

FACCE ERA-GAS event: "Farming & forestry in a climate-neutral Europe: Bringing 6 years of research into action for climate"

EU climate policy context for mitigation options from farming and forestry and the role of research and innovation/ Horizon Europe

2 March 2022

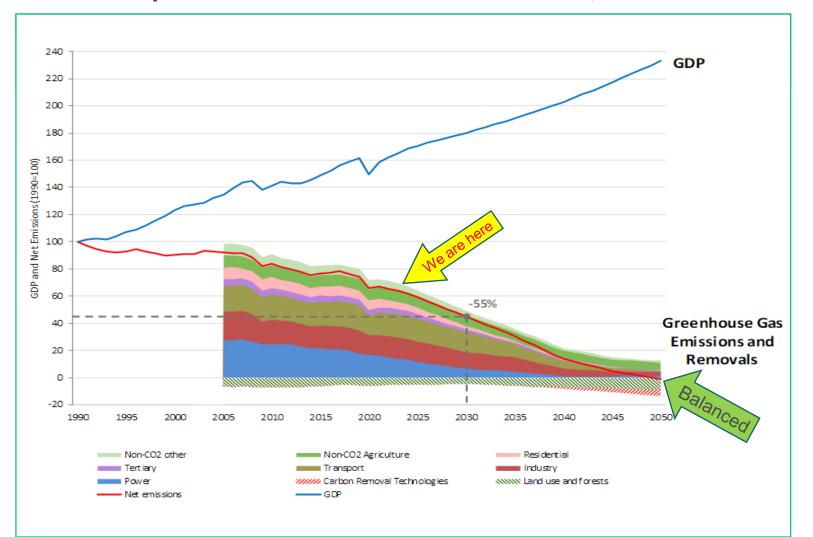
Dr. Peter Wehrheim, Head of Unit, Bioeconomy and Food Systems Unit, DG Research & Innovation

EU Climate policy context for mitigation options related to farming & forestry



Pathway to climate neutrality:

Development of GDP and GHG emissions, 1990 - 2050



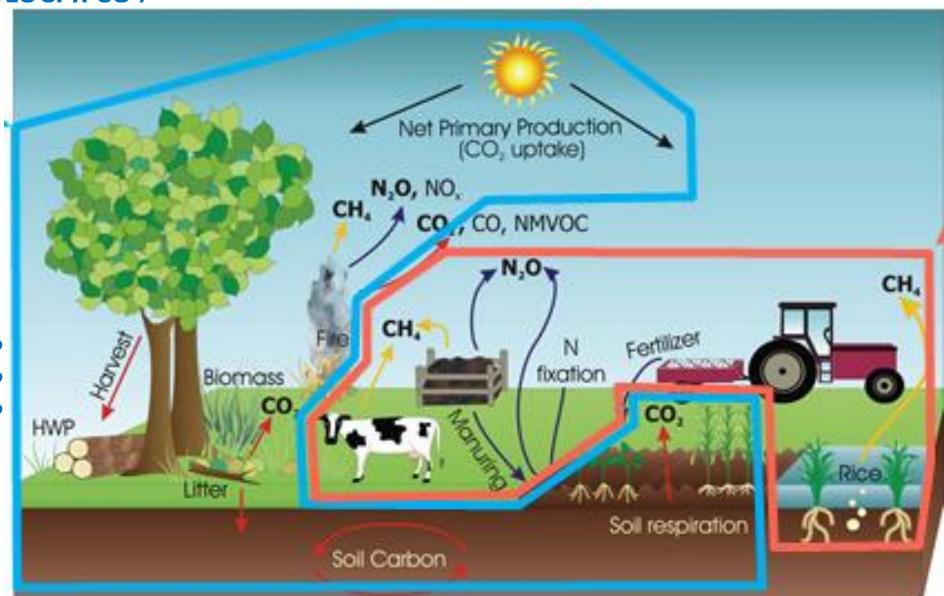


Land Use, Land Use Change and

Forestry (LULUCF): CO.

Partly human induced (linked to global natural carbon cycle)

Uncertainties?
Additionality?
Permanence?



