


**33<sup>rd</sup> Plenary Meeting of the Network of the Heads of European Nature Conservation Agencies (ENCA)**


**Rome, 2 - 4 June 2024**

# Innovative tools for generating payments for ecosystem services

Daide Pettenella






Dipartimento Territorio e Sistemi Agro-Forestali



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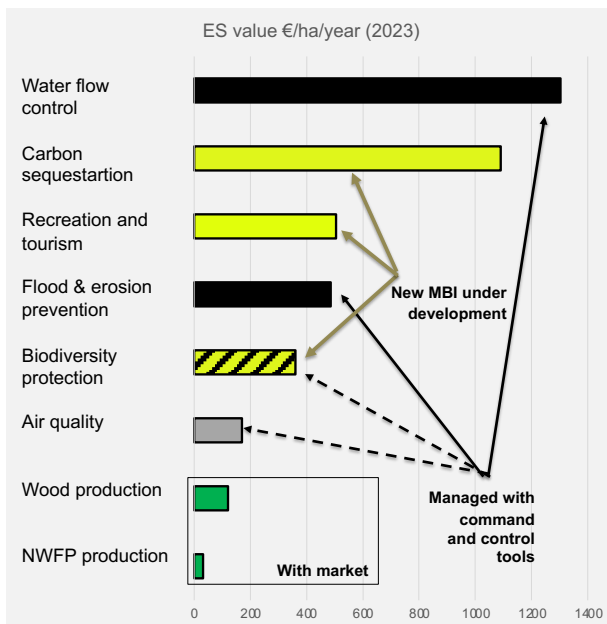
## Tools to activate the provision of Ecosystem Services

<b>Passive:</b> Command and Control Instruments	Taxes, constraints, permits, licenses, various obligations such as registers, licenses, ...	sticks 
<b>Active:</b> Creation of new forms of remuneration	Tax relief: exemptions, deductions, deductions, ...	
	Capital or interest grants	carrots 
	Direct land acquisition	
Market-Based Mechanism	ES payment schemes (PES and PES-like)	
	Credits and related markets	
	SE Auctions	
	Development of standards, certifications, labels-brands	
	Env. Claims	sermons 
	Donations, sponsorships	
	Training, Technical Assistance, Communication, Information	

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## The values of Ecosystem Services in forest ecosystems

Ecosystem Service	ES values €/ha/yr (2023)	S.D.
NWFP Production	32	31.27
Timber production	120	107.36
Air quality	170	148.54
Biodiversity protection	360	247.98
Flood protection, erosion	486	408.87
Recreation & Tourism	505	1442.31
Carbon sequestration	1090	1895.75
Water flow control	1303	1173.7



Source: [https://cinea.ec.europa.eu/programmes/life\\_en](https://cinea.ec.europa.eu/programmes/life_en)

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## A general trend: from Command-and-Control (CAC) to Market Based Instruments (MBI)

**C&C** Taxes, permits, limitations, ...  
right/duty implementation  
“non to be done”

**MBI** Economic tools used to drive human behavior  
“to be done” (on a voluntary basis)

Source: OECD 1994, Stavins 2001, Windle et al. 2005

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## Great attention to MBI, with special focus to PES

- **4th Ministerial Conference on the Protection of Forests in Europe** (Vienna, Austria, 28–30 April 2003)
- **UN Commission on Sustainable Development, 13th Session on water, sanitation and human settlements** (New York, 30 April 2004 and 11–22 April 2005)
- **9th Meeting of the conference of the contracting parties to the convention on wetlands** (Kampala, Uganda, 8–15 November 2005) **Resolution IX.3: Engagement of the Ramsar Convention on Wetlands in ongoing multilateral processes dealing with water**

