



Certification methodologies – Best practices and challenges

*Christian HOLZLEITNER, Head of Unit,
European Commission, DG CLIMA, Unit C3*

Carbon Removals Expert Group - 7 March 2023

Agenda

11:00 to 11:30	11:30 to 13:00	13:00 to 14:00	14:00 to 15:30	15:40 to 16:40	16:40 to 16:45	From 17:30
<ul style="list-style-type: none">• Keynote by Prof. Dr. Ottmar Edenhofer	<ul style="list-style-type: none">• Industrial removals	<ul style="list-style-type: none">• Lunch	<ul style="list-style-type: none">• Carbon Farming	<ul style="list-style-type: none">• End use and credibility of certification	<ul style="list-style-type: none">• Closing	<ul style="list-style-type: none">• Drinks at Grand Central

Mandate of the Expert Group

To assist the Commission's Directorate-General for Climate Action ('DG CLIMA') in the preparation of policy initiatives and related legislative proposals in the field of carbon removals, covering both industrial and nature-based carbon removal initiatives (carbon farming);

To bring about an exchange of experiences and good practices from existing public and private initiatives in the field of carbon removals, including as regards the key issues for the certification of carbon removals, including the quantification, monitoring and reporting of carbon removals, and other criteria, such as additionality, durability, environmental integrity, and transparency;

To establish cooperation and coordination between the Commission, Member States and stakeholders on questions relating to the implementation of Union legislation, programmes and policies in the field of carbon removals;

To assist DG CLIMA in the preparation of relevant delegated acts;

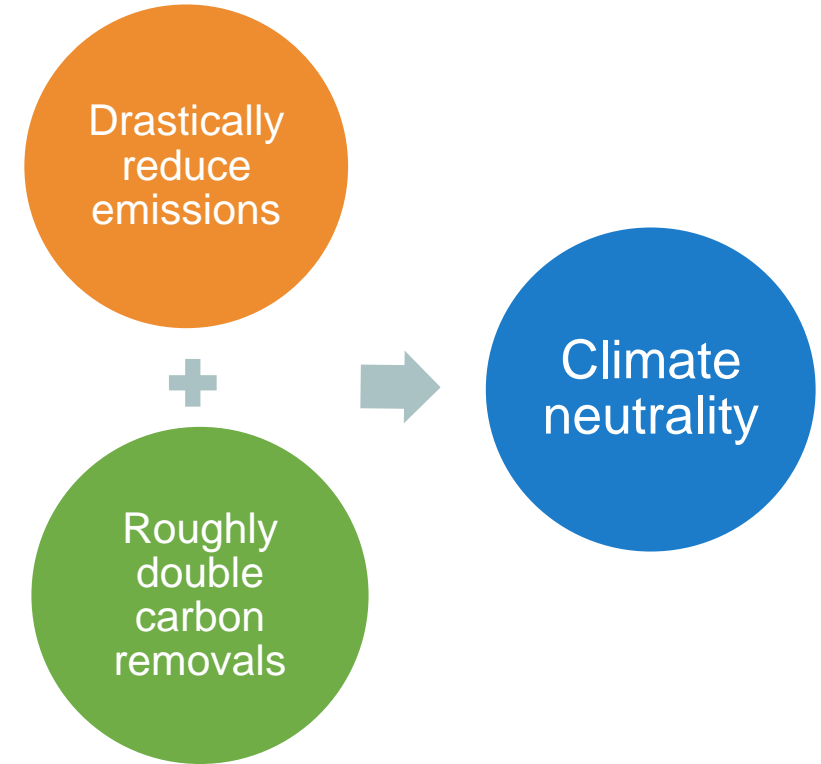
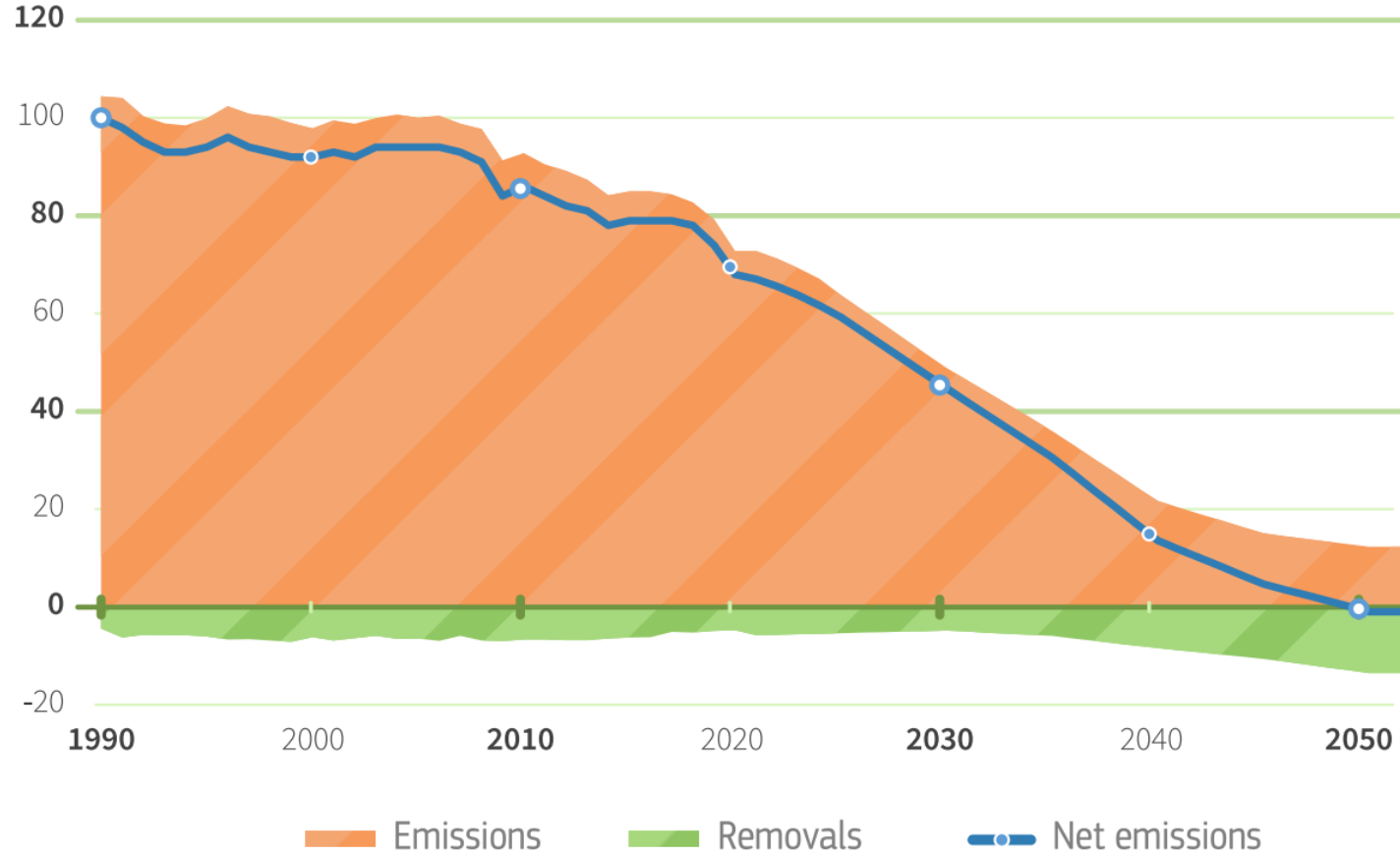
To assist DG CLIMA in the early preparation of relevant implementing acts, before submission to the committee in accordance with Regulation (EU) N°182/2011;

To assist DG CLIMA in identifying, assessing and realising synergies with other policy developments in the land use, forestry and agriculture sector, in particular with regard to Regulation (EU) 2018/841 on Land Use, Land Use Change and Forestry, and in the industrial sectors.

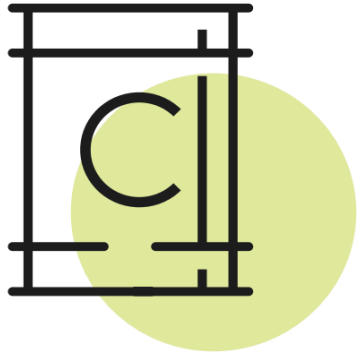
Composition of Expert Group



Towards climate neutrality



Carbon removal activities



PERMANENT STORAGE

E.g. Bioenergy with Carbon Capture and Storage (BECCS), Direct Air Carbon Capture and Storage (DACCS)

Industrial leadership for climate-neutral technologies

At least 5 MtCO₂ removed in 2030, and up to 200 MtCO₂ in 2050

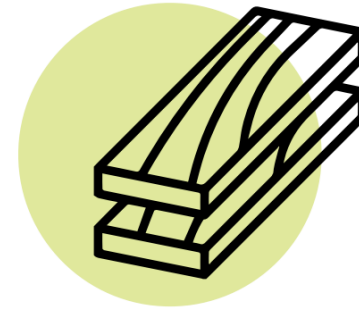


CARBON FARMING

Soil and forest activities in the scope of the LULUCF Regulation, including: Peatland restoration, agroforestry, sustainable forest management, soil carbon sequestration,

Strong synergies with biodiversity

Contribute to LULUCF target of -310 MtCO₂ removals in 2030 and climate-positive bio-economy in 2050



CARBON STORAGE IN LONG-LASTING PRODUCTS

E.g. wood-based construction materials and other carbon-storing construction products

New European Bauhaus

Starting up carbon farming

Benefits



Increased carbon removals



Additional income for land managers

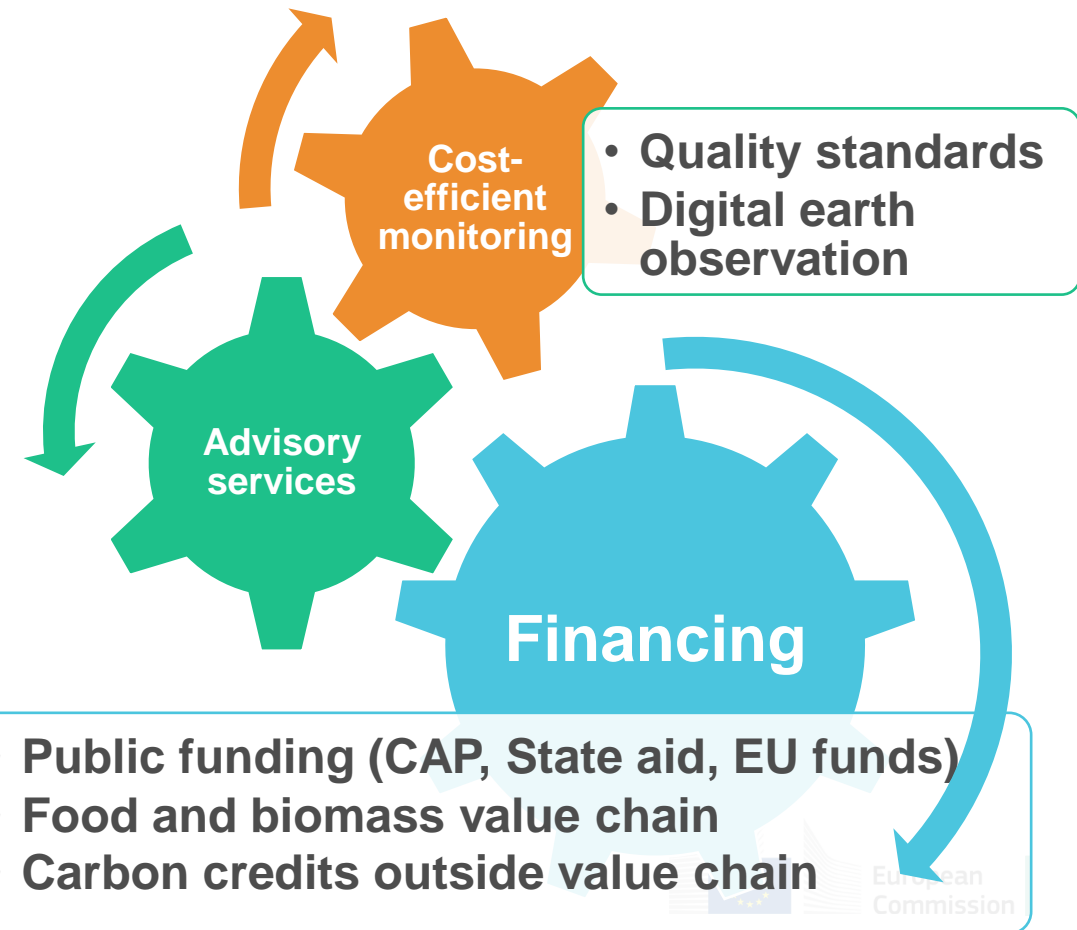


More biodiversity and nature



Increased climate resilience of farm and forest land

Challenges



Starting up industrial carbon removals

Permanent storage



Bioenergy with carbon capture and storage e.g. Stockholm Exergi's project financed by Innovation Fund



