



**G7 Workshops on the role of Nature-based Solutions for biodiversity conservation, climate change adaptation and mitigation and meeting peoples' needs**

*Accelerating the implementation of Nature-based Solutions  
Rome, 27<sup>th</sup> November 2024*

**Navigating Carbon, Biodiversity and Sustainability Credits:  
Key Lessons  
for Effective State Regulation**



**Daide Pettenella**

**TESAF** Dipartimento Territoriale e Sistemi Agro-Forestali  UNIVERSITÀ DEGLI STUDI DI PAVIA


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## **Carbon credit: a definition**

A carbon credit is a financial instrument that represents the **reduction or non-emission** of a **1t CO<sub>2</sub> eq.** (one tonne of carbon dioxide or equivalent gases) from the atmosphere.

It can be bought and sold, thus covering the costs of generating credit (supply) and allowing the buyer to demonstrate that he has reduced emissions (demand).

As a rule, the credit is **certified against a standard** of good practice according to a general control scheme and, to avoid double counting and tracking credits, the purchases and sales are entered in a **publicly accessible Register.**

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### Institutional carbon market


**Compliance**  
(Mandatory)

### CER Certified Emission Reduction

UN and Government Standards:



Clean Development Mechanism  
(CDM)  
<https://offset.climateneutralnow.org>










Reduced emissions from deforestation  
and forest degradation  
(REDD+)  
<https://redd.unfccc.int/>

California Compliance Offset Program,  
Australian Carbon Credit Unit Schemet  
Japanese J-Credit Scheme


### Voluntary carbon market

**Voluntary**  
(OTC - Over the Counter)


### VER Verified Emission Reduction

Standard	Sito internet	Logo
VCS-Verra	<a href="https://verra.org/">https://verra.org/</a>	
The Gold Standard	<a href="https://www.goldstandard.org/">https://www.goldstandard.org/</a>	
CCB	<a href="http://www.climate-standard.org">www.climate-standard.org</a>	
Plan Vivo	<a href="http://www.planvivo.org">www.planvivo.org</a>	
Carbon Fix	<a href="http://www.carbonfix.org">www.carbonfix.org</a>	
Social Carbon	<a href="http://www.socialcarbon.org">www.socialcarbon.org</a>	
Climate action reserve	<a href="http://www.climateactionreserve.org">www.climateactionreserve.org</a>	

80% of the market (2022)




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## Two markets, but the same basic principles for generating carbon credits




→

$Total\ Biomass\ (TB) = AGB + BGB = AGB + 0.2 \times AGB = 1.2 \times AGB$


$Total\ Dry\ Weight\ (TDW) = TB \times 0.725$

$Total\ Carbon\ (TC) = TDW \times 0.5$


$CO_2\ weight = TC \times 3.67$



- **Metric:** How to measure a credit
- **Additionality:** Definition of the baseline (BaU)
- **Permanence** and risk management
- **Leakage:** transfer of the impacts of protection to other resources
- **Ownership** of the parties' claims and obligations
- Minimal environmental and social **co-benefits**



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## Co-benefits

Nothing new: a problem perceived from the beginning of the credit discussion. The transition was quick:

RED (*R*educed *E*mission from *D*eforestation)



REDD (... in *D*eveloping countries)



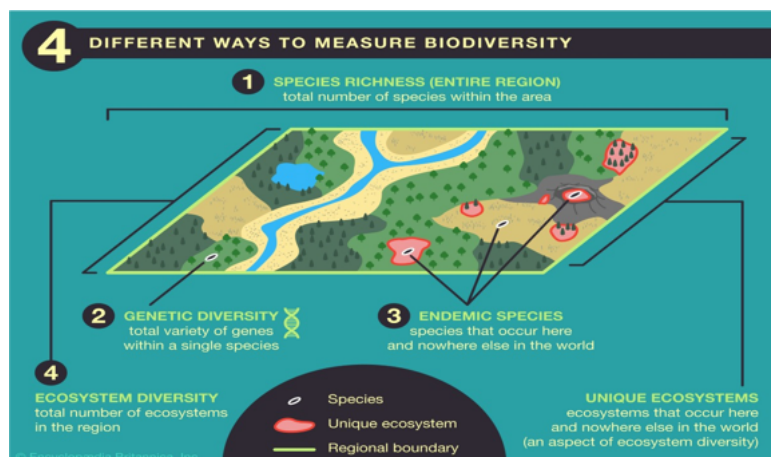
REDD (... and forest *D*egradation)