## Great attention to MBI, with special focus to PES

In light of the increased climate and biodiversity ambition of the EU, the **Member States are specifically encouraged, as relevant to their national circumstances, to set up a payment scheme for ecosystem services for forest owners and managers, in order to cover for costs and income foregone** similarly to exemplary national schemes such as the Finnish METSO programme. **Member States are also encouraged to accelerate the roll out of carbon farming practices, for instance via eco-schemes on agroforestry or rural development interventions** to cover biodiversity-friendly re- and afforestation investments, agroforestry and other non-productive investments for environment- and climate-related objectives. To support Member States, the Commission will provide **advice and technical guidance on the development of payment scheme for ecosystem services.**

New EU Forest Strategy for 2030

Various steps involve the development of ecosystem services (PES) and a set of other

The Recommendations were adopted by the Commission for the Protection and Use of Transboundary Waters (Bonn, 20-22 November 2006).

a high-level discussion forum  
**THINKFOREST**  
Documents for

In collaboration with MEPs  
Kriton Arsenis, S&D  
Ramon Tremosa, ALDE

FACILITATED BY EUROPEAN FOREST INSTITUTE

CONTACT: Ben Hayes  
Assistant Secretary General, European Forest Institute  
ben.hayes@efi.int

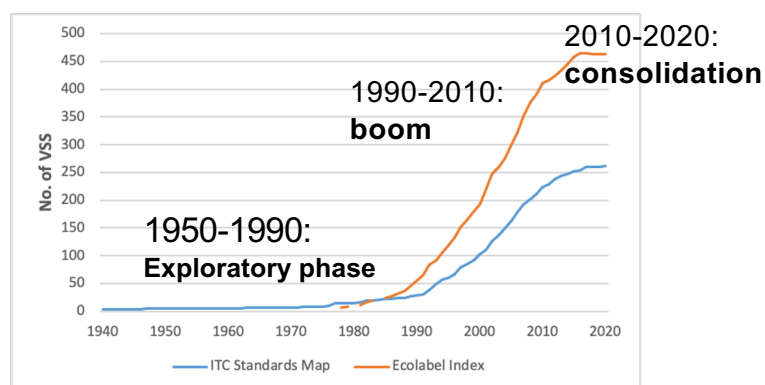
TO REGISTER: ben.hayes@efi.int  
or contact your national contact point  
for forest policy (see [www.efi.int](http://www.efi.int))

NEWFORUM

## Civil society initiatives related to MBI for the ES provision

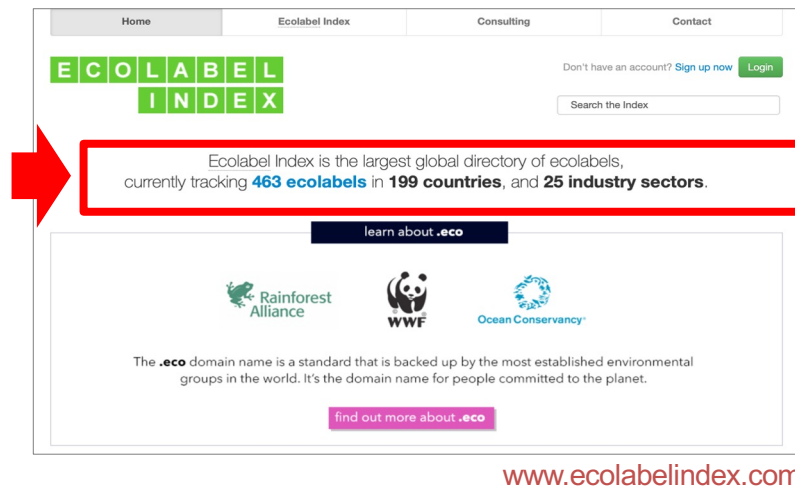
Areas of action	Private initiatives that have covered the area of action
Sustainable finance	GABV, FEBEA and INAISE networks' activities; Basel 1 and 2
Sustainable products sold to final consumers	Ecolabels

## Number of voluntary sustainability standards available on the market (1940-2020)



Source: Marx e Fernandez de Cordoba, 2020  
VSS = *Voluntary Sustainability Standards*