Direct air capture and storage

Storage in long-lasting products



Use of long-lasting wood-based construction products and other carbon-storing building materials

Challenges

First-of-a-kind projects

Sustainable sourcing of feedstock and energy

Public-private financing

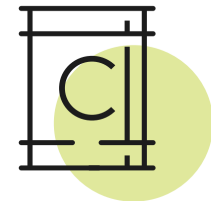
Proposed regulation on the voluntary certification of carbon removals in the EU

Principles in the framework

- QU.A.L.I.TY** criteria
- **QU**antification
 - **A**dditionality
 - **L**ong-term storage
 - **S**ustainabil-**ITY**
- Credible certification**
- **Third-party** verification
 - **Public and private** certification schemes
 - **Publicly accessible** registries
 - **Comprehensive** certificate



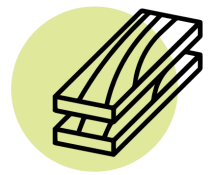
Tailored certification methodologies – to be developed together with expert group



PERMANENT STORAGE



CARBON FARMING



CARBON STORAGE IN LONG-LASTING PRODUCTS

QUALITY removal certificates enable public and private support

No regret option

- QUALITY certificates are a **tool** for monitoring, reporting, and verification of carbon removals
- **First steppingstone** towards a post-2030 policy on carbon removals

Enable early financial support

- Support carbon removals with **highest climate and sustainability benefits**
- Contribute to Member States targets
 - **LULUCF**
 - **Nature Restoration Law**
- Harmonized criteria for **public and private financing**
- Public support, including
 - Innovation Fund
 - State aid for carbon farming

Fight greenwashing

- **Corporate Sustainability Reporting**
 - Draft Sustainable Reporting Standards on Climate - [Download \(efrag.org\)](https://efrag.org)
 - *Delegated act to be adopted mid-2023*
- **Green Claims**
 - *Commission proposal planned for March 2023*

Further steppingstones towards a post-2030 EU carbon removal policy

Global Stock Take + 6 months



Climate Law

- Proposal of 2040 target

By 2025



Carbon farming

- *Art 17(2) new LULUCF Reg*
Assess options to ensure that land sector is well on track for climate neutrality
- Including implementation of Articles 6.2 and 6.4 PA

By 2026



Permanent storage

- *Art. 30 new ETS Directive*
Assess inclusion of permanent storage in ETS

By 2025



Carbon storage products

- *Art 17(3) new LULUCF Reg*
Assess inclusion in scope of LULUCF Regulation

Framework Methodologies

Certification framework

QU.A.L.I.T.Y
criteria

Credible
certification
rules



**Negotiations with
Parliament and Council**

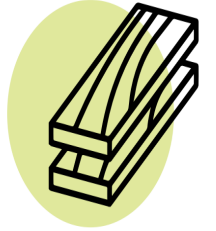
Tailored certification methodologies



**PERMANENT
STORAGE**



**CARBON
FARMING**



**CARBON
STORAGE IN
LONG-
LASTING
PRODUCTS**



Expert group

What are best practices? What are challenges?

	QU antification	A dditionality	L ong-term storage	S ustainability
Permanent storage				
Carbon storage in long-lasting products				
Carbon farming				

Inventory of current best practices and challenges

Which certification methodologies are ready to be scaled up?

2023 Expert Group Work Program and Timeline

Meeting on carbon farming methodologies

- Soils
- Forests
- Peatlands
- 21-22 June 2023

Meeting on industrial removals

- Permanent storage
- Long-lasting carbon storage products
- **Sep/Oct 2023**

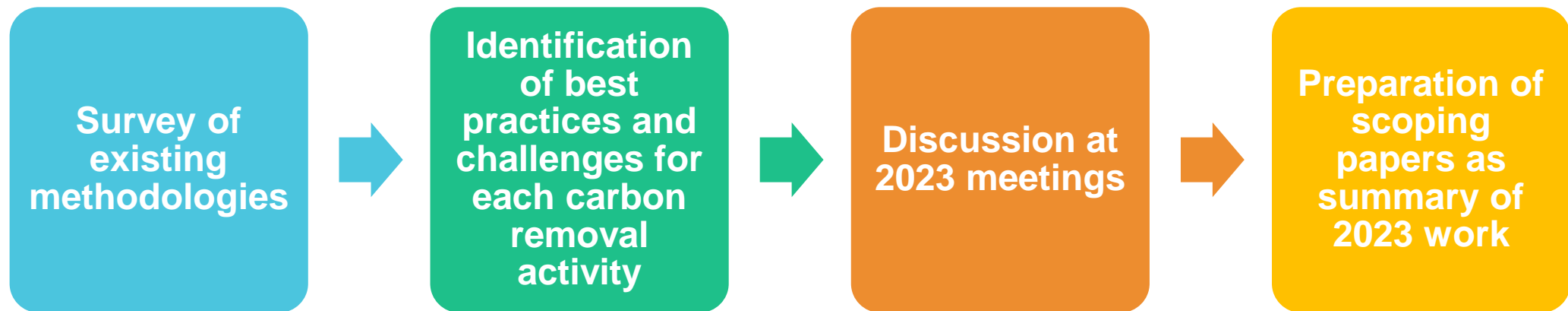
Meeting on certification process

- Certification schemes
- Third-party verification
- Registries
- **Oct/Nov 2023**

Meeting for 2024 work program

- Report on best practices
- **Q4 23 or Q1 24 depending on progress in co-decision process**

2023 meetings on certification methodologies – we want to know about your best practices and challenges



Get together with your peers and provide peer-reviewed inputs at each step

Experts A-Type, Consultants, and JRC



Lucia Perugini



Martin Comes



Asger Olesen



Joris Van Acker



Grega Milcinski



Sebastian Rüter



Giulia Marina Stellari



David Chiaramonti



Peter Karsch

• Project Manager, Partners for Innovation B.V.



**Joint Research
Centre**



Jan Peter Lesschen

• Scientific Director, Senior Researcher at Wageningen Environmental Research





- One of the objectives: “**conserve soil organic carbon stocks**”.

Horizon Europe Mission: A Soil Deal for Europe

– *Grant agreement being prepared (HORIZON-MISS-2022-SOIL-01-06)*

Type of Action: CSA (Coordination & Support Action) **EU Contribution:** EUR 3.0 Million – 1 Project

- **Supporting the upcoming Expert Group** on carbon removals to develop high-quality certification methods and standards within the recently proposed **EU legal framework for the certification** of carbon removals

Monitoring, reporting and verification of soil carbon and greenhouse gases balance – Grant agreement being prepared (HORIZON-MISS-2022-SOIL-01-05)

Type of Action: Research and Innovation Action **EU Contribution:** EUR 14 Million – 2 Projects

- ✓ Enhance development and demonstration of **standards, methods & rules to track** carbon farming.
Collaborate with Expert Group on carbon removals.

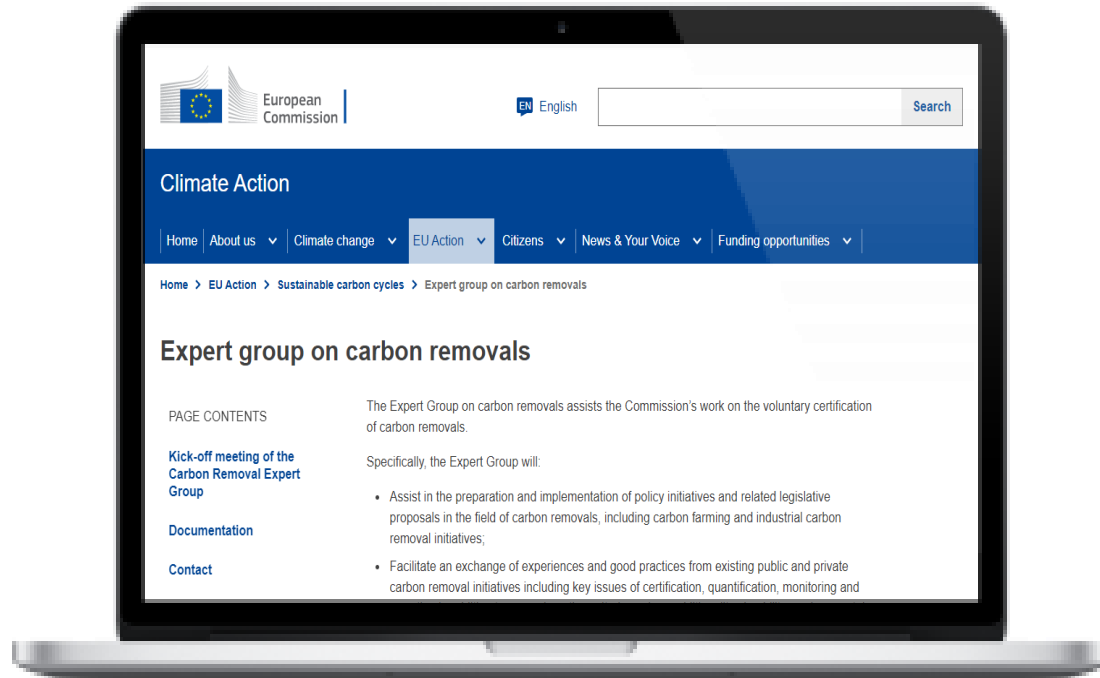
Carbon farming in living labs (LL) (HORIZON-MISS-2023-SOIL-01-09)

– *open call for proposals till 23 September 2023*

Type of Action: Research and Innovation Action **EU Contribution:** EUR 12 Million – 1 Project

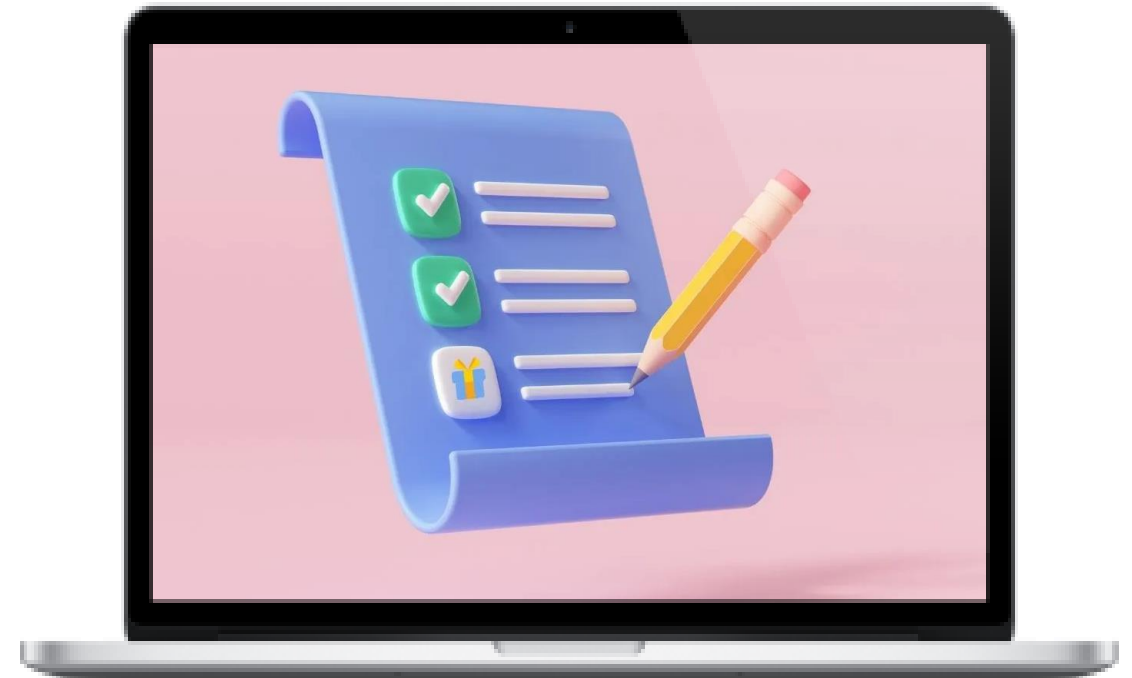
- Practice-oriented **knowledge and tools** are **more easily available** to land managers. Set up **four to five LL** to work together **on carbon farming**, covering one or several land use types.