REDD+ (... including safeguards = co-benefits)

## Biodiversity credits

Similar principles for the generation of credits, but the metric is much more complex



## Biodiversity credits

Similar principles for the generation of credits, but the metric is much more complex, → the market is still in an early stage of organization (with the institutional market far behind)

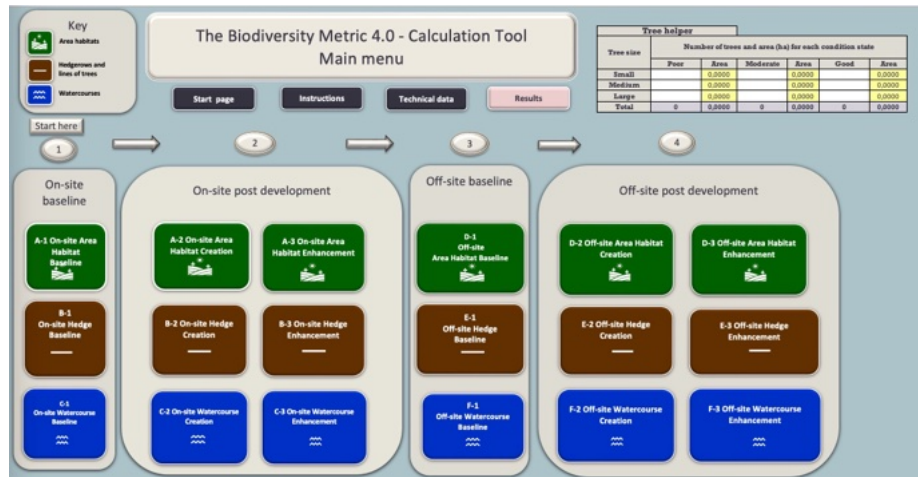
In Europe, UK is the most advanced country in this field: at the end of 2023, it adopted a policy that requires new land developments to be accompanied by a Biodiversity Net Gain (BNG)

## How the Biodiversity Net Gain (BNG) metrics work?

- Every new development affecting unbuilt habitats will have to complete a BNG assessment as a component of the materials submitted when seeking planning permission.
- If the BNG post-development score is  $\geq 10\%$  more than the baseline, the development can be approved; if not, the project plan must be altered to achieve the mandatory target, or the developer must purchase the shortfall in biodiversity units from the council or a third-party as a biodiversity offset.
- For off-site gains to be counted towards a development's BNG, these will be required to be registered on a publicly available register.
- The possibility that policies like BNG trade biodiversity losses today for uncertain gains in the future is a common concern and criticism of offsetting policies (Bekessy et al. 2010; Maron et al. 2012).

<https://publications.naturalengland.org.uk/publication/6049804846366720>

## «Biodiversity Metric 4.0» (Panks et al. 2022)



<https://publications.naturalengland.org.uk/publication/6049804846366720>

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## The metric for credits related to the regulation of the water cycle is even more complex: water credits, blue credits, natural flood management credits, ...



1. Forest sedimentation control
2. Recreation, swimming, fishing, camping and water storage
3. Hydroelectric station
4. Municipal water supply
5. City and industrial waste treatment plant
6. Pump to equalizing reservoir for irrigation
7. Diversion dam and lake
8. High-level irrigation canal
9. Levees for flood control
10. Erosion control: stream drams, contour terracing and wetland restoration
11. Regulating basin for irrigation
12. Wildlife refuge
13. Low level irrigation canal
14. Gravity irrigation
15. Contour ploughing
16. Sprinkler irrigation
17. Community Water Treatment Plan
18. Navigation: barge, trains, locks
19. Re-regulating reservoir with locks
20. Farm pond with pisciculture

Source: Masiero, 2009 – modif. da Smith et al., 2006.