## Ecolabels



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## Civil society initiatives related to MBI for the ES provision

Areas of action	Private initiatives that have covered the area of action
Sustainable finance	GABV, FEBEA and INAISE networks' activities; Basel 1 and 2
Sustainable products sold to final consumers	Ecolabels
Sustainability reporting	GRI, CDP, SASB, ISO 14001 EMS, SASCB, Carbon Trust Standard, Greenhouse Gas Protocol by the WRI and WBCSD,...
Sustainable use of wood biomass	Better Biomass, ISCC, SBP, ... (see <a href="https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en">https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en</a> )
Sustainable origin of the wood products and their CoC and criteria for SFM	CoC standards by FSC, PEFC, Naturaland, Plockhugget, ...
Carbon credits generation	National Schemes and private certification schemes and standards
Legal origin of 7 farm and forest products and their CoC	GFP, Rainforest Alliance, RTRS, RSB, RSPO, SAN, SBP + already mentioned forest related organizations

CDP: Carbon Disclosure Project, CoC: Chain of Custody, EMS: Environmental Management System, GCP: Global Coffee Platform, GRI: Global Reporting Initiative, ISCC: International Sustainability and Carbon Certification, RSB: Roundtable on Sustainable Biomaterials, RTRS: Round Table on Responsible Soy Association, RSPO: Roundtable on Sustainable Palm Oil, SAN: Sustainable Agriculture Network, SBP: Sustainable Biomass Program, SASB: Sustainability Accounting Standards Board, SASCB: Sustainability Accounting, Standards and Certification Board, WBCSD: World Business Council for Sustainable Development, WRI: World Research Institute.

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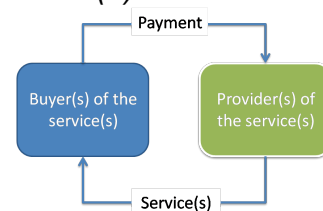
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## Payments for Environmental Services (PES)

Definition (Wunder, 2005):

“a **voluntary** (1) transaction where:

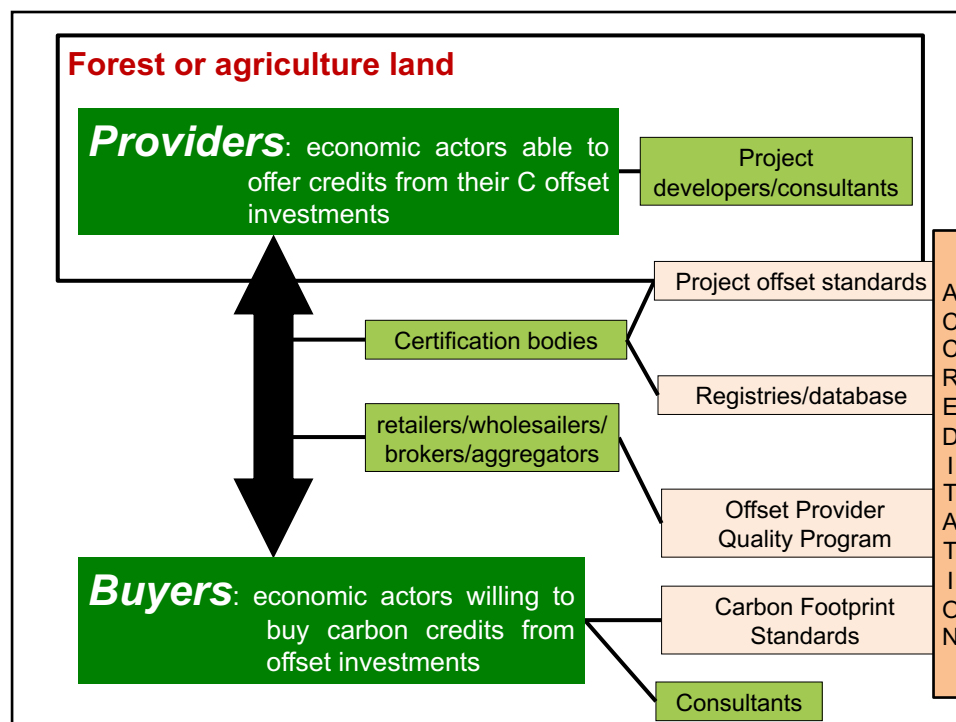
- a **well-defined ecosystem service** (2) (or a land-use likely to secure that service)
- is being bought by a (**minimum one**) ecosystem **buyer** (3)
- from a (**minimum one**) ecosystem **provider** (4)
- if and only if the ecosystem service provider secures ecosystem service provision” (5) (**additionality**)



