

Sectoral actions in the EU methane strategy – Agriculture

"balance technologies, markets and dietary changes, reduced fossil hydrocarbon inputs and that ensure a livelihood and sustainable business opportunities for farmers"

Expert group — first half of 2021

- analyse life-cycle methane emissions metrics, including new technologies and practices

Inventory of best practices and technologies — end of 2021

- in cooperation with sectoral experts, key stakeholders and Member States
- to explore and promote the wider uptake of innovative mitigating actions
- Special focus on methane from enteric fermentation
- update this inventory with technologies gradually coming onto the market

Carbon-balance calculations at farm level — 2022

- template and guidelines on common pathways for the quantitative calculation of greenhouse gas emissions and removals

Carbon farming — Starting in 2021

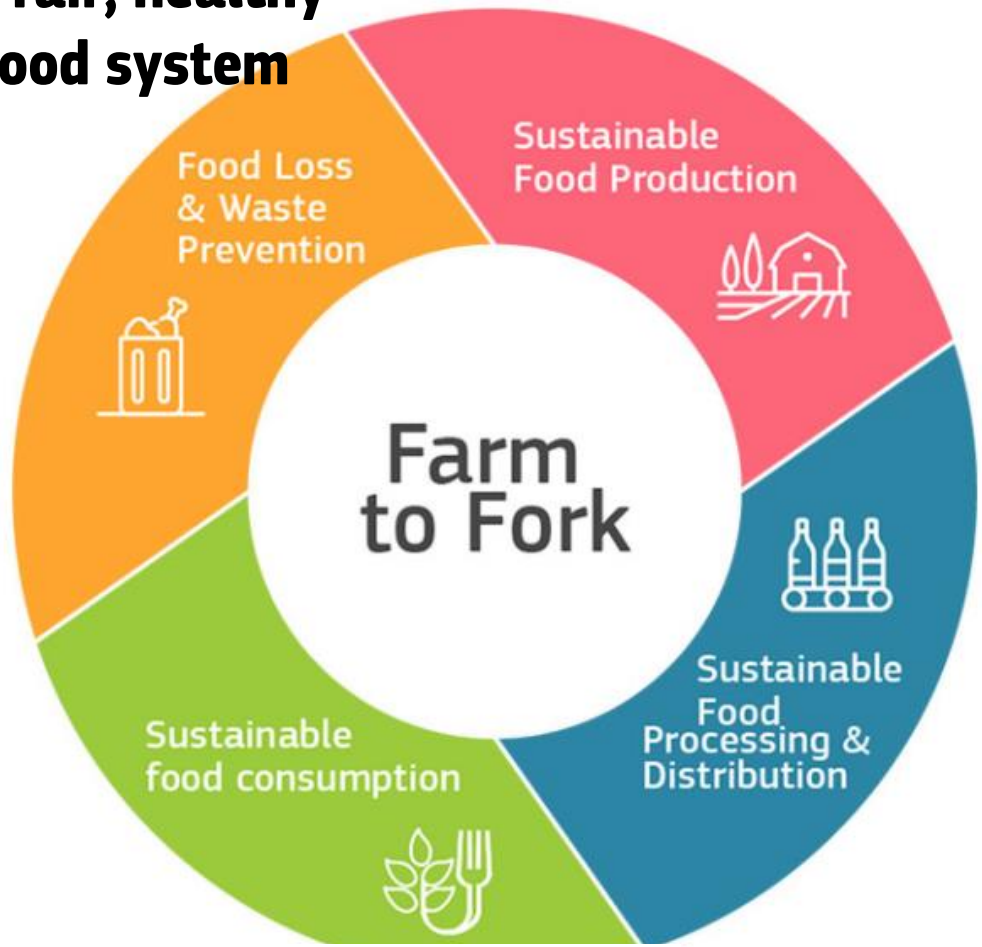
- promote the uptake of mitigation technologies through the wider deployment of 'carbon farming' in Member States and their Common Agricultural Policy Strategic Plans

Targeted research — 2021 - 2024

- Horizon Europe strategic plan 2021-2024
- consider proposing data on the different factors that effectively lead to methane emission reductions
- focusing on technology and nature based solutions
- factors leading to dietary shift
- Waste to biomethane technologies (waste sector)

From ‘Farm to Fork’: designing a fair, healthy and environmentally-friendly food system

- have a neutral or positive environmental impact
- help to mitigate climate change and adapt to its impacts
- reverse the loss of biodiversity
- ensure food security, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food
- preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector and promoting fair trade



Make sure Europeans get healthy, affordable and sustainable food

Tackle climate change

Protect the environment and preserve biodiversity

Fair economic return in the food chain

Increase organic farming

European Commission

Main targets in the Farm to Fork strategy

The use of pesticides in agriculture contributes to pollution of soil, water and air. The Commission will take actions to:

- ✓ **reduce by 50%** the use and risk of chemical pesticides by 2030.
- ✓ **reduce by 50%** the use of more hazardous pesticides by 2030.