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From carbon credits, biodiversity, blue credits, ...  
 ... to **bundling credits**: bioclimatic credits, sustainability credits, environmental credits, nature credits, ...

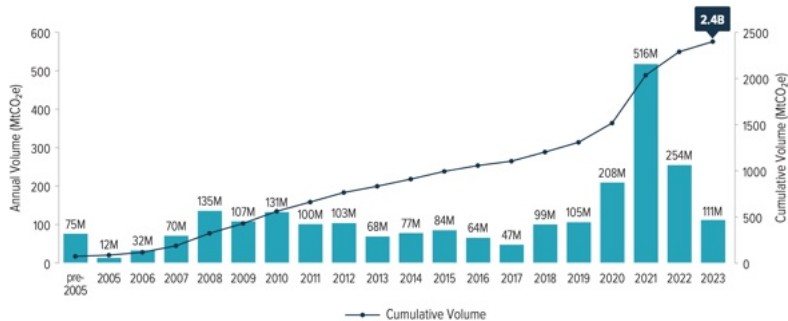
**A remarkable creative imagination related to credits that does not facilitate the transparency of the market**



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**Carbon credits in the voluntary market: a significant development until 2021. Then the collapse...**

2022			2023			Percent Change		
Volume (MtCO <sub>2</sub> e)	Value (USD)	Price (USD)	Volume (MtCO <sub>2</sub> e)	Value (USD)	Price (USD)	Volume	Value	Price
253.8	\$1.87 B	\$7.37	110.8	\$723 M	\$6.53	-56%	-61%	-11%



Fonte: ecosystem marketplace, 2024 <http://www.ecosystemmarketplace.com/>



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## Key Findings

- In 2023, the volume and value of the voluntary carbon market (VCM) contracted for the second year in a row from its 2021 peak, with a 56 percent year-on-year decline in the volume of reported transactions.**
  - The total reported transaction value of the VCM was \$723M USD, down 61 percent from last year.
- On average, buyers paid \$6.53 per ton CO<sub>2</sub>e for carbon credits in 2023, a slight decrease from 2022. Average credit prices in 2023 were higher than in any year before 2022. As of early 2024, prices appear to be rebounding from this dip.**
- Market participants reported a clear negative impact from media scrutiny of the VCM.** Negative press questioning the additionality and governance of carbon credit projects and potential corporate buyer greenwashing overshadowed many positive market developments in 2023. This translated to both a direct pullback in buyer investment, and increased complexity for project developers, whether due to changing requirements from credit issuing standards or greater demand for due diligence from credit buyers.
- The publication of the ICVCM's Core Carbon Principles and the launch of VCM's Claims Code contributed to buyer confidence in market quality and integrity.** But delays in implementation of these initiatives and a lack of guidance from the Science Based Targets Initiative (SBTI) on the use of carbon offsets to meet corporate net-zero goals was cited by many respondents as a prime factor keeping buyers on the sidelines for much of late 2023.
- The data suggest a growing bifurcation in the market between buyers seeking pure carbon removal projects and those committed to projects that deliver social and environmental co-benefits.** Co-benefits are a core motive for some buyers, an interesting trend pointing to the possibility of greater convergence with emerging markets for nature-positive and biodiversity credits.
  - In 2023, buyers preferentially sought out credits representing emissions removals and clearly demonstrated project additionality.
  - While the share of credits traded from projects certifying "beyond carbon" co-benefits through Sustainable Development Goals (SDGs) or individual certifications grew, the premium that buyers paid for these credits declined from 2022 values, suggesting a growing supply of projects providing local co-benefits.
- Although total market value fell for all VCM credit categories, different categories had distinct trajectories in terms of traded volumes and average price.**
  - The biggest gross declines in volume occurred among Forestry and Land Use and Renewable Energy credits, which remain the most popular project types, but faced intense scrutiny, particularly around project additionality calculations.
  - The volume of transactions in the Energy Efficiency/Fuel Switching, Agriculture, and Household/Community Devices categories all increased from 2022.
  - Within the Forestry and Land Use credit category, REDD+ credits, the most popular nature-based project type, lost 62 percent of their value year-over-year, with transaction volume falling 51 percent and price falling 23 percent. Prices for Afforestation-Reforestation and Revegetation (ARR) and Improved Forest Management (IFM) credits both increased. The 2023 pullback from REDD+ projects affected transaction volume of projects in Asia, Latin America, and the Caribbean, where the majority of these projects are located. EM survey respondents shared that many buyers in higher income countries are seeking credits from projects closer to home.