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## Some barriers in the development of PES initiatives

Barrier category	Challenges
<b>Informational</b>	Lack of awareness among beneficiaries and providers
<b>Technical</b>	Scientific uncertainty, Baselines, Leakage, ES valuation, Excludability and free riding, Shortage of skills and experience
<b>Spatial</b>	Spatial variability of ES
<b>Temporal</b>	Permanence, Time lags, Different time horizons
<b>Financial</b>	Perceived risks, High start-up and Transaction costs
<b>Institutional</b>	Perverse incentives, Complex policy environment
<b>Legal</b>	Property rights and other issues
<b>Equity</b>	Perceived unfairness
<b>Cultural</b>	Aversion to paying for ES, lack of trust

Source: modified from DEFRA, 2011

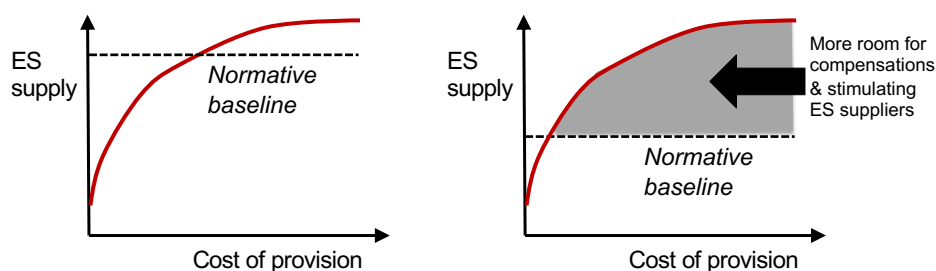
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## Legal problems: cost of provision and high baselines (and related problems of additionality definition)

- The prevailing approach by State actors → **cost of provision** (a robust framework adopted by EU Rural Development Program); high normative **baselines** is often a limitation



- An alternative criteria: the value of the service → **beneficiary's WTP** (normally higher than the cost of provision)

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## Cultural problems: “financialization” and “commodification” of natural resources

A process whereby the natural **functions and processes** of forests, 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** (Kill, 2014)

### Financialization of Nature

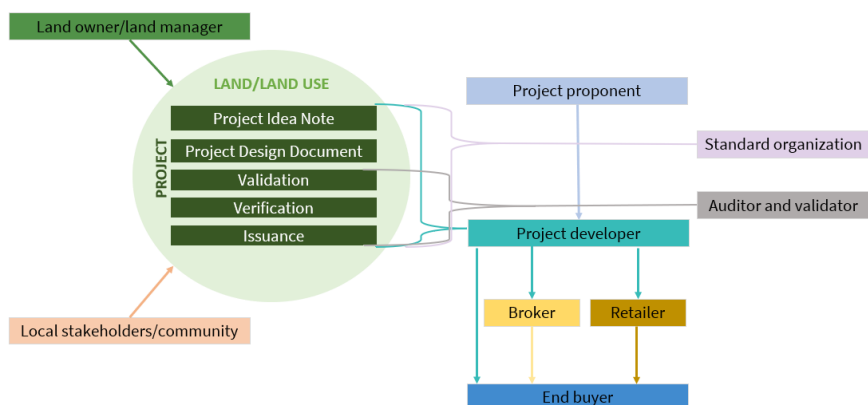


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## Main actors involved in the C market



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## Civil society initiatives: not always without problems and limitations

**The  
Guardian**

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

**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



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.