AGRICULTURE $non-CO_2$ (CH₄, N₂O) – in the EŞR

All human-induced

A Clean Planet for all: EU Long-Term Strategy, 2018

Bioeconomy: 1 of the 7 strategic building blocks towards a net-zero GHG economy

- <u>Sequester and store</u> C in agricultural land, forestry, wetlands
- <u>Substitute</u> C-intensive materials in the building sector and through sustainable bio-based products
- New <u>business opportunities</u>
- <u>Climate-friendly</u> farming systems, agroforestry
- Unlocking the potential of <u>aquatic & marine</u> resources including algae
- Substitute fossil fuels in power generation



ROAD TO CLIMATE NEUTRAL ECONOMY: STRATEGIC PRIORITIES



FULLY DECARBONISING EUROPE'S ENERGY SUPPLY

Large scale electrification of the energy system coupled with deployment of renewables will decarbonise our energy supply and significantly reduce our dependency on third country suppliers



EMBRACING CLEAN, SAFE AND CONNECTED MOBILITY

Decarbonising the transport sector by using alternative means of transport, connected and automated driving combined with the roll-out of electric vehicles and enhanced use of alternative fuels



PUTTING INDUSTRIAL MODERNISATION AT THE CENTRE OF A FULLY CIRCULAR ECONOMY

Reaping first mover benefits by modernising existing installations and investing in new carbon neutral and circular economycompatible technologies and



MAXIMISING BENEFITS FROM ENERGY EFFICIENCY

Reducing energy consumption by close to half between 2005 and



DEVELOPING SMART NETWORK INFRASTRUCTURE AND INTERCONNECTIONS

A modern and smart infrastructure, ensuring optimal sector coupling and enhancing regional cooperation, is the cornerstone of the energy transmission and distribution landscape of

tomorrow



REAPING THE FULL BENEFITS OF BIO-ECONOMY AND CREATING ESSENTIAL CARRON SINKS

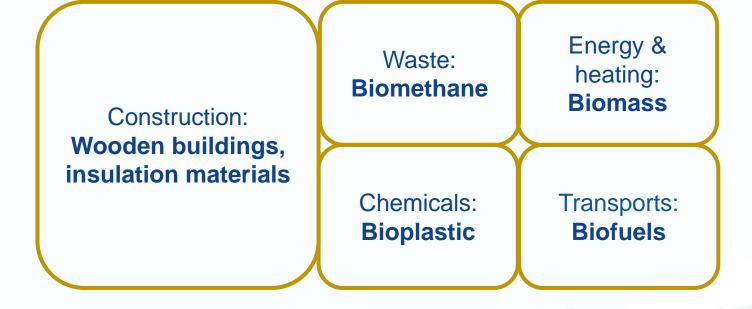
Creating natural sinks by developing more sustainable land-use and agriculture

TACKLING REMAINING CO₂ EMISSIONS WITH CARBON CAPTURE AND STORAGE

Compensating for remaining greenhouse gas emissions in our economy and creating negative emissions



- The Circular Economy / Bioeconomy can open new markets for agriculture and forestry
- Farmers and foresters will help to reduce emissions in other sectors by providing biobased materials and feedstocks to replace fossil-based <u>and mineral</u> materials





2030 Climate and Energy Framework - before Fit 4 55!!

-40 % Greenhouse Gas Emissions (domestic EU) cf. 1990

ETS

Emission Trading System

-43 %

cf. 2005

Including: Power/Energy Sector and Industry, Aviation

Maritime emissions not included

Max 100 MtCO2eq Non-ETS -30% cf. 2005

Including: road transport, buildings, waste, agriculture, Land Use, Land Use Change and Forestry (LULUCF)

ESR -30% Full flexibility

Max 280

MtCO2ea

"No-Debit"

LULUCF

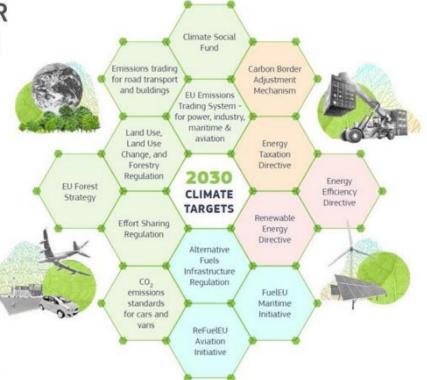
Includes
Agricultural
Non-CO2
GHG

New Climate Policy Context

EUROPEAN GREEN DEAL

REACHING OUR 2030 CLIMATE TARGETS

#EUGreenDeal



European Green Deal

- Climate Law Net-zero Emissions by 2050
- Climate Target Plan -55% below 1990 levels by 2030
- Other policies: Farm to Fork, Biodiversity Strategy, New EU Forest Strategy, EU Soil Strategy etc.