Fonte: Ecosystem Marketplace, 2024

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## Carbon credits: problems in additionality and respect for local population rights

### Synthesis of 3 scientific studies

**Based on a new analysis at least 90% of Verra's rainforest carbon credits do not represent real emission reductions**

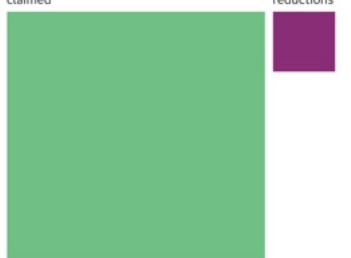
Each credit is equal to one metric tonne of CO<sub>2</sub> equivalent

94.9m

carbon credits claimed

5.5m

real emissions reductions





Guardian graphic. Source: The Guardian analysis based on a significant percentage of the projects as looked by West et al studies and Verra registry (accessed in August 2022). All figures are estimates. West et al 2023 is a pre-print. Note: Verra's claims versus analysis of independent scientific studies

**Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows**

The investigation found that:

- Only a handful of Verra's rainforest projects showed evidence of deforestation reductions, according to two studies, with further analysis indicating that 94% of the credits had no benefit to the climate.
- The threat to forests had been overstated by about 400% on average for Verra projects, according to analysis of a 2022 University of Cambridge study.
- Gucci, Salesforce, BHP, Shell, easyJet, Leon and the band Pearl Jam were among dozens of companies and organisations that have bought rainforest offsets approved by Verra for environmental claims.

Fonte: <https://www.theguardian.com/environment/2023/jan/18/revealer> (gennaio 2023)

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**THE  
NEW YORKER**

**THE GREAT CASH-FOR-CARBON HUSTLE**

*Offsetting has been hailed as a fix for runaway emissions and climate change—but the market's largest firm sold millions of credits for carbon reductions that weren't real.*

**By Heidi Blake**  
October 16, 2023

October 16, 2023: A New Yorker article documents serious issues related to **South Pole's activity** in the **Kariba project** in Zimbabwe (REDD+ project on **750,000 ha**)

The project generated approx. **\$100 million of credits** sold to Volkswagen, Delta Airlines, Ernst & Young, McKinsey, Gucci, Lidl and Greenchoice.

**South Pole is the world's largest carbon credit brokerage group in the voluntary market Verra, the certification body of the Kariba project, which globally has performed the vast majority of forest credit certifications, has suspended certification.**

Source: <https://www.newyorker.com/magazine/2023/10/23/the-great-cash-for-carbon-hustle>  
<https://reddmonitor.substack.com/p/south-pole-and-the-kariba-redd-project>

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**Joint Statement**

**Why carbon offsetting undermines climate targets**

1. Offsetting could delay climate action
2. Carbon offsetting inherently lacks credibility
3. There are only so many "quality" credits that could be used as offsets
4. The climate funding gap will not be solved by offsetting

We call for scientific, ambitious, equitable, robust, credible and transparent rules around carbon accounting and corporate climate target setting. Voluntary and regulatory frameworks on climate transition planning must exclude offsetting.

