

# Soil organic carbon from an EU perspective

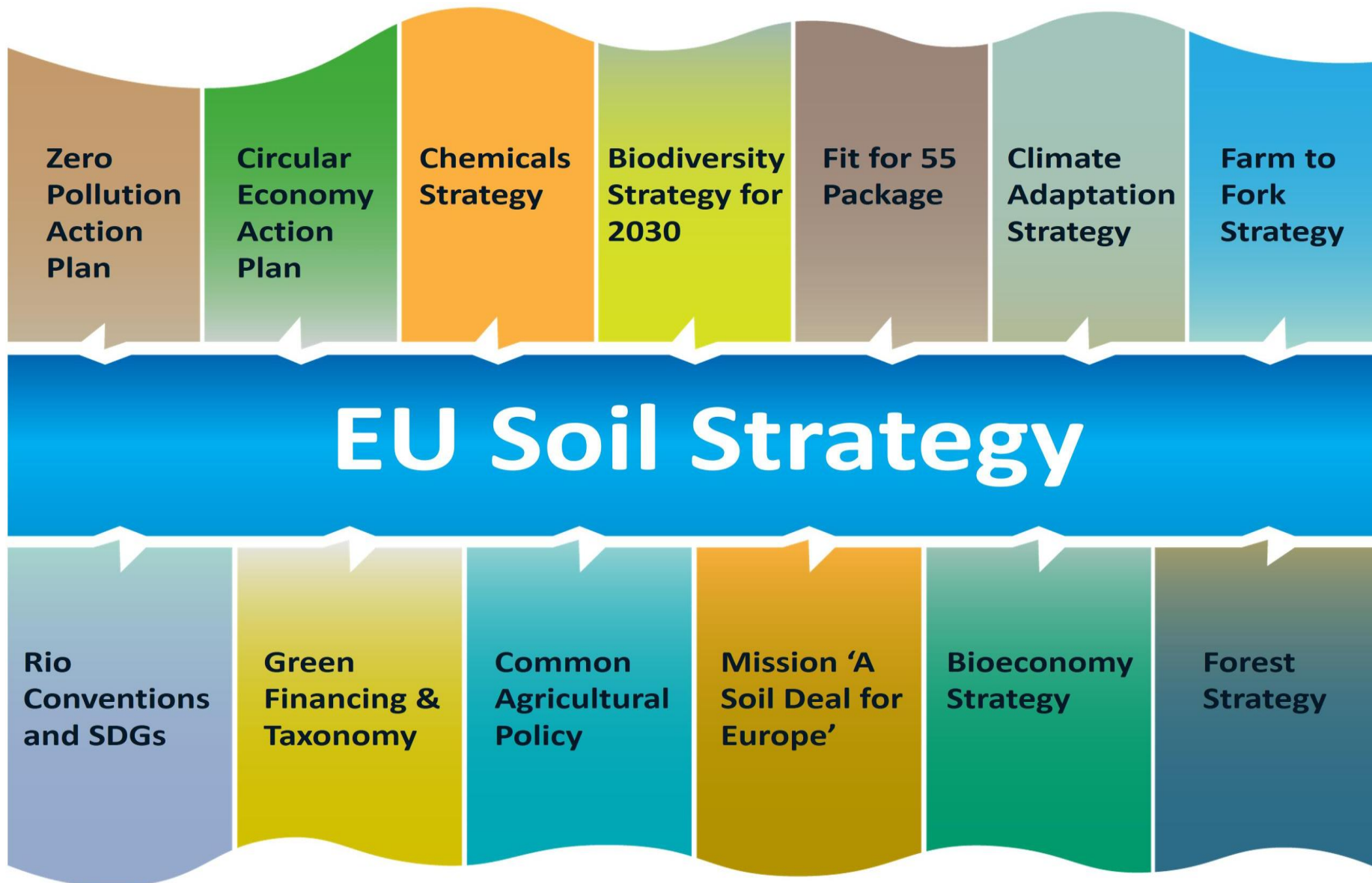
Arwyn Jones

(Panos Panagos, Emanuele Lugato)