<https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoc>

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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 problems related to **South Pole's activity** in the Kariba project in **Zimbabwe** (REDD+ project on 750,000 ha)

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

**South Pole** is the world's **largest group** in the brokerage of carbon credits in the voluntary market.

**Verra**, the certification body of the Kariba project, which has performed the vast majority of forest credit certifications globally, **has suspended certification**.

<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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## Am example of PES-like: payment connected to hydropower generation in Italy

- The first source of renewable energy in Italy (5.1% of total final consumption)
- National frame law: no. 959 in 1953
- Payment is based on potential power of hydroelectric plants (>220 kW/h)
- Beneficiaries: Municipalities, frequently organised in Consortia that have the catchment area or host the power plant (5.3 €/kWh)
- Consortia: 69 BIMs; 1,684 Municipalities involved; 252 dams; 518 power plants

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## Criteria to distribute the payment among the Municipalities (Source: Decree Ministry of Public Works)

- 10% flat rate shared equally among Municipalities
- 20% paid in relation to the territorial area of each Municipality
- 30% paid in relation to the population of each Municipality
- 40% paid in relation to the localisation of various infrastructures (dam, power plant, torrents, channels, ...)

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## Use of money raised by the PES

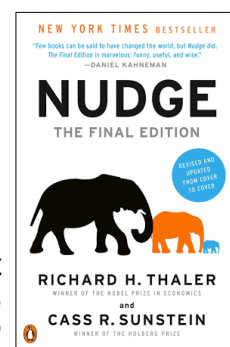
- Public works: infrastructures, social services, cultural events (recently: renewable energy generation and distribution)
- <5% administrative costs
- Local politicians are the decision makers (aim: to raise the voters' consensus)

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## Need for clear and shared rules



Public institutions define the frame rules (indicators, thresholds, procedures, institutional actors, M&V systems, ...) for managing environmental services markets

An approach consistent with the principles of the "Nudges economics"



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Area of policy action	Private initiatives that have covered the areas of action	The regulatory initiatives by the EU
Sustainable finance	GABV, FEBEA and INAISE networks' activities; Basel 1 and 2	<b>Taxonomy</b>
Sustainable products sold to final consumers	Ecolabels	<b>Green Claims Directive, Eco-design for Sustainable Products Regulation</b>
Sustainability reporting	GRI, CDP, SASB, ISO 14001 EMS, SASCB, Carbon Trust Standard, Greenhouse Gas Protocol by the WRI and WBCSD,...	<b>CSRD (Corporate Sustainability Reporting Directive) and NFRD (Non-Financial Reporting Directive)</b>
Sustainable use of wood biomass	Better Biomass, ISCC, SBP, ... (see <a href="https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en">https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/voluntary-schemes_en</a> )	<b>REDII and REDIII</b>
Legal (sustainable) origin of the wood products and their CoC and criteria for SFM	CoC standards by FSC, PEFC, Naturaland, Plockhugget, ...	<b>EUTR – European Union Timber Regulation</b>
Carbon credits generation	National Schemes and private certification schemes and standards	<b>CRCF – Carbon Removal Certification Framework</b>
Legal origin of 7 farm and forest products and their CoC	GFP, Rainforest Alliance, RTRS, RSB, RSPO, SAN, SBP + already mentioned forest related organizations	<b>EUDR – European Union Deforestation and forest degradation Regulation</b>

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## An example: new credits markets in UK based on institutional rules

### UK Government Endorsed Standards

(as at 05.09.23)

Ecosystem Service Market	UK Government Endorsed	Relevant Metric
Woodland carbon	Woodland Carbon Code*	WCC Carbon Calculator
Peatland carbon	IUCN Peatland Code**	PC Emissions Calculator
Biodiversity net gain	To be confirmed***	Biodiversity Metric (v4.0)