**Crisis of legitimacy of the carbon credit market**

July 2024

Petition signed by +80 civil society organizations including: Action Aid International

- Amnesty International
- Christian Aid
- Friends of the Earth (EU e USA)
- Global Witness
- Greenpeace
- Oxfam

Source: <https://newclimate.org/sites/default/files/2024-07/Joint-CSO-Statement-Offsetting.pdf>

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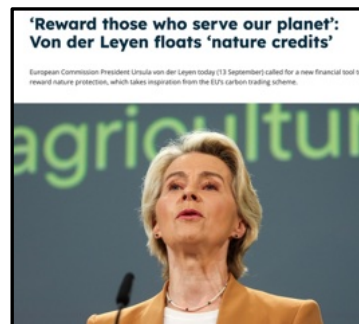
## A fundamental criticism: financialization of nature and ES (Jutta Kill, 2014)

*"A process whereby the natural functions and processes of forests, woodlands, meadows, mountains and other natural areas become treated as a range of 'ecosystem services' including biodiversity, regulation and filtration of water, carbon storage and sequestration, the economic value of which can be calculated and expressed in monetary terms. **Financialization** transforms both everyday perceptions and policy, and **involves not only the framing and valuation of these natural spaces in economic terms via commodification, monetization, commercialisation, but also their integration into financial markets as a tradable asset**"*

In the end, credits are criticized for the fact that they distract investments from the **real urgent actions**: changing our lifestyles (of consumption and therefore of production) not buying "licenses to go on damaging the environment".

## Biodiversity credits

- Unlike carbon credits, so far **biodiversity credits** have **not** had an **official endorsement** in the EU
- the **EU Biodiversity Strategy** to 2030 does **not mention** them, like Reg. 2024/1991 on **Land Restoration**, while paying great attention to the description of the financing instruments, even if...

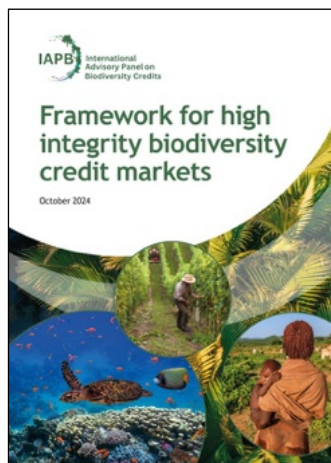


## Critical valuations now affect also the biodiversity credit market

One of the Cali CoP16 outcomes: criticisms of biodiversity claims

The screenshot shows a webpage with a navigation bar at the top containing 'Home', 'Signatories', 'Resources', 'Explainers', 'Events', and 'About Us'. The main content area features a large green headline 'DON'T BE FOOLED!' followed by a sub-headline 'BIODIVERSITY MARKETS ARE FALSE SOLUTIONS'. Below this, there is a paragraph of text: 'Stop the promotion, development and use of biodiversity offsetting and crediting schemes. Instead, prioritize transformational change in tackling the underlying causes of biodiversity loss'. A red arrow points to the sub-headline. At the bottom of the screenshot, the URL 'https://www.biodmarketwatch.info/' is visible. The footer of the webpage includes the logos for 'TESAF Dipartimento Territorio e Sistemi Agro-Forestali' and 'UNIVERSITÀ DEGLI STUDI DI PAVIA'.

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<https://drive.google.com/file/d/1fY8EfmEfAr7zeL2d59vuZhiuwc8xQaw/view>



## IAPB document presented in Cali

Some of the most significant recommendations

- 4 A biodiversity credit is "a certificate that represents a measured and evidence-based unit of positive biodiversity outcome that is durable and additional to what would have otherwise occurred" (BCA, 2024a). IAPB's work builds on this definition, including conservation and restoration outcomes, to examine some aspects in greater depth and to set the necessary criteria to secure the integrity of biodiversity credits and markets.
- 5 Biodiversity credits can be used for making evidence-based contributions to Nature goals, for local compensation of biodiversity impacts (under strict criteria), and for insetting – proactive investment within buyers' supply chains. IAPB does not support international biodiversity offsetting approaches: compensation must be local-to-local and like-for-like. In addition to these use cases, there are linkages between carbon and biodiversity markets and potential for co-benefits between them. The overriding principle across use cases is that high integrity must be evident.
- 6 At this stage, there will be multiple markets for biodiversity credits, and markets will follow a project financing approach. Biodiversity is not fungible so projects will be funded based on specific circumstances and outcomes, and the local specificity of ecosystems and communities means that a standardised biodiversity unit is not appropriate (though standardisation of approaches could support market development). Markets will address specific objectives and use cases, in line with local, national or international governance or policy frameworks.
- 7 Design solutions therefore need to support multiple markets, depending on the context, actors and motivations. There is space for both voluntary and compliance markets, and compensation and contribution opportunities to co-exist and deliver scaled, equitable, positive outcomes for people and the planet. It should be noted, however, that IAPB does not support secondary markets at this stage.