Final remarks



Expert Group Website: Public updates & next meetings

https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/expert-group-carbon-removals_en



Dedicated website for Expert Group: Structured way to share your input, insights, papers and perspectives

Where can I find more information on the carbon removal expert group?

- [Expert group on carbon removals \(europa.eu\)](#)
- [Register of Commission expert groups and other similar entities \(europa.eu\)](#)
- [Call for experts on carbon removals \(closed in September 2022\)](#)

Where can I find more information on carbon removal certification?

- Proposal: https://climate.ec.europa.eu/document/fad4a049-ff98-476f-b626-b46c6afdded3_en
- Impact Assessment: https://climate.ec.europa.eu/document/ab53e63b-4b85-4d28-ac67-6bd742506bae_en
- Press release: [Commission proposes certification of carbon removals \(europa.eu\)](#)
- Q&A: https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_7159
- Factsheet: https://ec.europa.eu/commission/presscorner/detail/en/fs_22_7161
- [Expert group on carbon removals \(europa.eu\)](#)

More resources related to carbon removals

- More information on Sustainable Carbon Cycles: https://ec.europa.eu/clima/eu-action/forests-and-agriculture/sustainable-carbon-cycles_en
- New LULUCF Regulation
- Corporate Sustainability Reporting Directive: [EUR-Lex - 32022L2464 - EN - EUR-Lex \(europa.eu\)](#)
- Draft European Sustainability Reporting Standards – Climate Change: [Download \(efrag.org\)](#)
- New State Aid Guidelines for Agriculture and Forestry: [State aid \(europa.eu\)](#)
- [Innovation Fund \(europa.eu\)](#)
- LIFE programme: [Climate change mitigation and adaptation \(europa.eu\)](#)
- [Soil Mission \(europa.eu\)](#)

Call for input

- [Technical survey on carbon farming certification methodologies](#) – deadline: 5 May 2023
- Call for evidence: [EU climate target for 2040](#) – deadline: 23 June 2023
- Upcoming call for evidence: Industrial carbon management communication



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Global Commons and Climate Change





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Managing the carbon cycle in the 21st century: A tentative governance proposal for CDR in Europe

Prof. Dr. Ottmar Edenhofer

Expert group on carbon removals
Brussels, 7 March 2023

Contents

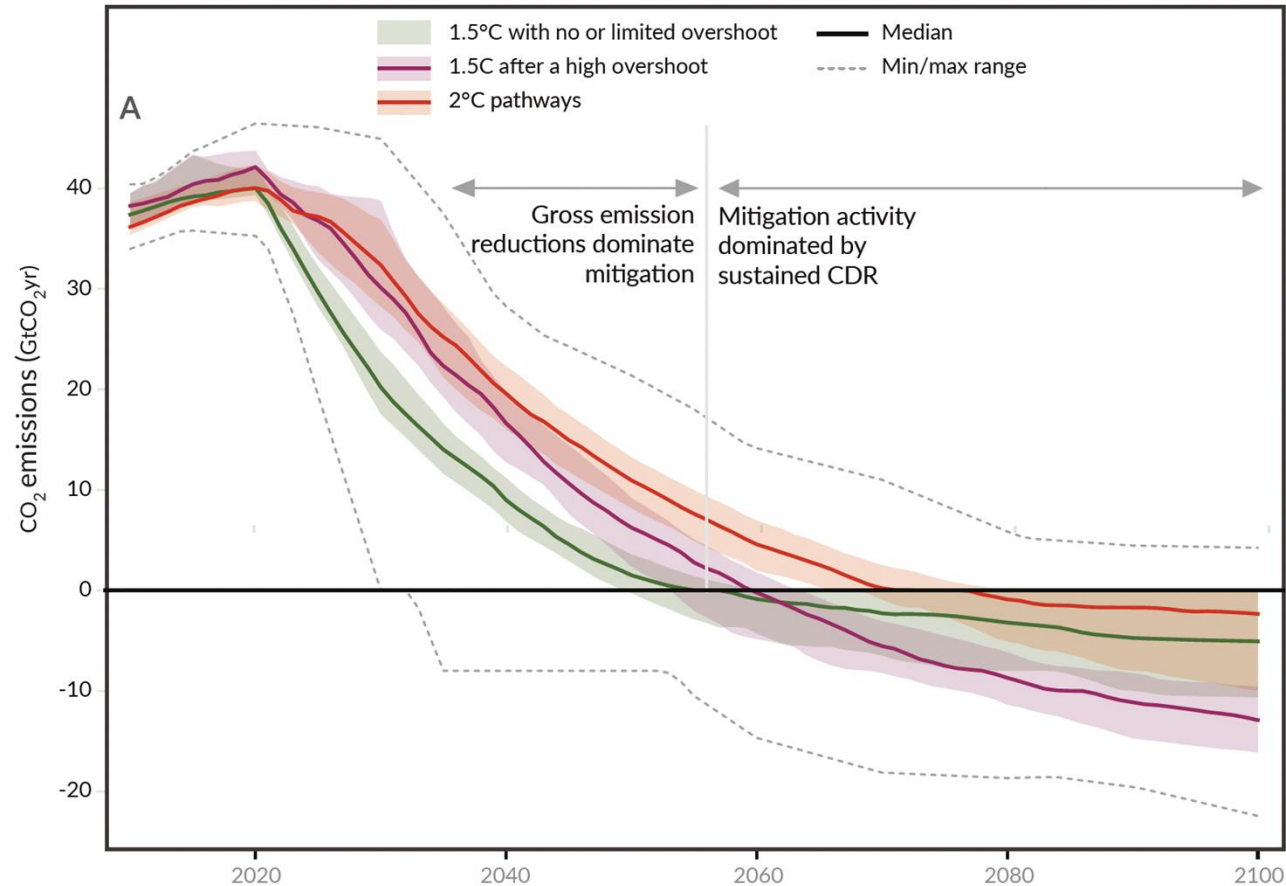
#1 Climate targets & carbon dioxide removal

#2 Scaling CDR deployment

#3 Governance

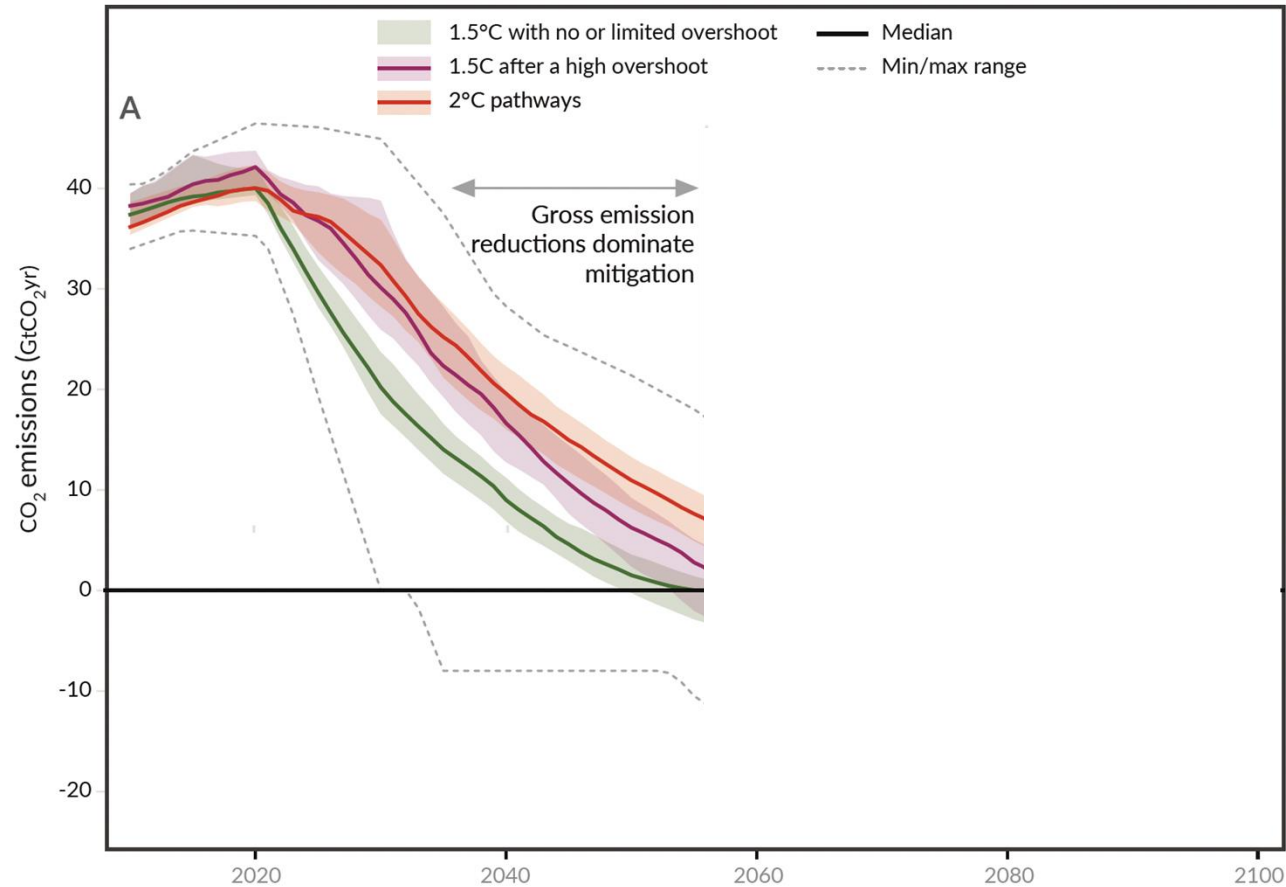
Climate targets & carbon dioxide removal

All 541 scenarios that meet the Paris temperature goal feature CDR, in addition to reducing emissions



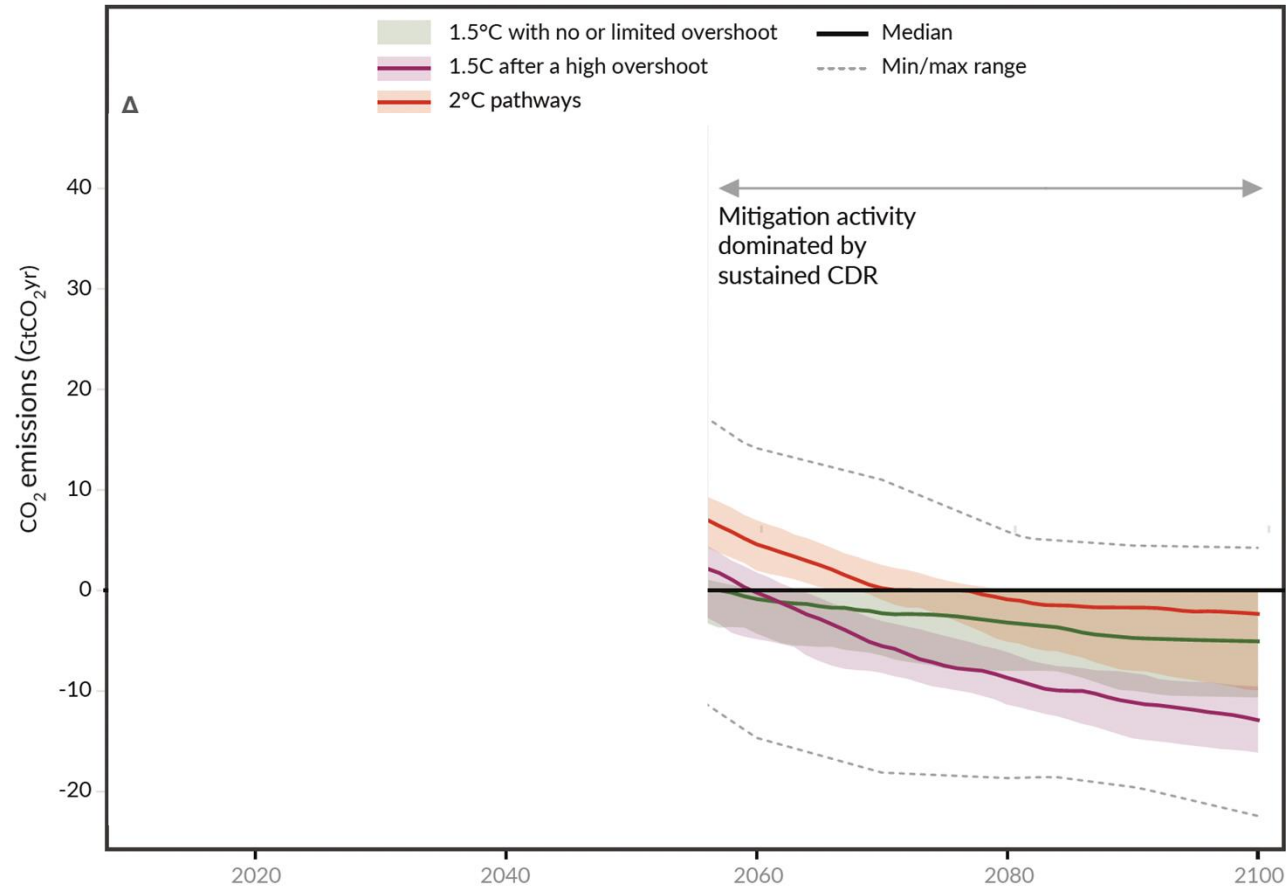
Source: Smith, Geden, Nemet et al. (2023). *The State of Carbon Dioxide Removal*

The first half of the 21st century is dominated by GHG emission reductions



Source: Smith, Geden, Nemet et al. (2023). *The State of Carbon Dioxide Removal*

The second half of the 21st century is dominated by CDR



Source: Smith, Geden, Nemet et al. (2023). *The State of Carbon Dioxide Removal*

Only active policymaking integrates CDR into the EU's climate paradigm. Poor implementation risks climate goals

'Union-wide greenhouse gas emissions and removals regulated in Union law shall be balanced within the Union at the latest by 2050, thus reducing emissions to net zero by that date, and the Union shall aim to achieve negative emissions thereafter.'