Source: <https://finance.earth/wp-content/uploads/2023/08/Full-Nature-Markets-Principles-October-2023.pdf>

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

- For each habitat patch during the baseline assessment:
  - **habitat type** and its area (ha),
  - **distinctiveness** (from „very low“ to „very high“),
  - **strategic significance** (based on its location relative to areas identified as ecologically valuable in local nature strategies).
  - **condition** (from „very poor“ to „very good“, or N/A for urban and cropland areas)
- Use of some **multipliers** to increase the number of biodiversity units where the ecological uncertainty is high, or if they are being delivered further into the future
- The biodiversity unit value for each habitat type is given by a simple multiple of these numerical scores.

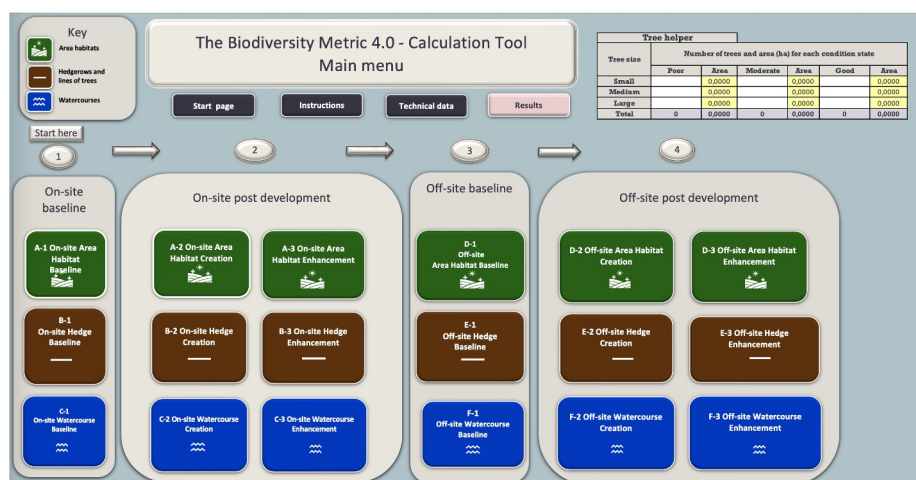
<https://publications.naturalengland.org.uk/publication/6049804846366720>

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



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

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# Conservation Biology

CONTRIBUTED PAPERS | [Open Access](#)

## Achieving biodiversity net gain by addressing governance gaps underpinning ecological compensation policies

Emily E. Rampling ✉, Sophus O. S. E. zu Ermgassen ✉, Isobel Hawkins, Joseph W. Bull