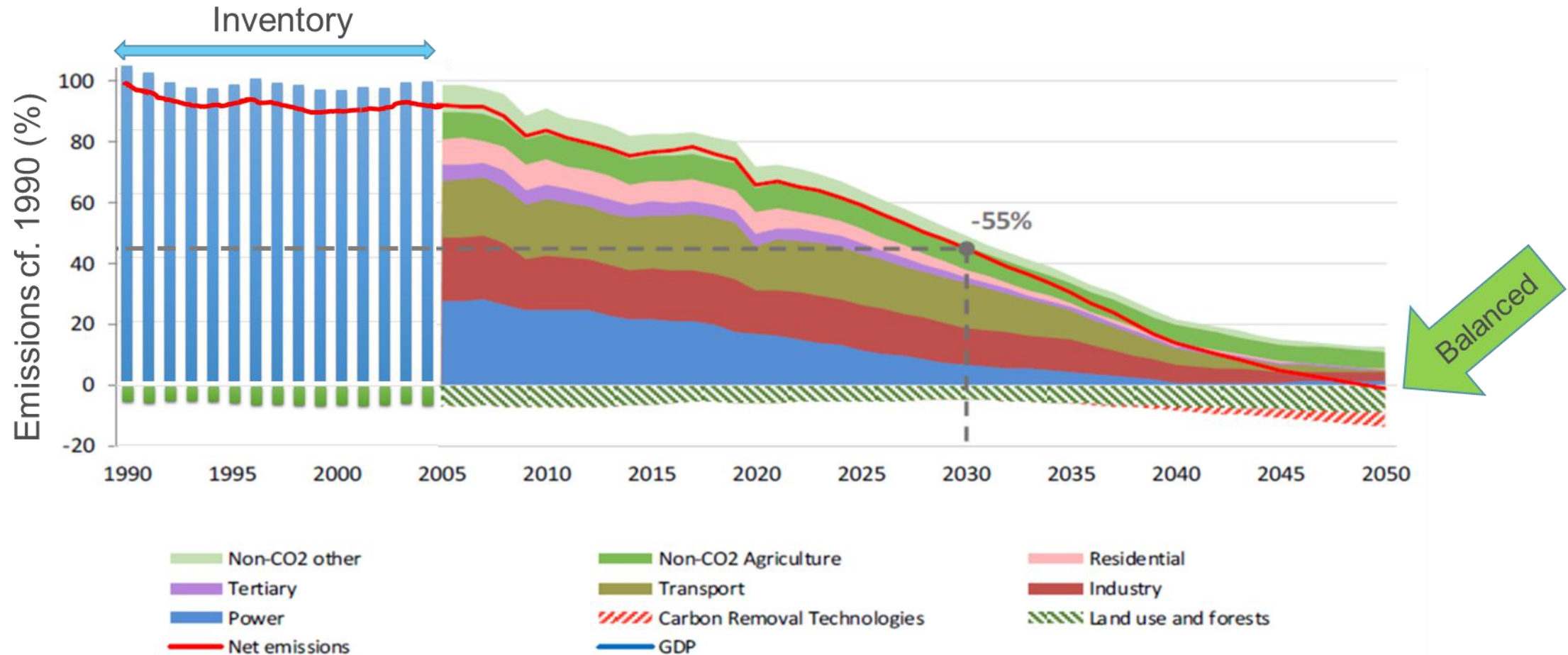
European Commission, Joint Research Centre (JRC) - Directorate Sustainable Resources (Ispra)