'Fit for 55' – making the 2030 climate target a reality

LULUCF, RED, ETS Revision

Latest package

Sustainable Carbon Cycles Comm. (Carbon Farming)

European Commission



Proposed **2030** Climate ambition to deliver at least 55% net GHG reductions versus 1990

other transport

Existing ETS -61 % vs 2005 Including: power centralized heat energy transformation energy intensive Industry aviation (intra-EU) maritime transport (Intra- and 50% extra EU, only intra-EU covered by EU target)



LULUCF Effort sharing sectors -310 Mt CO_{2-eq} -40 % vs 2005 by 2030 Including: For Total LULUCF Full emissions and road transport, buildings, flexibility removals **New ETS** -43 % vs 2005 Max 131 Mt CO2ea over 2021agriculture (energy CO2, 2025 non-CO2), waste (non-CO2), Max 131 Mt CO2ea small industry and F-gases, over 2026-2030 energy non-CO2,

European

Drivers for amendments: environmental benefits and business opportunities

On track towards climate neutrality – clear orientation for the sector

New business opportunities through carbon farming and carbon storage products

Win-win-win solutions for climate, biodiversity, and bioeconomy

Better monitoring of highly biodiverse and carbon rich areas

Low mitigation costs for carbon removals

Mobilise CAP funds and private revenues (e.g. carbon credits)

Lower compliance costs through remote sensing (Copernicus)



Fit 4 55: proposed revision of the LULUCF Regulation: objectives

Simpler, more transparent and effective compliance rules and targets (no more accounting as of 2026)

Increase EU land carbon removals to at least 310 Mt by 2030

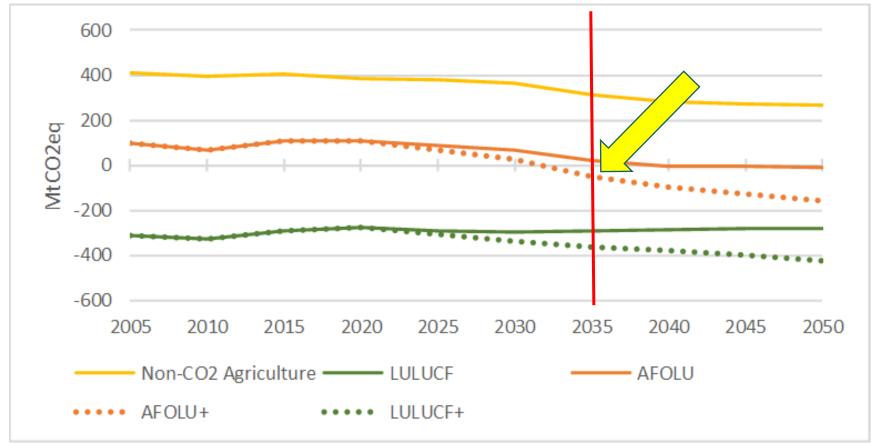
Climate neutral EU land sector by 2035

Aim:

Increased carbon removals balance reduced agricultural emissions, including from livestock and fertiliser use



The 2035 objective: climate neutral sector



Land Use, Forestry, Agriculture

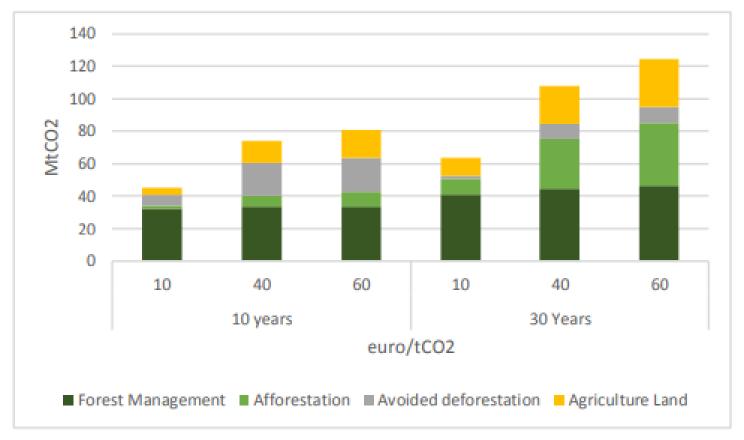
LULUCF IA Figure 5 (p. 21) and CTP IA Figure 19 (p. 116) Chapter 10.4