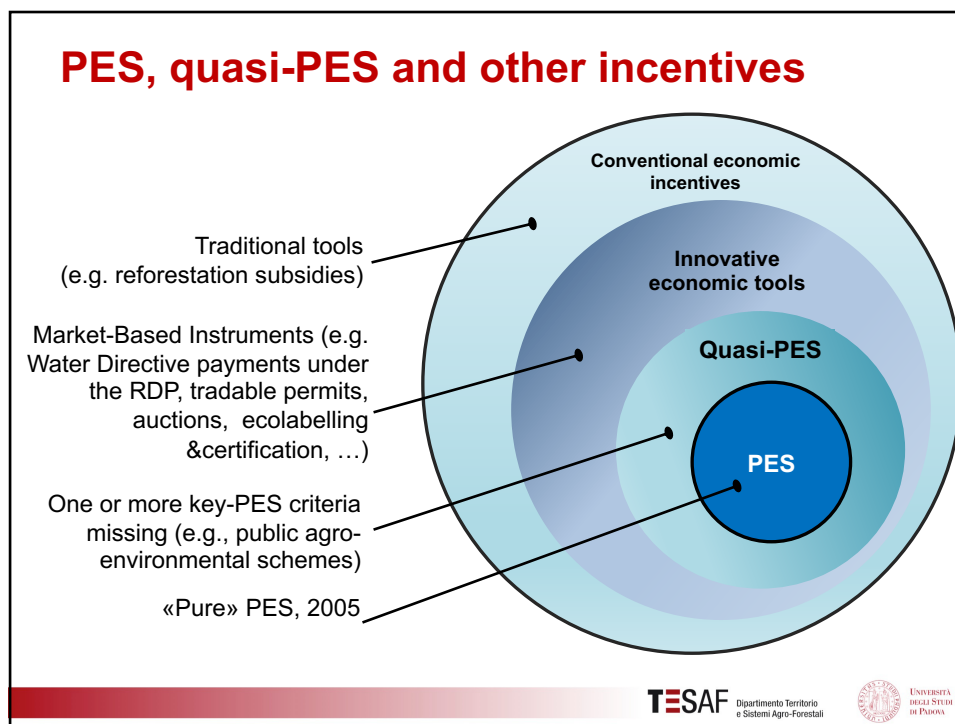
First published: 09 October 2023 | <https://doi.org/10.1111/cobi.14198>

Biodiversity compensation policies have emerged around the world to address the ecological harms of infrastructure expansion, but they have historically experienced weak compliance. The English government is introducing a requirement that new infrastructure developments demonstrate they achieve a Biodiversity Net Gain (BNG). Previous research has highlighted governance gaps that risk undermining the policy's ecological outcomes and explore the risks caused by capacity constraints in regulators. However, the magnitude of their effects on the policy's potential biodiversity impacts remains unexplored. We collated BNG information from all new major developments across six early adopter councils from 2020–2022. We quantified the proportion of the biodiversity outcomes promised under BNG which are at risk of non-compliance, explored the variation in strategies that developments use to meet their biodiversity liabilities, and quantified the occurrence of simple errors in the biodiversity metric calculations. Large developments and energy infrastructure are more likely to meet their liability within their own development footprint, and small developments more likely to purchase offsets. We estimate that 27% of all biodiversity units fall within governance gaps that expose them to a high risk of non-compliance. Ideally, more robust governance mechanisms would be implemented to cover on-site biodiversity unit delivery. Alternatively, more of these units could be delivered through the off-site biodiversity offsetting; in the latter case, we estimate that the demand for offsets could rise by a factor of four, increasing the financial contributions generated by BNG for conservation activities on private land. Lastly, we find that 21% of applications contained a simple recurring error in their BNG calculations, half of which have already been accepted by councils, hinting at under-resourcing in councils assessing developments. Our findings demonstrate that resourcing and governance shortfalls risk undermining the policy's effectiveness at halting biodiversity loss and require addressing to ensure the policy benefits nature.

# Criticism of the BNG

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



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## Conclusion

- Two problems of **harmonization**:
  - systems of **civil society initiatives** with those promoted by the **State(s)**
  - systems promoted by **different public institutions** (Regions, State, super-national institutions)

## National schemes for the carbon market, 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

## 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 <sup>1</sup> (GD) 	Voluntary	In development since 2017	National	Forestry and land-use Renewable energy	<ul style="list-style-type: none"> <li>Peatland Management</li> <li>Rhithemia 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 <sup>1</sup> (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