# Soil is cross cutting within many policy initiatives



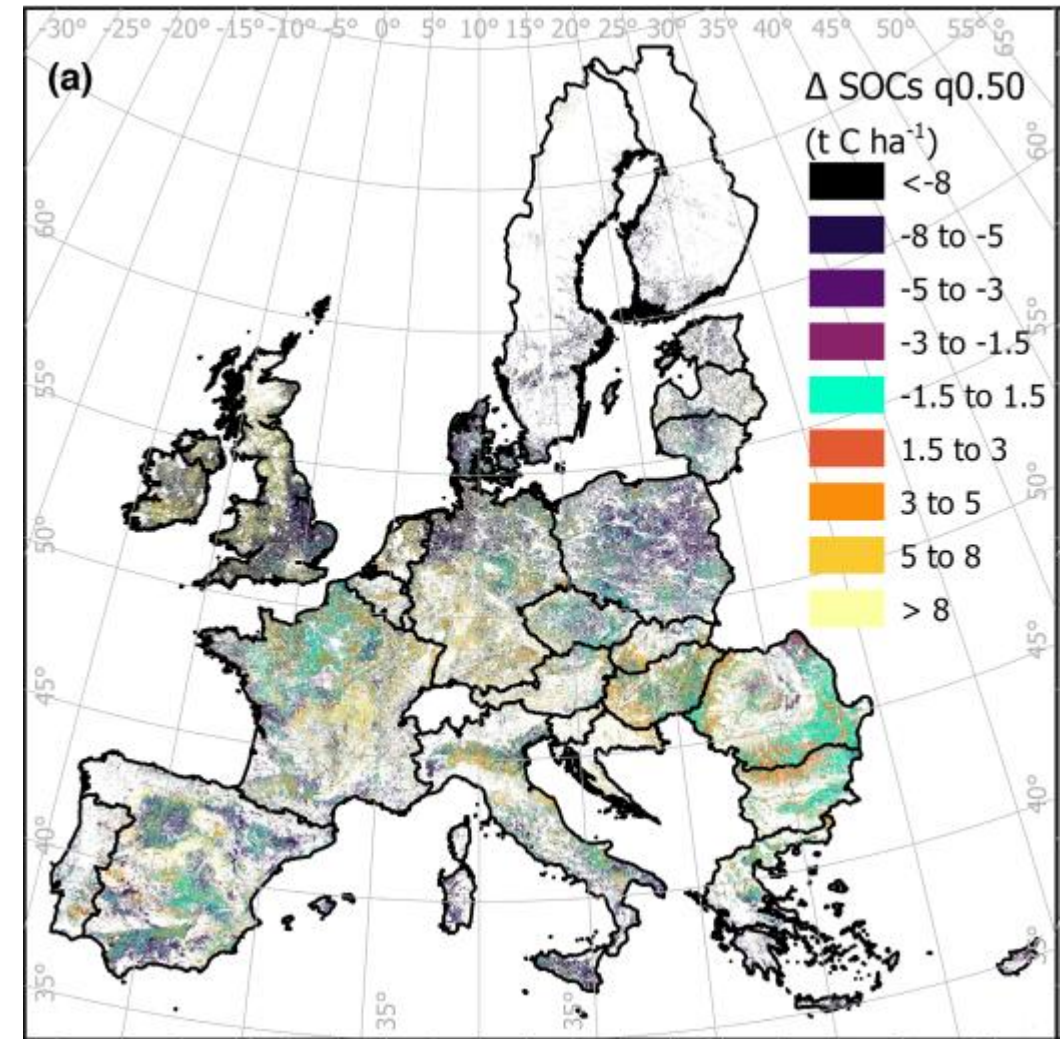
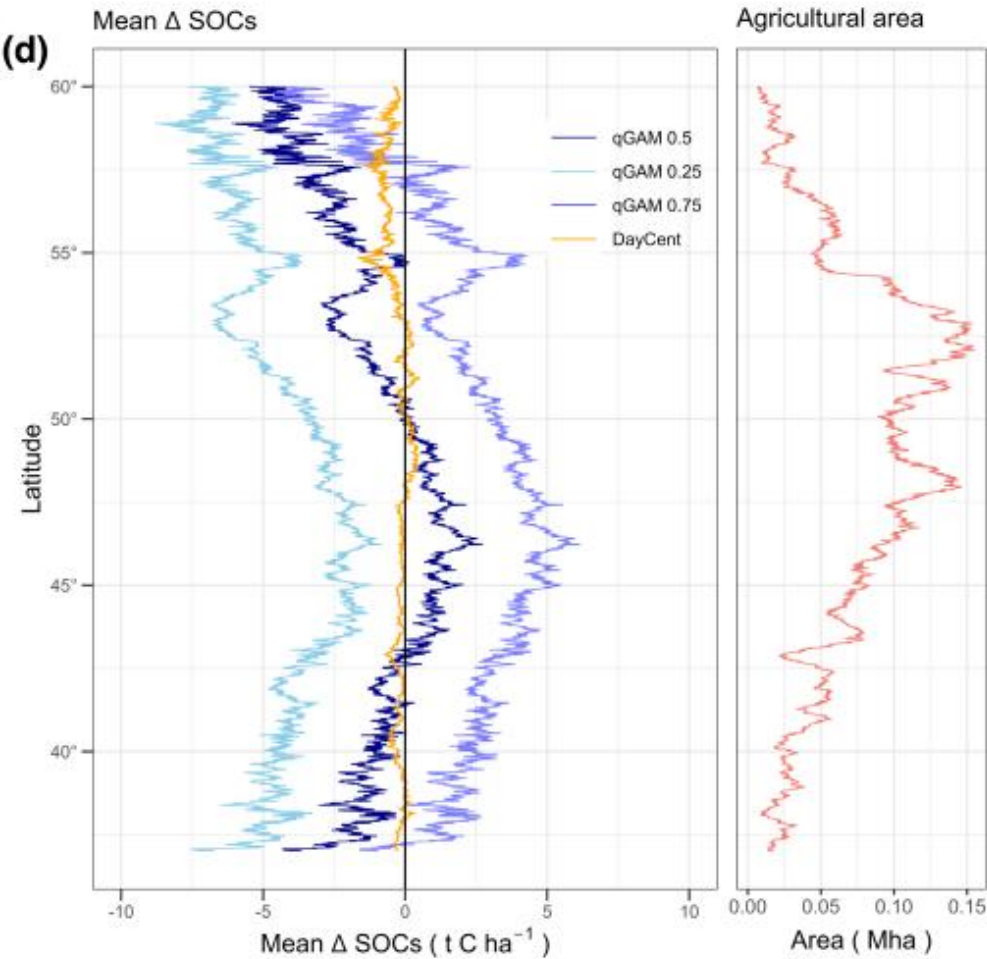
# Pathway to climate neutrality: Climate Law