The **excess of nutrients** in the environment is a major source of air, soil and water pollution, negatively impacting biodiversity and climate. The Commission will act to:

- ✓ **reduce nutrient losses by at least 50%**, while ensuring no deterioration on soil fertility.
- ✓ **reduce fertilizer use by at least 20%** by 2030.

Antimicrobial resistance linked to the use of antimicrobials in animal and human health leads to an estimated 33,000 human deaths in the EU each year. The Commission will **reduce by 50% the sales of antimicrobials for farmed animals and in aquaculture by 2030**.

Organic farming is an environmentally-friendly practice that needs to be further developed. The Commission will boost the development of EU organic farming area with the aim to achieve **25% of total farmland under organic farming by 2030**.

European Commission

The new EU-wide Biodiversity Strategy will:

Establish protected areas for at least:

30%
of land in Europe

30%
of sea in Europe

With stricter protection of remaining EU primary and old-growth forests legally binding nature restoration targets in 2021.

Restore degraded ecosystems at land and sea across the whole of Europe by:

Increasing organic farming and biodiversity-rich landscape features on agricultural land

Halting and reversing the decline of pollinators

Restoring at least 25 000 km of EU rivers to a free-flowing state

Reducing the use and risk of pesticides by 50% by 2030

Planting 3 billion trees by 2030

European Commission

Future CAP common specific objectives

European Commission

CAP after 2020 – Increased environment and climate ambition

- Environmental and climatic objectives clearly mentioned among the objectives
- Specific indicators for climate mitigation
- CAP Strategic Plans: Higher level of flexibility, coherence of intervention to meet the needs
- Consistency with EU political priorities and national policies on the ground
- Higher level of responsibility : Result-based policy
- Requirement of no backsliding
- Wider and stronger portfolio of policy tools (conditionality and eco-scheme)
- More exigent ringfencing
- Green Deal recommendation to MS
- Strategic plans for the CAP
- National recovery and resilience plans

The role of the CAP

- Integrate CAP data in the National inventories
- Promote practices and technologies to reduce non-CO2 emissions
- Promote soil carbon protection (in grassland and peatlands)
- Promote practices for soil carbon increase in depleted soils
- Promote afforestation and agroforestry
- Promote production of sustainable biomass
- Cover upfront investments, support advisory, transation costs, innovation
- Support piloting with bottom-up innovation projects with farmers

Research lines and innovation needs

Improve monitoring, reporting and verification (use of remote sensing, field measurements and multisectorial integrated modelling, set standards for GHG accounting systems)

Ecosystem monitoring of GHG fluxes. Understand dynamics with future climate scenarios

Push the reduction of emissions in the agricultural sector, with techonology mainly (to ensure food secutirty) > feed additives; small scale biodigestors, precision agriculture, sustainable fertilization, nutrient recovery, circular economy

LCA and GHG calculators for farmers, foresters, and policy makers

Understand forest vulnerability (ensure biomass supply for the bioeconomy)