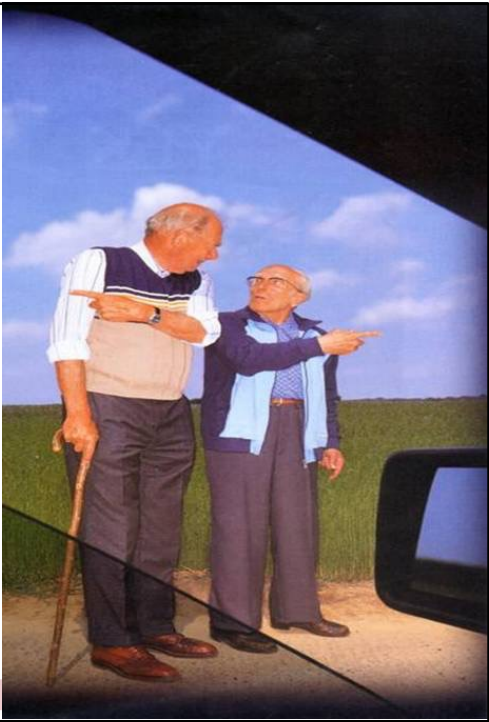
<https://www.i4ce.org/en/publication/domestic-carbon-standards-in-europe/>

## Conclusion

- Two problems of **harmonization**:
  - systems of **civil society initiatives** with those promoted by the **State(s)**
  - systems promoted by **different public institutions** (Regions, State, super-national institutions)
- Are public institutions able to guarantee **extra benefits with the new rules?** And will they be able to effectively and efficiently carry out their new monitoring and control responsibilities **avoiding unnecessary administrative costs?**
- The new fields of action are particularly complex: the **problem of defining metrics for benefits**, also due to the presence of **trade-offs** between co-benefits (e.g.: energy poverty-biodiversity)



Let's avoid  
sterile  
contrasts



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A model example:  
International Advisory  
Panel on Biodiversity  
Credits



A GLOBAL INITIATIVE TO SHAPE BIODIVERSITY CREDIT MARKETS  
DELIVERING FOR PEOPLE AND PLANET

Innovative solutions that deliver scaled-up investment in nature are crucial to increase the protection and restoration of the planet's ecosystems.

The International Advisory Panel on Biodiversity Credits has been set up as an independent and global initiative to help unlock significant financial flows to nature through the development of high integrity Biodiversity Credit Markets.

An open and inclusive process

The Independent Panel is a global multidisciplinary group composed of over 25 diverse and experienced individuals from more than a dozen countries. They include people from finance and industry, Indigenous peoples and local communities, and NGOs. The Panel is values-driven and evidence-based and adopts an open and inclusive process involving other countries and key partners.

The Panel considers it essential that its work and any recommendations it makes are developed together with Indigenous Peoples and local community representatives and with full respect of their rights, in accordance with relevant national legislation, (UNDRIP) and other international instruments, as applicable.



A systematic approach

Our five Working Groups are addressing key design challenges: Measurement, Supply, Demand, Stewardship and Governance.

We are also engaging Knowledge Partners. These Groups will help us bring together the latest science, data, technology, knowledge and experience from Indigenous Peoples and local communities, and market developments to help shape nature markets and increase and accelerate investment in nature in a way that delivers for people and the planet.

<https://www.iapbiocredits.org>

IAPB Publications



Consultation on biodiversity credits archetypes



Call for Views – revised and extended report 18 April 2024

Resources from other organisations



UNEP, WCMC and UNEP FI, 2024

Accountability for nature: A guide to nature-related assessment and disclosure frameworks and standards



Biodiversity Credit Alliance, 2023

Demand-side sources and motivation for biodiversity credits (Issue 2023)



Zyngria, Steele and Dutton, 2023

Biocredit catalogue: A collection of biocredit schemes and schemes (IED, London)



United Nations Environment Programme, 2023

State of Finance for Nature: The Bio Nature Summit – Resourcing \$2 trillion to combat nature loss (Nairobi)



Pollination, 2023

State of voluntary biodiversity credit markets: A global review of biodiversity credit schemes



Taifex on Nature Markets, Nature Finance and NED, 2023

Initial mapping of Indigenous Peoples and local community engagement in biodiversity credit markets



Biodiversity Credit Alliance, 2023

Communities and nature markets: Building just partnerships in Biodiversity Credits (Discussion paper)



Taifex on Nature Markets, 2023

Making Nature Markets Work: Shaping a Global Nature Economy in the 21st century

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