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## National schemes for carbon markets in the primary sector, with related standards and control systems

Country	Name of the initiative	Voluntary/Compliance	Date	Scale	Sector	Eligible activities	Volume of GHG emissions reduced/sequestered	Price
GERMANY	MoorFutures* (MF) 	Voluntary	Since 2011	Local	Forestry and land-use	Restoration of peatlands	68,889 tCO <sub>2</sub> e validated	Between 40 €/tCO <sub>2</sub> e and 67 €/tCO <sub>2</sub> e (taxes not included)
UNITED KINGDOM	Woodland Carbon Code* (WCC) 	Voluntary	Since 2011	National	Forestry and land-use	Afforestation/reforestation	6.3 MtCO <sub>2</sub> e registered whose 3.4 MtCO <sub>2</sub> e are validated 1.1 MtCO <sub>2</sub> e are verified*	Between 6 €/tCO <sub>2</sub> e and 17 €/tCO <sub>2</sub> e
	Peatland Code* (PC) 	Voluntary	Since 2015	National	Forestry and land-use	Restoration of peatlands	6,484 tCO <sub>2</sub> e on 77 ha validated with 839 ha of projects pending	Between 6 €/tCO <sub>2</sub> e and 10 €/tCO <sub>2</sub> e*
AUSTRIA	Climate Austria* (CA) 	Voluntary	Since 2008	Local	Renewable energy Transport	<ul style="list-style-type: none"> <li>Biomass heating technology</li> <li>Alternatives drives</li> <li>Led lighting</li> <li>Thermal solar energy</li> </ul>	130,000 tCO <sub>2</sub> e verified	Between 25 €/tCO <sub>2</sub> e and 40 €/tCO <sub>2</sub> e
	Ökoregion Kaindorf (OK) 	Voluntary	Since 2007	Local	Agriculture	Carbon in agricultural soil	In 2019, around 25,000 tCO <sub>2</sub> e** validated	Between 30 €/tCO <sub>2</sub> e and 45 €/tCO <sub>2</sub> e
SPAIN	Registro de huella de carbono* (RHC) 	Voluntary	Since 2014	National	Forestry and land-use	<ul style="list-style-type: none"> <li>Afforestation/reforestation</li> <li>Restoring forest areas degraded by fires</li> </ul>	123,590 tCO <sub>2</sub> e validated whose 19,159 tCO <sub>2</sub> e are verified	At least 25 €/tCO <sub>2</sub> e
	Valvocar* (Vc)	Voluntary	In development since 2019	Local	Forestry and land-use	N/A	N/A	N/A

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## National schemes... (cont.)