On the pathway to climate neutrality of all sectors by 2050



Potential for climate mitigation in LULUCF sector

Potential for carbon sequestration and LULUCF sink enhancement at different carbon prices in 2030 and 2050



- At carbon price of 60 euro/tCO2 → sink increase of up to 80 Mt CO2 possible by 2030
 - Mainly through avoided deforestation, improved forest management and soil carbon sequestration → role for carbon farming
- By 2050: sink increase might be driven by afforestation (need for environmental sustainability)
 - Incentives needed now to see sink from afforestation in 30 years



Source: GLOBIOM model

Sustainable carbon cycles

To achieve climate neutrality at the latest by 2050 and negative emissions thereafter, the EU needs to increase carbon removals and establish sustainable carbon cycles.



Drastically reduce the use of fossil carbon



Increase carbon removals



Recycle and reuse carbon



Sustainable Carbon Cycles – solutions

Ecosystem solutions (Carbon Farming)

Mixed solutions

Industrial solutions

Agricultural lands (e.g. agroforestry, soils)

Wetlands
(e.g.
rewetting
of drained
peatlands)

Forestry (e.g. management, afforestati on) Long-lived bio-based products (e.g. wood construction products)

Carbon Capture Use and Storage (CCUS)

Direct Air Capture (DAC)



Horizon Europe

Facilitating mitigation contributions from farming and forestry



Horizon Europe: structure





Horizon Europe is more than Work Programmes: the 49 candidate Partnerships

HORIZON EUROPE PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 6: Food. CLUSTER 5: Climate, **CLUSTER 1: Health** CLUSTER 4: Digital. Industry & Space **Energy & Mobility** Bioeconomy, Agriculture, ... Innovative Health Initiative Key Digital Technologies Clean Hydrogen Circular Bio-based Europe Smart Networks & Global Health Partnership Clean Aviation Rescuing Biodiversity to Services Safeguard Life on Earth Single European Sky ATM Transformation of health High Performance Climate Neutral. Research 3 systems Sustainable & Productive Chemicals risk Blue Economy Europe's Rail European Metrology assessment (Art. 185) Connected and Automated Water4All ERA for Health Mobility (CCAM) Al-Data-Robotics Animal Health & Welfare* Rare diseases* Photonics Accelerating Farming One-Health Anti Microbial Zero-emission waterborne Systems Transitions* Made in Europe Resistance* Agriculture of Data* Clean steel - low-carbon Zero-emission road Personalised Medicine* Safe & Sustainable Food Pandemic Preparedness* System* Processes4Planet Built4People Co-funded or co-programmed Global competitive space Clean Energy Transition **Driving Urban Transitions** Institutionalised Partnerships (Art 185/7) Institutionalised Partnerships / EIT KICs

Co-Programmed

Co-Funded

PILLAR III - Innovative Europe

EIT (KNOWLEDGE & SUPPORT TO INNOVATION INNOVATION COMMUNITIES) **ECOSYSTEMS** InnoEnergy Innovative SMEs Climate Digital Food Health Raw Materials Manufacturing **Urban Mobility** Cultural and Creative Industries

CROSS-PILLARS II & III

European Open Science Cloud



^{*} Calls with opening dates in 2023-24

^{**} Calls with opening dates not before 2022





Missions: a new instrument under Horizon Europe to address major societal challenges

Adaptation to Climate Change

Cancer

Climate-neutral and Smart Cities

Restore our Ocean and Waters

Soil Deal for Europe











Mission Manager DG CLIMA

Mission Manager DG RTD

Mission Manager DG MOVE

Mission Manager DG MARE

Mission Manager DG AGRI

Conclusions:

- The legal proposals for EU climate policies (Fit455) strategic vision on how to better include agriculture/ forestry / the bioeconomy into EU climate commitments:
 - move towards a more stringent contribution from the land sector
 - to combine the agriculture non-CO₂ greenhouse gas emissions with the land use, land use change and forestry sector, creating a newly regulated land sector
- Progress on monitoring and verification through research and innovation is a pre-condition to develop/design concrete solutions/incentives schemes on how to scale up most promissing mitigation options related to agriculture and forestry.



Thank you

See the LULUCF upgrade amendment proposal: https://europa.eu/!jPjNFP and factsheet: https://europa.eu/!n87V6u



© European Union 2020

Unless otherwise noted the reuse of this presentation is authorised under the <u>CC BY 4.0</u> license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