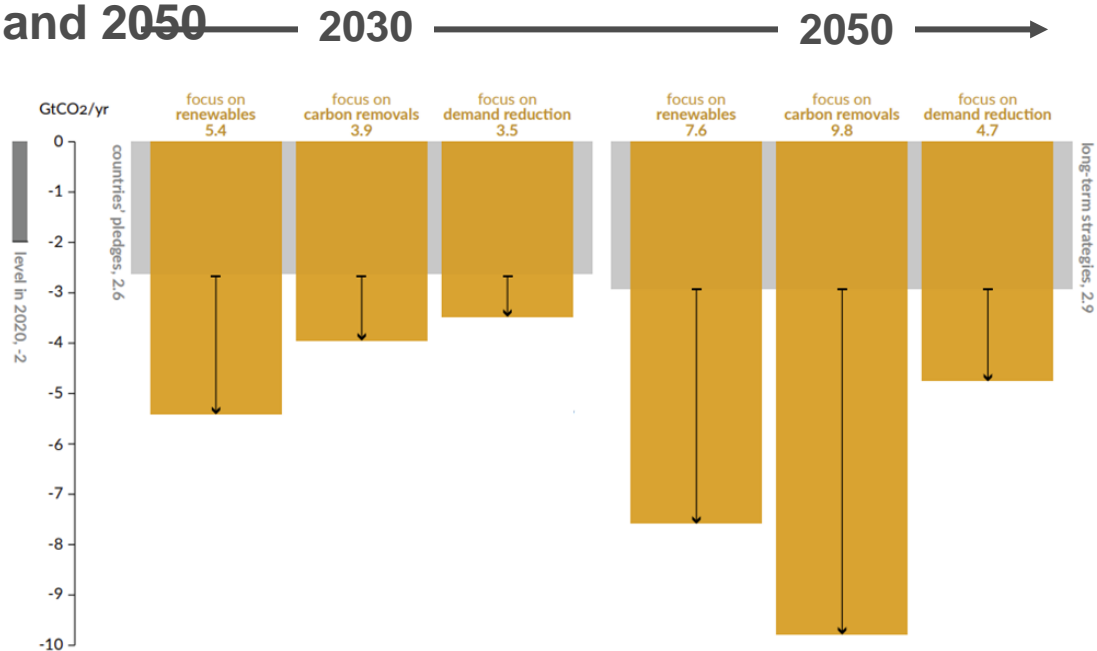
- Negative emissions have entered the EU's policy landscape
- But CDR is **neither fully integrated into its climate policy paradigm yet nor is the EU on track to deliver** required quantities



Scaling CDR deployment

There is a gap between proposed levels of carbon dioxide removal and what is needed to meet the climate targets

Carbon dioxide removal (GtCO₂/yr), proposed levels compared to **three Paris-relevant scenarios** in 2030 and 2050



CDR expenditures are going to amount to billions and trillions by 2050*

In 2050	EU	Global
CDR needs (GtCO ₂)	0.3 - 0.5	5 - 15
Removal costs (\$/t CO ₂)	100 - 300	
Expenditures (in bn. €)	<u>25 - 130</u>	<u>400 - 4.000</u>
As share of GDP (in %)	<u>0.1 - 0.5</u>	<u>0.3 - 3.3</u>

Source: Smith, Geden, Nemet et al. (2023). *The State of Carbon Dioxide Removal*

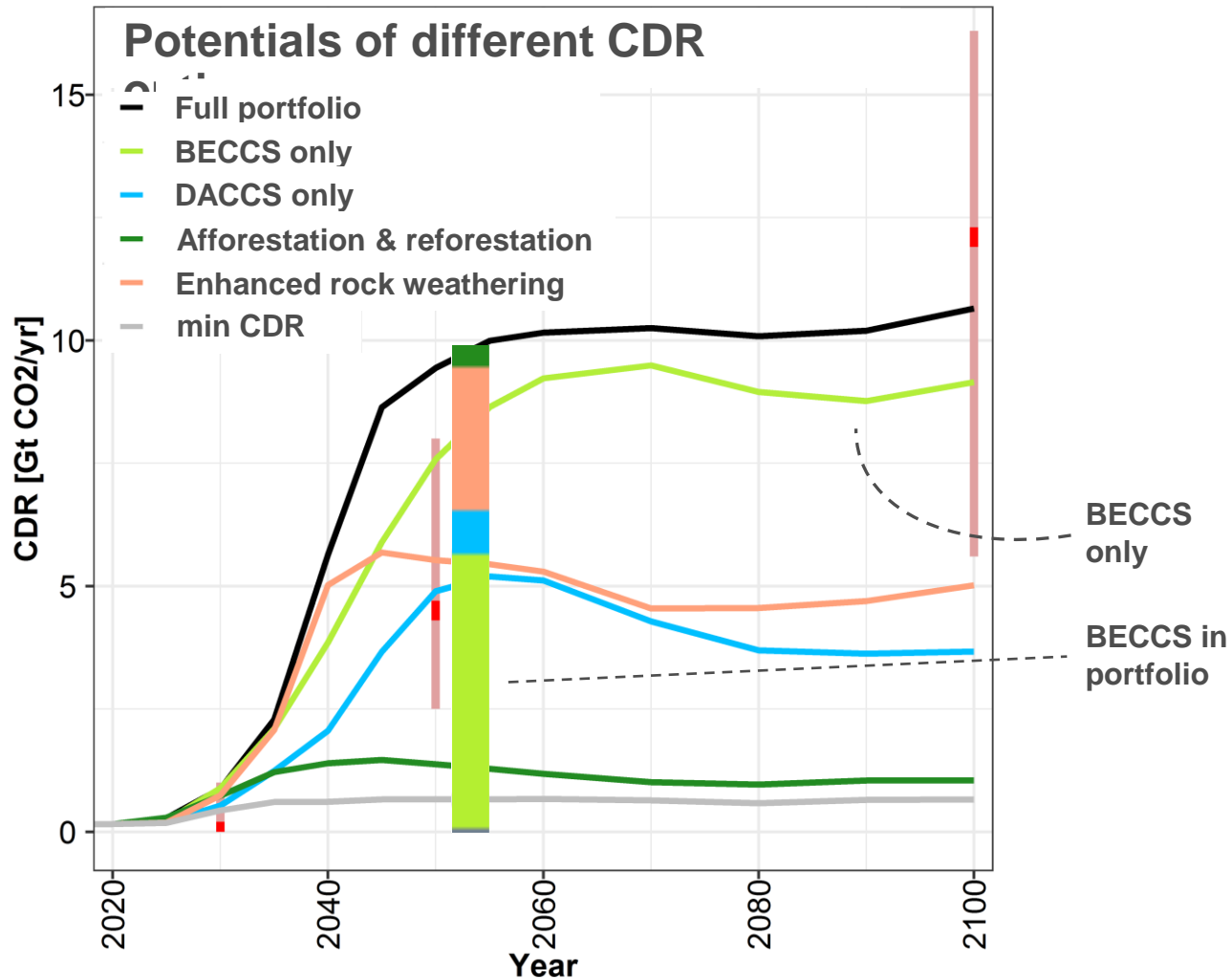
*own calculations (back of the envelope)

Deployment at scale: The running decade is crucial for kickstarting carbon dioxide removal

What are prerequisites for **addressing the CDR gap**?

1. Access to **financing & funding** for R&D (both conventional + novel CDR)
2. Stable, long-term **deployment incentives** (ie. consistent governance framework & policy regime)
3. Credible **accounting and quality principles** (incl. MRV and accounting for externalities)
4. A well designed **trans-border CO₂ infrastructure** (transport and storage)
5. **Public support** for carbon dioxide removal and storage
6. **Limited dependence on CDR** (ie. keeping the gap narrow through harsh emission reductions)

There is no CDR silver bullet. Portfolios have multiple benefits



- **Higher CDR availability** can lead to lower levels of net emissions and hence **enable earlier emission neutrality**
- Limit contribution of each options, thus **reducing risks**
- Portfolios **balance regional CDR deployment**

Source: Strefler et al. (2021). *Carbon dioxide removal technologies are not born equal*

Governance



Carbon dioxide removal needs good governance

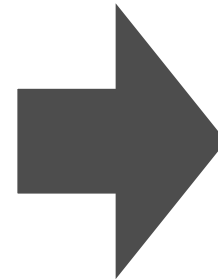
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December 2022

Pigou's Advice and Sisyphus' Warning: Carbon Pricing with Non-Permanent Carbon-Dioxide Removal

Matthias Kalkuhl, Max Franks, Friedemann Gruner, Kai Lessmann, Ottmar Edenhofer



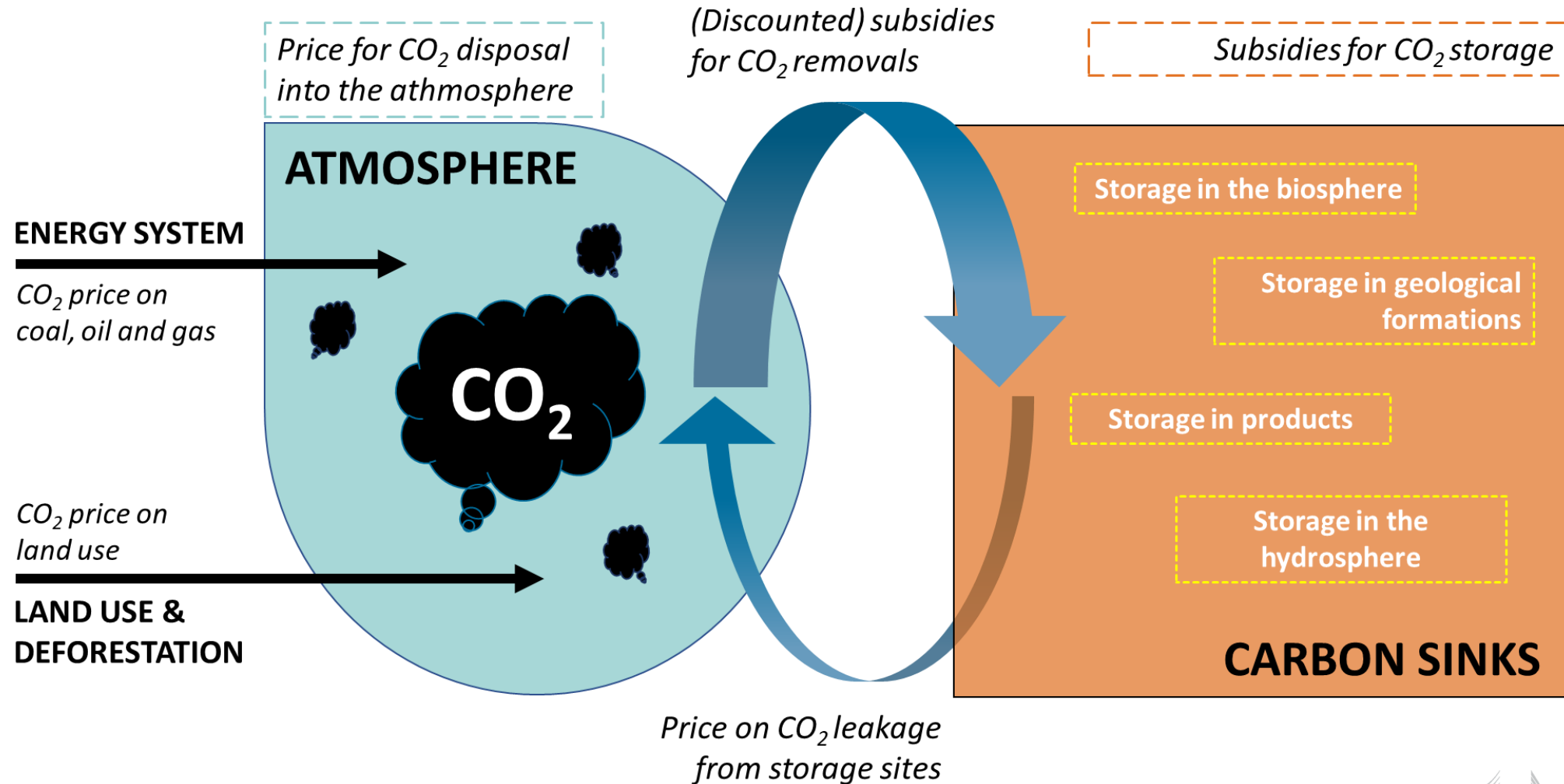
'How should policy regimes for optimal deployment of carbon removal and storage in non-permanent sinks look like?'