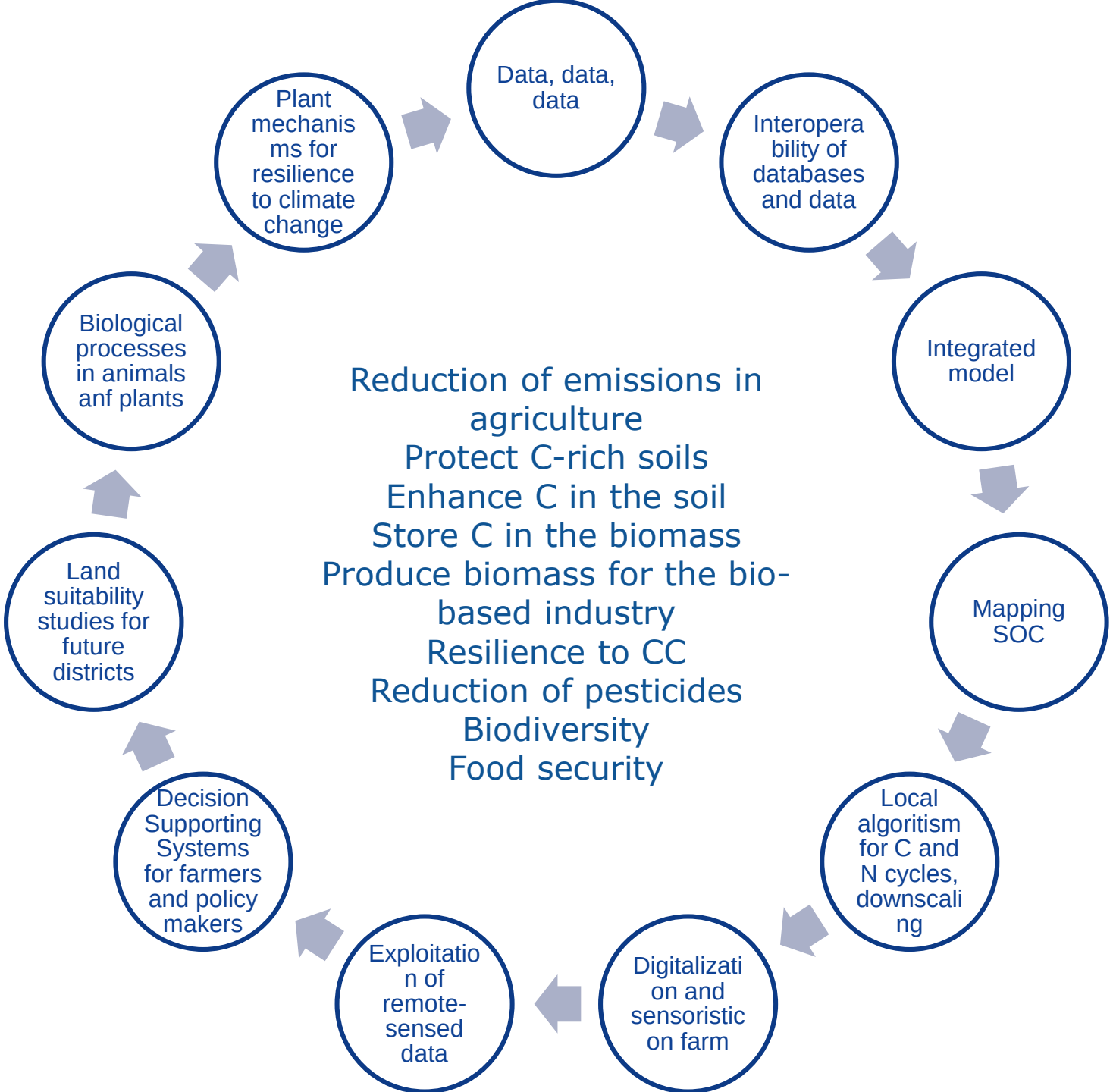
Best management of peatlands and wetlands

Carbon farming (how to reward for C sequestration), how to define C credits

Land use modelling for land availability and land dynamic > production of non-food crops

Enzimatic processes for the production of biofuels from lignocellulosic material

Understand drivers of biodiversity and halt losses



Policy-based Research opportunities in Agriculture and Climate

- Monitoring C fluxes (Soil C) > Carbon farming schemes
- Best practices for minimize Soil C losses
- EU wide maps of Organic soils
- Appropriate management of grasslands to increase C storage and to increase resilience
- Appropriate use/removal of residues
- - CAP, GAEC 5 – Farm Sustainability tool
- Minimum/zero tillage: alternatives to glyphosate
- Adaptation to local cropping systems
- Definition of the best crop rotation (for resilience and mitigation)
- Best green cover for main cropping systems (Med areas)
- Landscape studies (balancing features with arable areas)
- Land suitability maps for crops at landscape level (resilience and environmental care)
- Smart/sustainable packaging
- Understand dietary changes, alternative for nutritional needs, ensure democracy of food needs
- Animal comfort and against climate change and new diseases
- Understand enteric fermentation to reduce CH4 emissions
- Precision farming for pest and diseases

Links

Legislative proposal on a new Regulation for Land use, forestry, and agriculture Delivering the European Green Deal | Climate Action (europa.eu)

Our webpage on Carbon Farming | Climate Action (europa.eu)

Press release on the publication of the Handbook https://ec.europa.eu/clima/news/commission-sets-carbon-farming-initiative-motion_en

Executive summary of Handbook https://op.europa.eu/en/publication-detail/-/publication/b7b20495-a73e-11eb-9585-01aa75ed71a1/language-en

Technical Handbook https://op.europa.eu/en/publication-detail/-/publication/10acfd66-a740-11eb-9585-01aa75ed71a1/language-en

Annexes with the case studies https://op.europa.eu/en/publication-detail/-/publication/99138c98-a741-11eb-9585-01aa75ed71a1/language-en