# What's happening to SOC stocks in agricultural soils?

Soil organic carbon stocks in European croplands and grasslands: How much have we lost in the past decade?

Daniele De Rosa<sup>1</sup>   
 Matteo Fasiolo<sup>2</sup> 



2018-09 losses ~ 70 Mt C (0-20cm depth) = 7.7 Mt C loss per year

# Organic soils: a key “special” issue

## EU emissions from organic soils

Source: Annual European Union greenhouse gas inventory 1990–2018




17 Mha -> 95 Mt CO<sub>2</sub>



>160 Mt CO<sub>2</sub>e

ORGANIC SOILS IN NATIONAL INVENTORY SUBMISSIONS OF EU COUNTRIES

Martin, N. & Couwenberg, J.

Land use subcategory	Area (Kha)	ICECF (tC/ha)	Emissions from Org. Soils. (Kt CO <sub>2</sub> )
 4A1	12 264	[-2.60; 0.65]	13 631
4A2	407		1 494
 4B1	1 242	[-10.01; -1.00]	25 813
4B2	273		5 814
 4C1	4 132	[-6.80; 0.25]	42 150
4C2	354	Large uncertainty EF	5 683

85%

The EU emissions from organic soils are at least 4-5 times (7-8 times Greifswald estimates) higher those from croplands

**Peatlands as a hotspot of emissions**

# Carbon farming



A **green business model** rewarding land managers for improved land management practices, resulting in carbon sequestration in ecosystems and reducing the release of carbon to the atmosphere.

## Benefits of carbon farming:



Increased carbon removals



Additional income for land managers



More biodiversity and nature



Increased climate resilience of farm and forest land

+++	+ / +++	+	+ / ++++	++	C removal
+ / +++	+ / +++	+++	+ / ++++	+	Reduced emissions
+++	+	+ / ++++	+ / ++++	++	LC/LU change
Afforestation and reforestation	Use of conservation tillage, catch crops, cover crops and increasing landscape features	Restoration, rewetting and conservation of peatlands and wetlands	Targeted conversion of cropland to fallow, or of set-aside areas to permanent grassland	Agroforestry and other forms of mixed farming	

# Nature Restoration Regulation



© Wild Wonders of Europe/Hermansen/naturepl.com

Soils are an integral part of terrestrial ecosystems.

## Targets:

- Restoration and rewetting of drained organic soils
- Stock of organic carbon in forests
- Increasing trends in stock of organic carbon in cropland mineral soils

## Considerations:

- Assess area of habitat that is not in good condition (soil)
- Until satisfactory levels are met