To infinity and beyond? Storage times of CDR methods vary significantly

Removal and storage pathway	Storage duration (<i>half-time</i>)
Bioenergy with carbon capture and storage	millennia
Enhanced weathering	centuries
Forestry techniques & wood products	decades to centuries
<i>Single family home</i>	100
<i>Furniture, residential upkeep and improvement</i>	30
<i>Paper</i>	2
Soil carbon sequestration techniques	years to decades
Biochar	years to decades

Source: Kalkuhl et al. (2023). *Pigou's Advice and Sisyphus' Warning: Carbon Pricing with Non-Permanent Carbon-Dioxide Removal*

Managing the carbon cycle is a long-term commitment



What can we learn from Pigou's advice and Sisyphus' warning?

- Non-permanent **CDR creates a perpetual "carbon debt"** to future generations that consists of undertaking removal into leaky reservoirs (*Sisyphus' warning*)
- Policymakers can ensure optimal CDR deployment by (1) **downstream carbon pricing**, (2) **upstream carbon pricing**, (3) **paying a subsidy on stored carbon** (*Pigou's advice*)
 - › the **optimal carbon tax may differ from an optimal CDR subsidy** under non-permanent storage, ie. the optimal subsidy tends to be lower than the tax (price differential determined by the leakage rate)
 - › non-permanent CDR introduces the need for a new social cost of carbon metric ('**social costs of carbon removal**') to measure **climate change damages from releasing stored emissions**
- Non-permanent **CDR does not necessarily affect optimal temperature levels**
- **CDR methods** have side effects (eg. on biodiversity, local climate, soil). Such **positive/negative externalities** should be accounted for

Optimal pricing for carbon dioxide removal depends on inter-regional leakage

Journal of Environmental Economics and Management 117 (2023) 102769



Optimal pricing for carbon dioxide removal under inter-regional leakage[☆]

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Interregional Leakage

ABSTRACT

Carbon dioxide removal (CDR) moves atmospheric carbon to geological or land-based sinks. In a first-best setting, the optimal use of CDR is achieved by a removal subsidy that equals the optimal carbon tax and marginal damages. We derive second-best policy rules for CDR subsidies and carbon taxes when no global carbon price exists but a national government implements a unilateral climate policy. We find that the optimal carbon tax differs from an optimal CDR subsidy because of carbon leakage and a balance of resource trade effect. First, the optimal removal subsidy tends to be larger than the carbon tax because of lower supply-side leakage on fossil resource markets. Second, net carbon exporters exacerbate this wedge to increase producer surplus of their carbon resource producers, implying even larger removal subsidies. Third, net carbon importers may set their removal subsidy even below their carbon tax when marginal environmental damages are small, to appropriate producer surplus from carbon exporters.

- Under inter-regional carbon leakage, the optimal **CDR subsidy should exceed the price for carbon**
 - › rational: reducing emissions by a ton of CO₂ domestically causes more leakage than removing a ton
- **This wedge be exacerbated or reversed**, depending on the resource trade balance of a country
 - › a net exporter of fossil resources increases the price differential to increase rents of their carbon resource producers
 - › a net importer sets a carbon tax above the CDR subsidy to appropriate the resource rent from resource exporters

Certification is the missing piece in the EU's climate policy framework



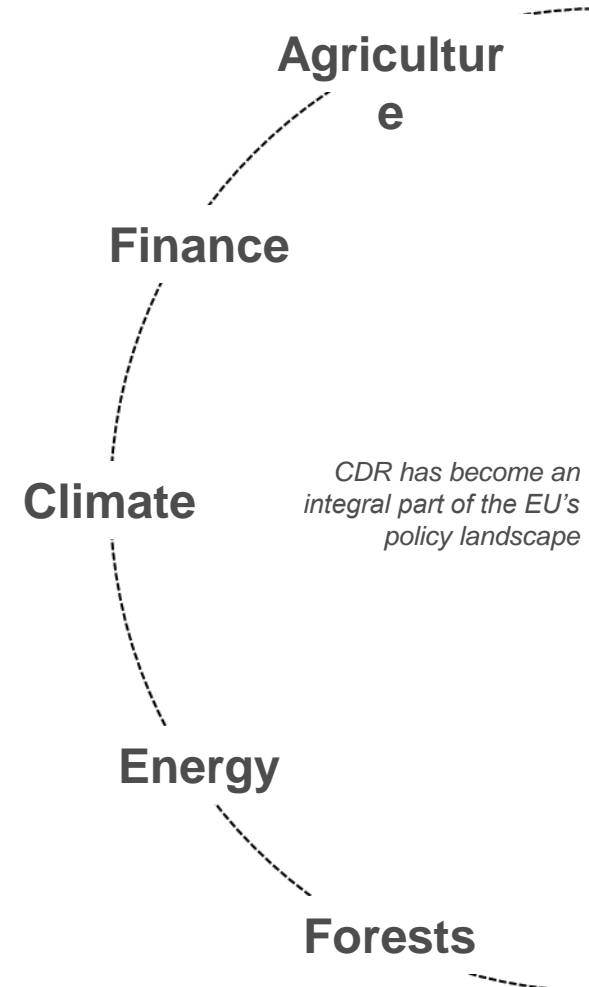
Brussels, 30.11.2022
COM(2022) 672 final
2022/0394 (COD)

Proposal for a
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
establishing a **Union certification framework for carbon removals**
{SEC(2022) 423 final} - {SWD(2022) 377 final} - {SWD(2022) 378 final}



Carbon Removal Certification Framework

- Common Agricultural Policy
- ...
- Farm to fork strategy
- European Climate Law
- CCS Directive
- ETS Directive
- Circular Economy Action Plan
- Sustainable Carbon Cycles
- Carbon Removal Certification Framework**
- EU Adaptation Strategy
- Renewable Energy Directive
- Innovation Fund
- TEN-E Regulation
- ...
- Forest strategy
- LULUCF Regulation
- ...



Carbon removal certification does not come without challenges. What are guiding principles?

- Maintain **environmental integrity**
 - › sound definition of carbon dioxide removal & storage permanence
 - › uniform understanding of hard-to-abate emissions
 - › valid quantification & assessment of additionality
 - › reflection of co-benefits & side effects
 - › carbon release management (non-permanence, durability and reversibility, liability/insurance)
- A **use case for carbon removal certificates**, considering (future) legal interactions with the EU policy framework
- **Institutional setup, administrative burden and costs** of certification and MRV

The path forward: A tentative governance proposal

- An institutional mandate is assigned to a **European Carbon Central Bank (ECCB)** to organize/supervise carbon dioxide removal
 - › **ECCB mandate & CDR target** find their way into EU legislation
 - › the ECCB issues **emissions allowances to cover residual emissions**
 - › **high-quality carbon removal certificates** are needed to compensate high-cost/unavoidable residual emissions
- The ECCB organizes the **procurement of carbon removal certificates via (reverse) auctions**
 - › **auctions could be split by CDR option** (in bundles), e.g. depending on the storage type or externalities. This ensures that currently still more expensive options will be developed
 - › **targeted subsidies / contracts for difference** (accounting for different externalities of CDR options) could be paid to the supplier of novel CDR. Rents will be limited
 - › **validity of certificates** depends on the degree of permanence. ECCB has to **renew non-permanent certificates** immediately after their expiry (liability for the bank)

The path forward: A tentative governance proposal

- Next to ECCB, **other (new) institutions** are required to...
 - › build **technological expertise** & ensuring appropriate **funding** (eg. Innovation Fund, IPCEI, Green Deal Industrial Plan/Net-Zero Industry Act, auctioning/subsidizing). A **Green Leap Innovation Authority (GLIA)** is established
 - › carry out **independent certification based on scientific assessments** (by GLIA); harmonized rules & standards are then implemented and carried out by public/private bodies
- A **specific CDR** target will likely lead to different prices between ETS and CDR sector
 - › **deficit** when ETS price < CDR price (policy makers have to accept more ambitious removal targets)
 - › **surplus** when ETS price > CDR price (policy makers have to accept more ambitious abatement targets)
 - › **price convergence** should be considered as part of the mandate of ECCB; it implies also a **net zero target**
 - › the ECCB should announce an increasing **minimum price path** (or allow **only “premium” CDR technologies**) in order to avoid that cheap short-term CDR options distort investments in mitigation

Takeaways

- **Climate targets cannot be met without CDR.** The EU should take a leading role. Sustainably managing the carbon cycle is a core challenge of climate action in the 21st century
- The **CDR gap needs to be addressed urgently.** Early years of technology deployment are decisive for meeting needs in the coming decades. Deployment at scale requires a **consistent policy framework and solid incentive schemes**
- New institutional players and mandates are needed to manage CDR in the EU. **A European Carbon Central Bank should be established** as intermediary between demand and supply-side of carbon dioxide removal
- Swift action is needed. A **governance framework for carbon dioxide removal** and a **mandate for a European Carbon Central Bank** should find its way into EU legislation parallel to the process of **setting a 2040 climate target**



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Many thanks!

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CDR expenditures in 2050: back of the envelope calculation

	EU	Global	Sources
CDR needs (GtCO ₂ in 2050)	0,3-0,5	5-15	EC Sustainable Carbon Cycles SWD, State of Carbon Dioxide Removal Report
Removal costs (\$/t CO ₂)		100-300	State of Carbon Dioxide Removal Report
Exchange rate \$/€ (avg. 2018-22)		0,86	Boerse.de
Expenditures (bn. USD)	30-150	500-4.500	
Expenditures (bn. EUR)	26-128	428-3.850	
GDP in 2021 (tr.)	15 EUR	86 USD	EU, World Bank
growth rate/yr (2022-50)		2.0 %	Assumption
GDP in 2050 (tr.)	26 EUR	150 USD	
CDR expenditure (% of GDP)	0.1-0.5	0.3-3.3	

Introduction to Panel sessions

Framework Methodologies

Certification framework

QU.A.L.I.T.Y
criteria

Credible
certification
rules



**Negotiations with
Parliament and Council**

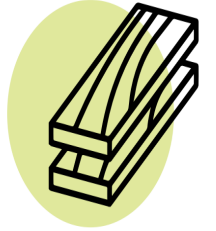
Tailored certification methodologies



**PERMANENT
STORAGE**



**CARBON
FARMING**



**CARBON
STORAGE IN
LONG-
LASTING
PRODUCTS**



Expert group

What are best practices? What are challenges?

	QU antification	A dditionality	L ong-term storage	S ustainability
Permanent storage				
Carbon storage in long-lasting products				
Carbon farming				

Inventory of current best practices and challenges

Which certification methodologies are ready to be scaled up?

Panel: Industrial removals

PART 1 | Permanent storage

PART 2 | Carbon storage in long-lasting products

Moderated by **Fabien Ramos**, Policy Officer DG CLIMA

PART 1 | Permanent Storage



FABIAN LEVIHN

Stockholm Exergi AB



LOUIS UZOR

Negative Emission
Platform



FELIX ERTL

Circular Carbon

- What are the best practices to ensure that certification methodologies are a successful tool for the sustainable development of the carbon removal industry?
- BECCS and DACCS are generic terminologies covering many technologies and processes capturing and storing CO₂. Can we certify most of the DACCS and BECCS activities with a common methodology or should we develop different methodologies for different types of BECCS and DACCS?