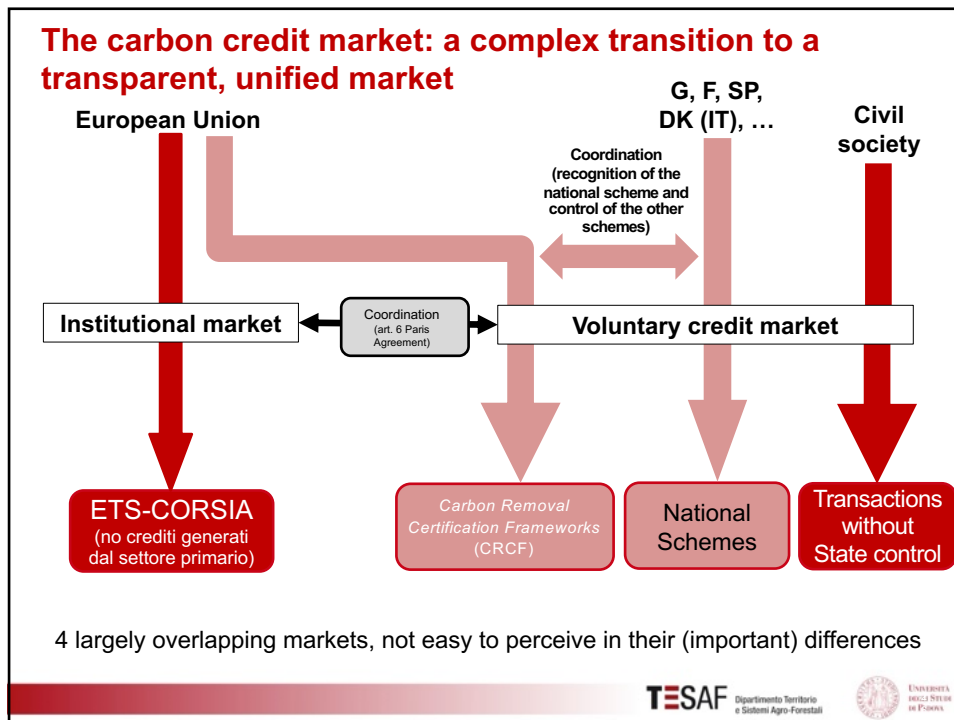
Country	Name of the initiative	Voluntary/Compliance	Date	Scale	Sector	Eligible activities	Volume of GHG emissions reduced/sequestered	Price
FRANCE	Label Bas Carbone (LBC) 	Voluntary	Since 2019	National	Forestry and land-use Agriculture	<ul style="list-style-type: none"> <li>Afforestation</li> <li>Restoration of degraded forest areas</li> <li>Converting coppices to high standing trees</li> <li>Improvements in livestock management</li> </ul>	0 for now	N/A
SWITZERLAND	Max.Moor (Mx)	Voluntary	2015-2020	National	Forestry and land-use	Rewetting peatlands	Not Known	Around 110 €/tCO <sub>2</sub> e
NETHERLANDS	Green Deal* (GD) 	Voluntary	In development since 2017	National	Forestry and land-use Renewable energy	<ul style="list-style-type: none"> <li>Peatland Management</li> <li>Riethemia to substitute natural gas in heating public building (in development)</li> </ul>	The Green Deal aims at 0.5 MtCO <sub>2</sub> e/year (projection)	N/A
NORDIC COUNTRIES (FINLAND, BELGIUM, SWEDEN)	Puro.earth* (Pu)	Voluntary	Since 2019 legal entity planned for 2019	Several countries	Agriculture Building	<ul style="list-style-type: none"> <li>Carbonated building elements</li> <li>Wooden building elements</li> <li>Biochar</li> </ul>	N/A	Average price of 26 €/tCO <sub>2</sub> e <sup>1</sup>

Source: Domestic carbon standards in Europe  
<https://www.i4ce.org/en/publication/domestic-carbon-standards-in-europe/>

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**The carbon credit market: a lesson to be learned for the biodiversity credit market?**

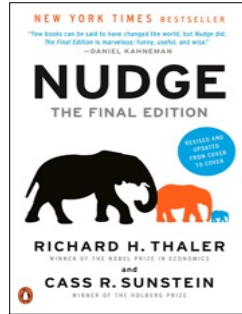
**Credibility, integrity, subsidiarity**

- A central importance for the development of the credit market is that of the **ES metric**
- Public action in **defining the rules** and providing **transparent information** is essential for the harmonious development of their market
- The **regulatory action** must be **separate** from that of **managing certification schemes** (conflicts of interest)
- **Market governance** should be **coordinated** at different scales to have a single market, especially at the launch stage of the system

Logos for **TESAF** (Dipartimento Territorio e Sistemi Agro-Forestali) and **UNIVERSITÀ DEGLI STUDI DI PAVIA** are at the bottom right.

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An approach consistent with the principles of "Nudges economics"



... maybe we need now something more than a nudge