PART 2 | Carbon storage in long-lasting products



ANDREW NORTON

CEI-Bois



ROB VAN DER MEER

CEMBUREAU



HAKAN KIHMBERG

Perstrop

- Carbon storage in long-lasting products covers a large variety of technologies and products. What are the most promising certification methodologies?
- What are the best practices to ensure that certification methodologies are a successful tool for the sustainable development of carbon storage in long-lasting products?

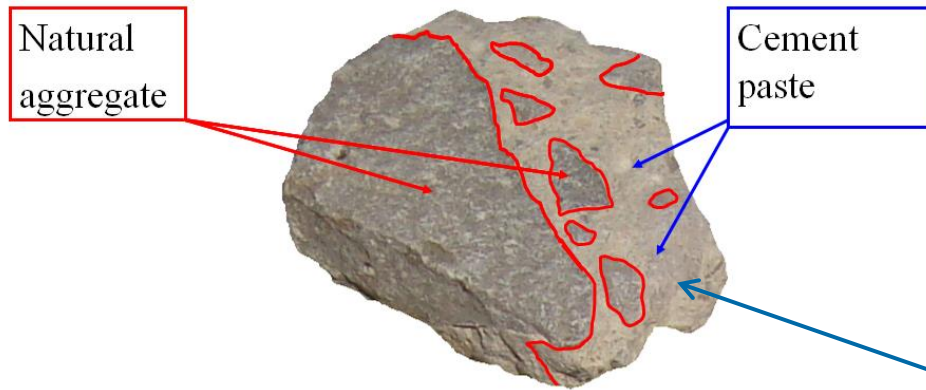
- ▶ FastCarb combines performance, circular economy & lower carbon emissions
- ▶ Main **Objective of French National Project FastCarb** : to **store CO₂ in the Recycled Concrete Aggregates (RCA)**, while **improving the quality** of these aggregates by plugging the porosity and ultimately **reducing the carbon footprint of a concrete** → Results demonstrate that the benefit on carbon footprint of concrete could be significant (~ minus 25%)



- ▶ **Circular Economy : Recycled Concrete Aggregates re-use in fresh concrete could be enhanced especially for finer fractions** that are nowadays not yet valorized and therefore reduce the use of natural resources

Carbonation phenomenon

Anatomy of Recycled Concrete Aggregate



+ fine fraction very rich in cement paste

Microscopic scale

Spontaneous reaction of atmospheric CO₂ with hydrated cement paste of concrete to form calcium carbonate CaCO₃ (limestone).

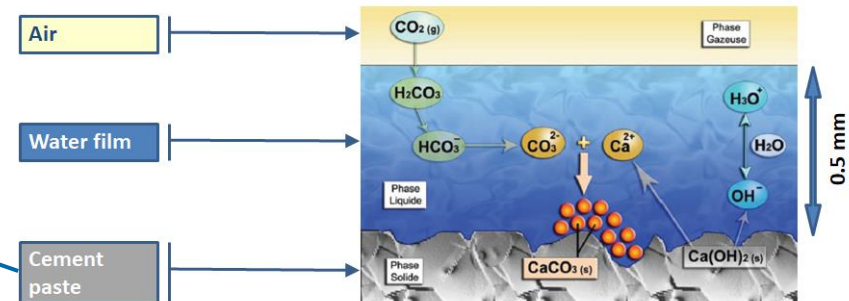
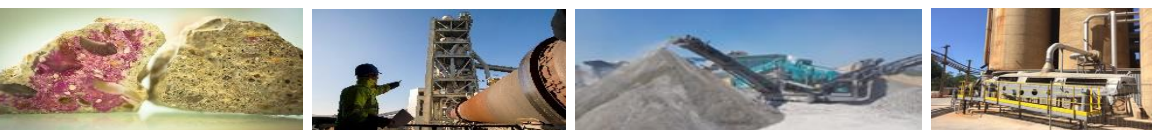


Figure 9.9 : mécanisme de carbonatation de Ca(OH)₂, d'après [THI 06a].

Modified from La Durabilité des Bétons



► Circular Economy with Construction & Demolition Wastes

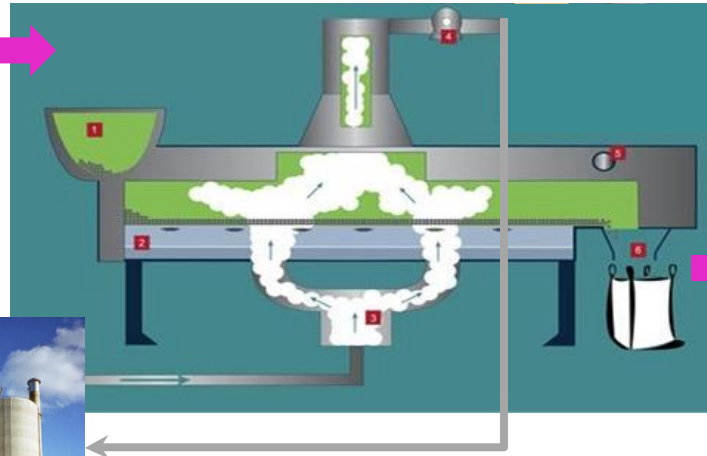
1. Recycled materials pretreatment depending on the material



Use of Recycled Concrete Aggregates

Transport

2. Industrial CO₂ trapping in minerals: CO₂ (gas) conversion into CaCO₃ (solid)



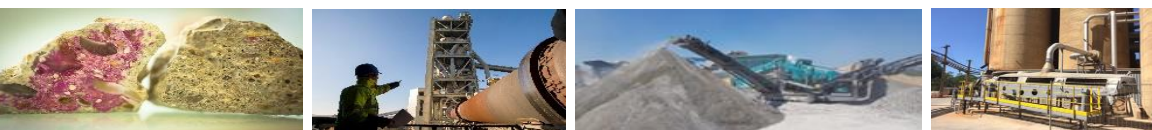
Industrial flue gases containing CO₂
Materials treated with flue gases.
Generating CO₂ savings at the plant

3. Carbonated material to be reused in concrete



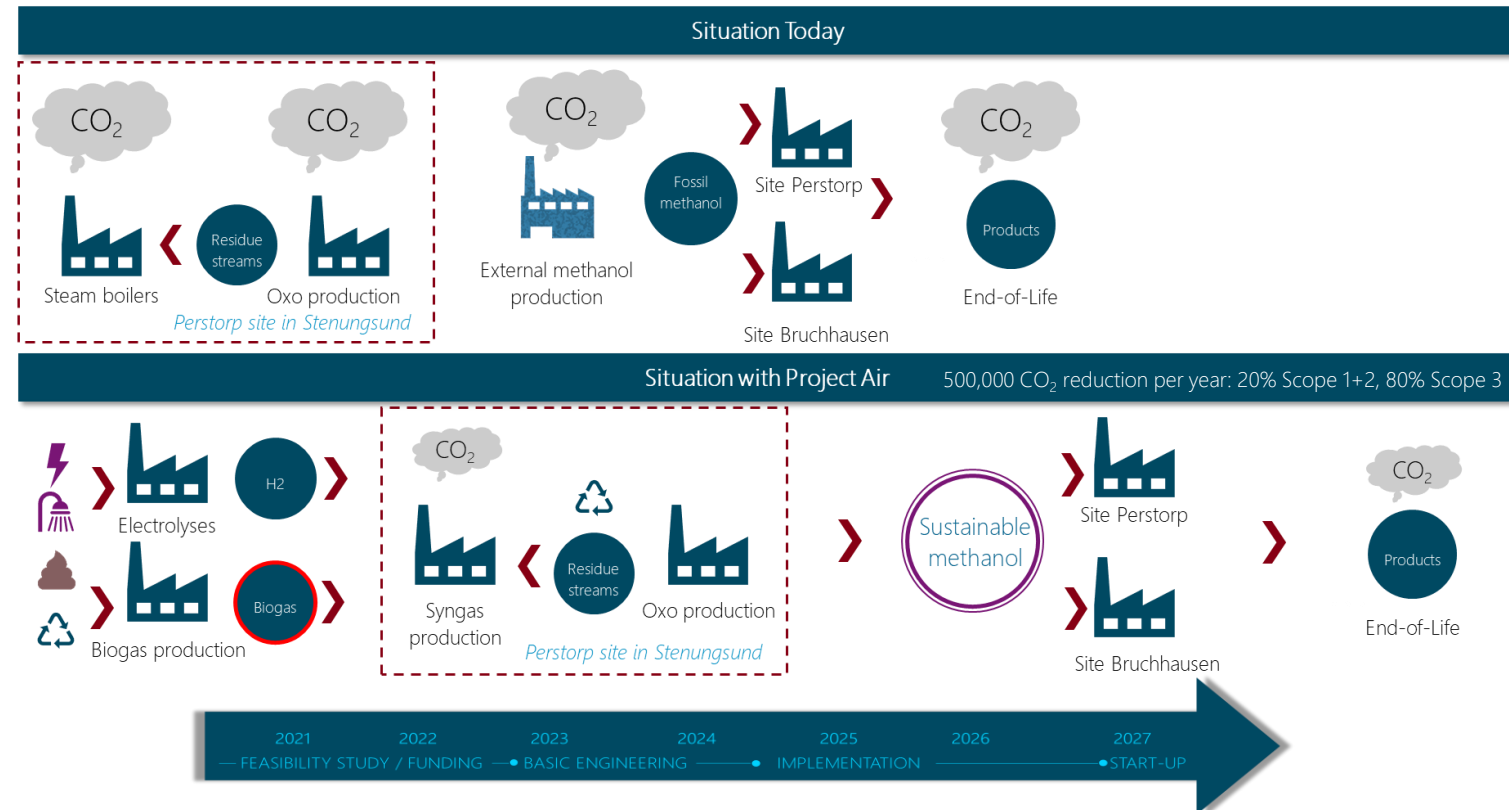
Materials reuse as aggregates:

- CO₂ footprint reduction of concrete
- Materials properties enhancement



Project Air – Towards Climate Neutral Manufacturing

- Reducing 500 000 ton CO₂ annually.
- Replacing 200 000 ton/year fossil methanol and its corresponding CO₂-emissions.
- Reduction of CO₂ emissions from Perstorp site in Stenungsund via CCU.
- Reduction of the end-of-life emissions from the methanol..
- New biogas production in Sweden and Denmark.
- 134% GHG reduction based entirelyly on renewable and recycled feedstock.

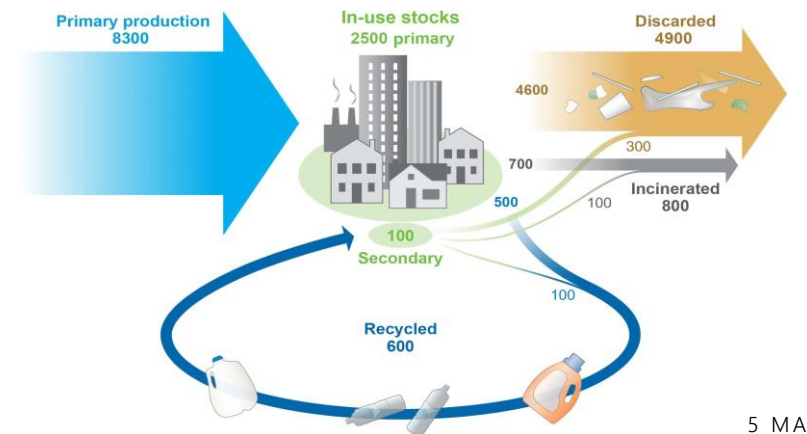
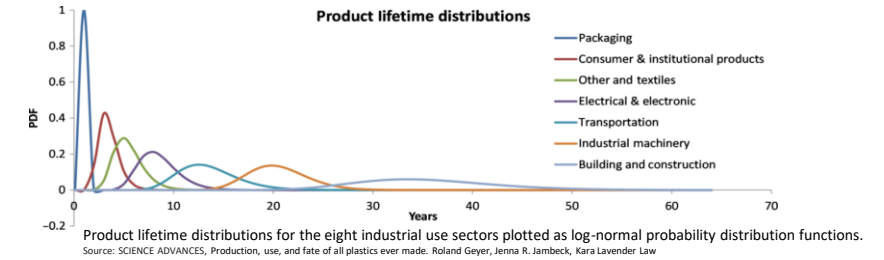
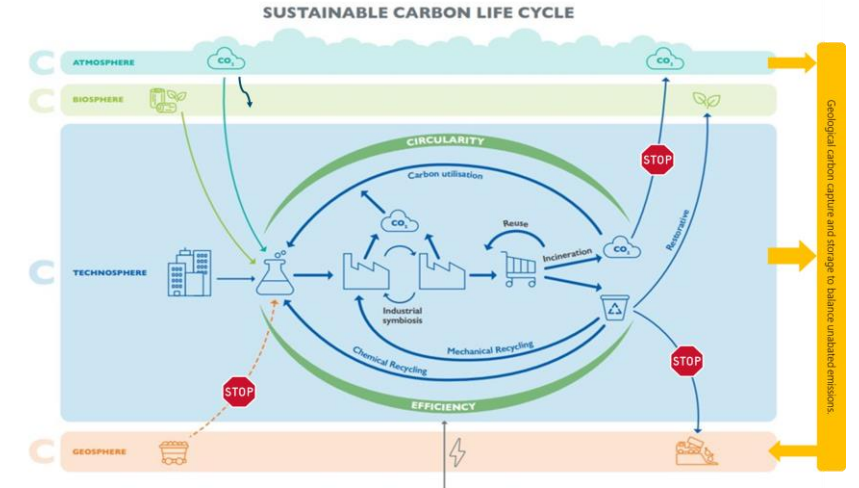


Project Air has been granted support by the European Innovation fund and the Swedish fund Industriklivet

Recycling is the Sustainable Feedstock for Europe's Industry

- Industry and society are completely dependent on carbon as a building block for a modern welfare society.
- We are striving for that fossil carbon should not be used as raw material or energy. Carbon dioxide must not be released from industrial processes or synthetic materials into the atmosphere.
- Industrial processes must be built on a feedstock of renewable and recycled products.
- Promote design of products that are simple to recycle.
- Systems for mechanical and chemical recovery must be supplemented with CCUs for carbon dioxide circulation.

Recycling is the long term sustainable solution for industry and society and must be promoted. CCU should be included in Europe's policies during transition towards Climate Neutrality.



Panel: Carbon Farming

PART 1 | Soils & agriculture

PART 2 | Forests

Moderated by **Valeria Forlin**, Policy Officer DG CLIMA

PART 1 | Agriculture



HUGH MCDONALD

Ecologic



KAJ GRANHOLM

Baltic Action Sea Group



GREGA MILCINSKI

Indepenent expert group
member

- What are the best practices to ensure that certification methodologies are a successful tool for the sustainable development of carbon farming in soils?
- What digital technologies (e.g. earth observation) are available to establish baselines and monitor and verify carbon removals, helping to improve the accuracy, reliability and cost-effectiveness of soil carbon certification?

Agricultural carbon credit pilot example: soil amendment carbon removal

LIFE19 PRE F1001 – SI2.828588
LIFE CARBON FARMING SCHEME PROJECT
2020-2022

Kaj Granholm, BSAG
Expert Group on Carbon Removals
7 March 2023

Coordinator:



Partners:



Tyynelän
tila



puro.
earth

NEOT
North European Oil Trade

Financed by:



LIFE19 PRE F1001 – SI2.828588
The Life Carbon Farming
project has received funding
from the LIFE Programme of
the European Union

Testing voluntary carbon removals from recycled organic soil improvement fibres



Five products, one project (Soilfood), one methodology (puro.earth)

- Lime-stabilized or composted mixed pulp mill sludge and fiber sludge
- 20-50 t/ha, depending on soil conditions
- 38% average carbon content
- Contains macro and micro nutrients, both fast and slowly soluble
- Improves soil structure and sponge capacity

Carbon sequestration process and quantification:
rhizodeposition, product chemical composition

Additionality: Environmental, regulatory, no system level claims

Recycled pulp mill side streams farmers apply according to a specific 5-year plan to improve soil structure. Baseline by aggregated plots, VCM (claim not tested)

Permanence: 20 years

Based on carbon decomposition rate in the product, determined by field scale studies giving parameters (AWEN) to Yasso07 model (model also used in Finnish GHG inventory)

Credit formation: ex-ante

Credit formed by aggregated amounts of soil improvement products (5 types) delivered to farms under contract

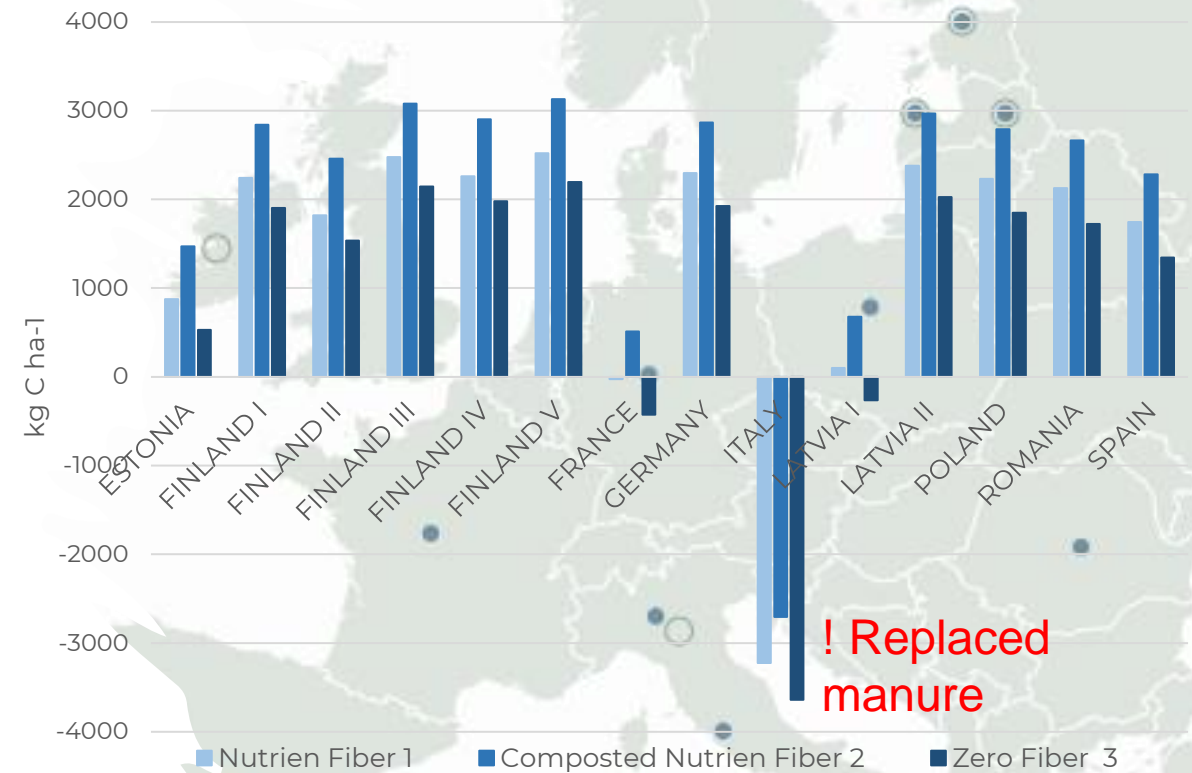
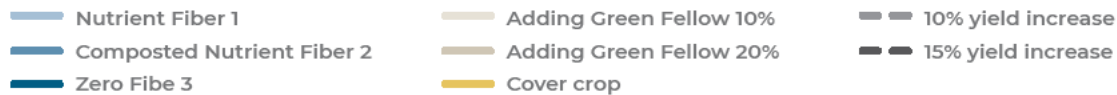
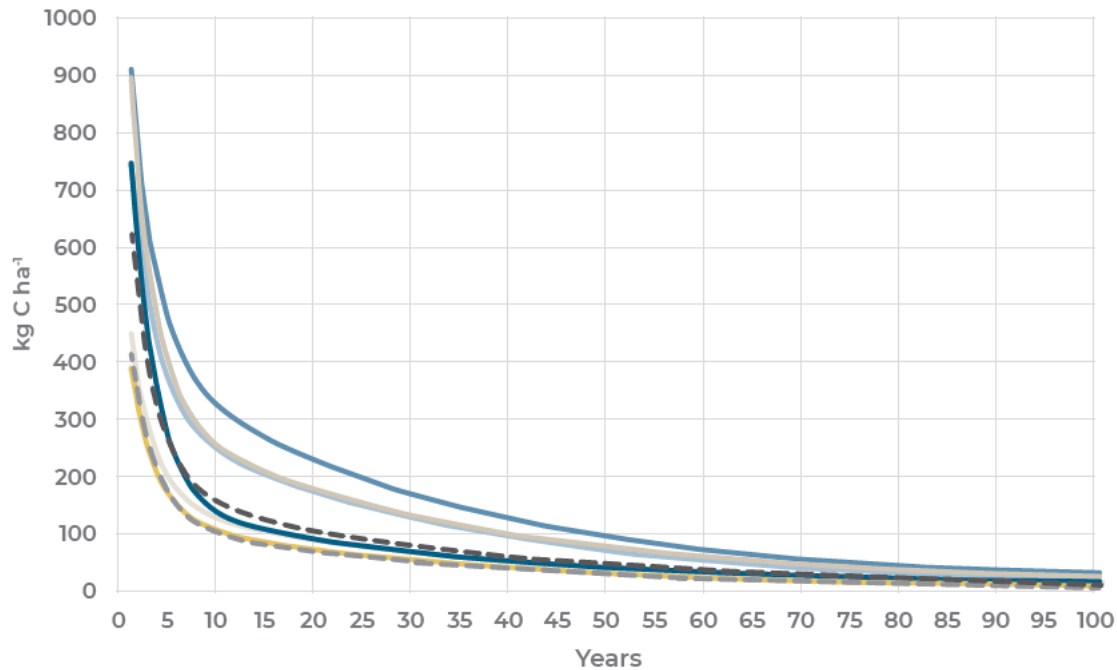
Verification/audit: Bioinspecta AG

Auditing covers product properties and model, product LCA, logistics and contracts with farmers (for project in Finland)

Critical: Define and enforce implementing conditions

Benefits: straightforward calculation, moderate uncertainty, co-benefits

Modelled results: 100-year simulation in Finland & 10-year simulations on project case farms around Europe



You can't manage what you don't measure

Timelapse

Dataset: S

Date: 2017-01-01 - 2021-04-25

filter by months

Select 1 image per:

orbit day week **month** year

Search

Borders

28 %

Select All

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- 2017-03-27
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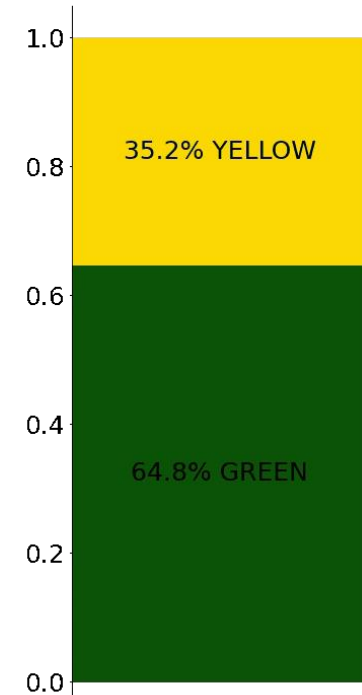
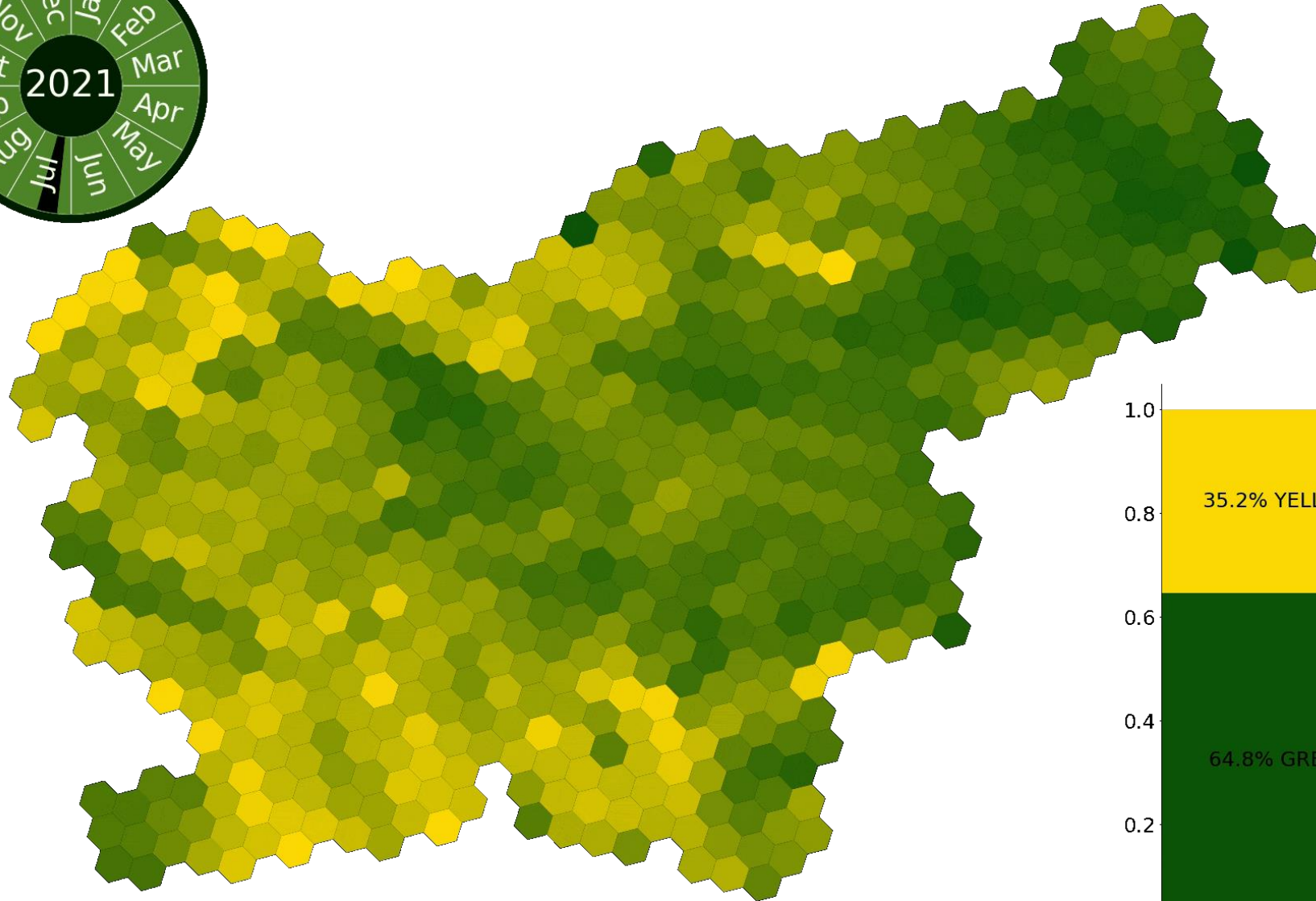
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EU CAP Area Monitoring



2016-05-03



PART 2 | Forests



ASGER OLESEN

Independent expert
group member



LUCIA PERUGINI

Independent expert
group member



CLOTHILDE TRONQUET

I4CE

- What are the best practices to ensure that certification methodologies are a successful tool for the sustainable development of carbon farming in soils?
- What digital technologies (e.g. earth observation) are available to establish baselines and monitor and verify carbon removals, helping to improve the accuracy, reliability and cost-effectiveness of forest carbon certification?

Panel: End-use & credibility of certification

PART 1 | Permanent storage

PART 2 | Carbon stored in products

Moderated by **Giulio Volpi**, Policy Officer DG CLIMA

PART 1 | End-use of certification



GIULIA MARIA STELLARI

Independent expert group
member



GILLES DUFRASNE

Carbon Market Watch

- What are the best practices around the use of carbon removals for corporate sustainability accounting?
- How can carbon removals be scaled up responsibly after 2030?



CARBON CREDITS – CHALLENGES & OPPORTUNITIES

COMPANIES HAVE VARIED REASONS TO PURCHASE CARBON CREDITS

1. MANAGING RISK

DEMONSTRATE SELF-GOVERNANCE

ADDRESS FUTURE COSTS

2. BUILDING TRUST

INVESTING IN COMPANY REPUTATION

MAKING CLAIMS

3. R&D / NEW BUSINESS DEVELOPMENT

EXPLORE NEW BUSINESS OPPORTUNITIES

CREDIBILITY, ATTRIBUTES, AND ABILITY TO MAKE CLAIMS ARE KEY!

PART 2 | Verification rules



NORBERT SCHMITZ

ISCC



HANANE TAIDI

TIC Council

- What are the existing best practices for ensuring robust third-party verification and certification?
- How should double counting be avoided?



Quality and Credibility of Certification



**Panel Discussion
Carbon Removals Expert Group**

Brussels, March 7, 2023

Dr Norbert Schmitz, Managing Director,
ISCC System GmbH

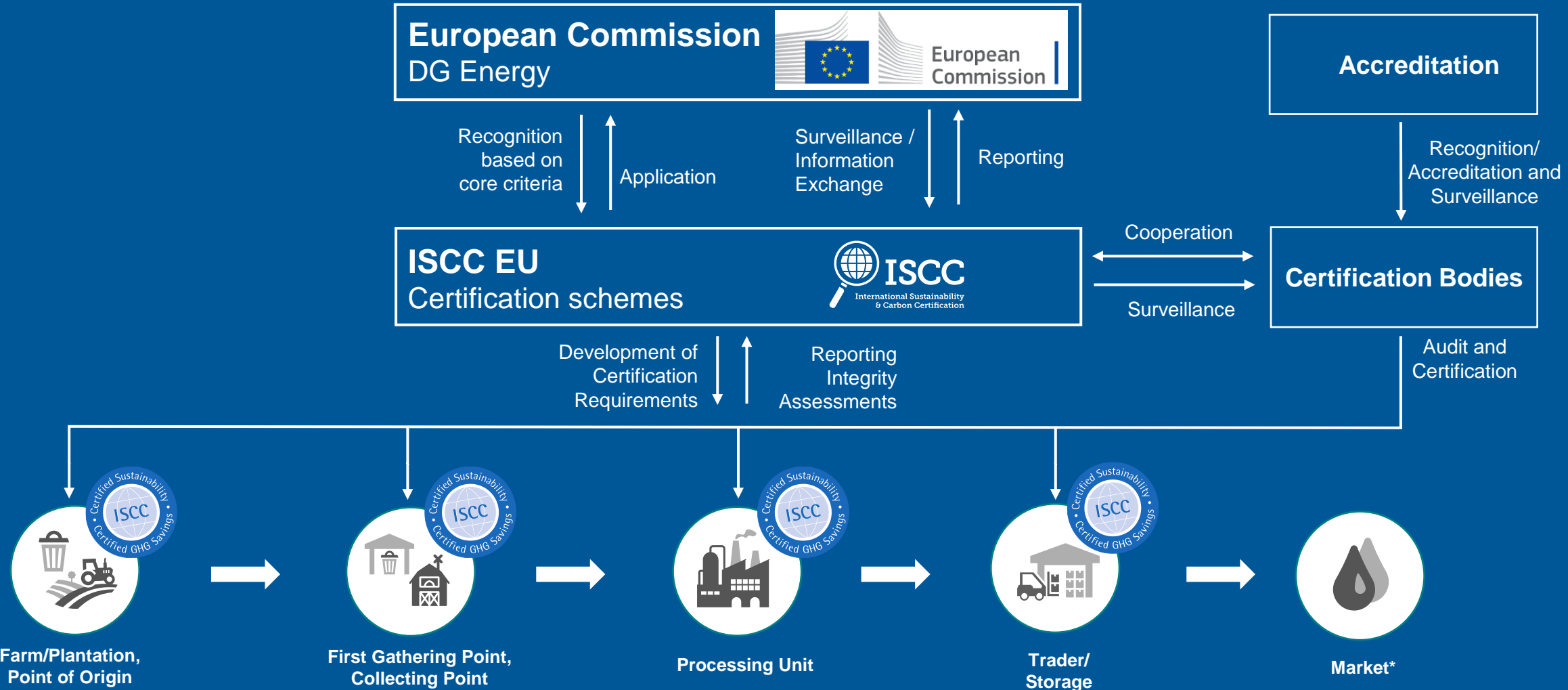
ISCC operates three flagship schemes to support the fulfilment of legal and voluntary sustainability requirements

ISCC EU

ISCC PLUS

ISCC CORSIA

Organisational set up of certification under the RED II as a role model



Key features of the ISCC certification system for truly independent 3rd party audits

GOVERNANCE

**SUSTAINABILITY
REQUIREMENTS**

**GHG
CALCULATION**

TRACEABILITY

- Multi-stakeholder initiative started in 2006
- 232 members in ISCC association
- 6 Technical & 4 Regional Stakeholder Committees

- System documents
- Audit procedures & checklists
- GHG calculators and emission factors
- Chain of custody and database
- Guidance & support (help desk)
- Training program
- Continuous improvement
- Integrity program
- Impact analysis
- Reporting to EU / regulators

Seven key learnings and good practices for credible certification

- **Governance** – Active stakeholder participation in system development
- **Transparency** – All system documents in public domain, public consultations of key documents and decisions
- **Practicability** – Conceptional development followed by pilots for different applications / supply chains
- **Effectiveness** - Avoidance of administrative burden and high costs – Digital solutions and risk-based verification approach
- **Competencies** - Building up competencies for system users and auditors Comprehensive training program, guidance, and help desk
- **Continuous development and responsiveness** – Knowledge sharing and learning from system users, auditors, impact assessments and regulatory requirements
- **Integrity** – Risk based and random integrity audits with global sanction system to be applied in case of non-conformities; Verification and zero tolerance against fraudulent behavior



Thank you!

ISCC System GmbH

Hohenzollernring 72, 50672 Cologne, Germany

www.iscc-system.org



ACCREDITATION:

Formal recognition of the technical competence and impartiality of conformity assessment bodies



National Governments



National Accreditation Bodies



Conformity Assessment Bodies

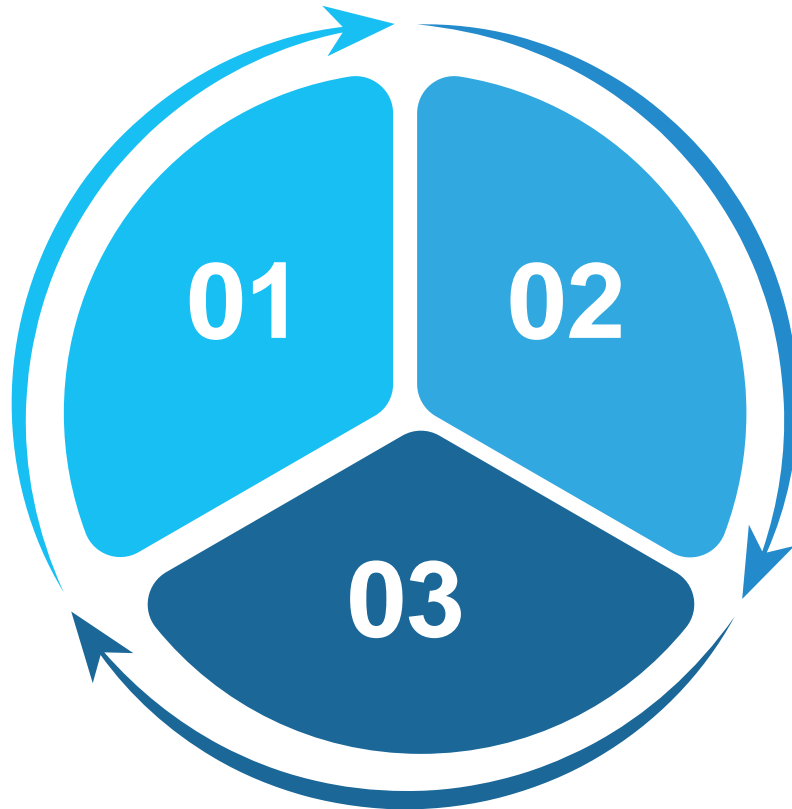


Sustainability Certificates

CERTIFICATION:

Demonstrating the credibility of an ESG claim

WHY IS ACCREDITATION OF CONFORMITY ASSESSMENT BODIES IMPORTANT?



Independence

Independency and neutrality are the first requirements to create a solid verification system and to ensure the necessary trust in the process.



Standardisation

Using international standards ensures a thorough scrutiny of companies' operations and contributes to the development of a level-playing field.



Accreditation

Third-party verification should be subject to accreditation to ensure that the company responsible for the verification is capable to provide the certifications.



VERIFICATION vs VALIDATION

CONFORMITY ASSESSMENT OF ESG CLAIMS:

Formal recognition of the technical competence and impartiality of conformity assessment bodies

VERIFICATION:

Evaluating the accuracy of a claim based on existing data to determine whether it complies with relevant requirements.

VALIDATION:

Evaluating the credibility of forward-looking claims through an analysis of its supporting assumptions, limitations, and methods.



Post-Kick-Off Survey: Give us your feedback

Your opinion is important to us and we would appreciate it if after the kick-off meeting you could take a few minutes to complete our post-event feedback survey. Your responses will help us improve future events and ensure we are meeting the needs of the expert group.

<https://ec.europa.eu/eusurvey/runner/CarbonRemovalExpertGroupKickoff2023>

