

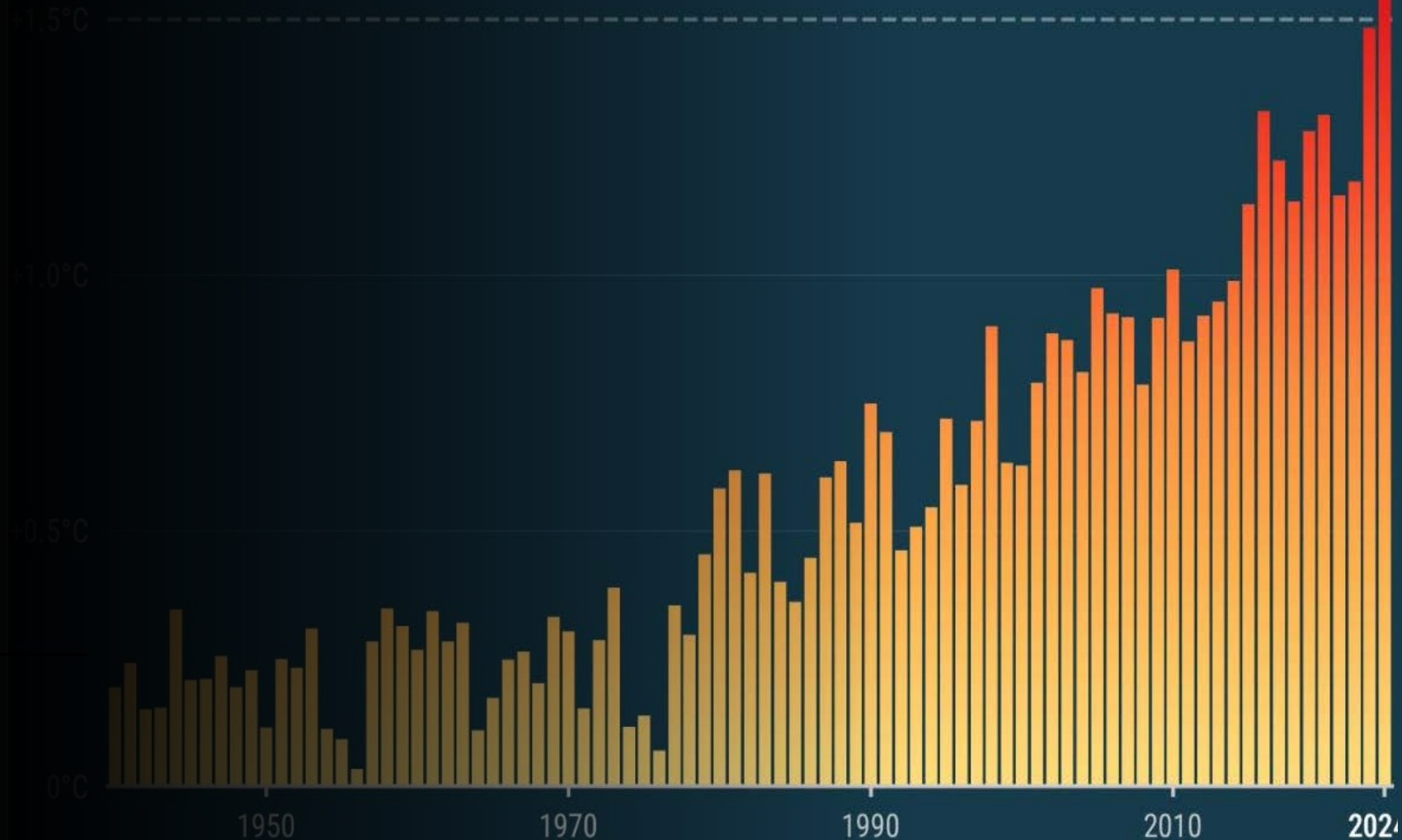
The Role and Importance of Tropical Carbon Sinks in the Context of Climate Change

Achieving NDCs through Global Forest Cooperation
based on Paris Agreement Article 6: REDD+ and
Tropical Carbon Sinks

Christopher Martius
COP29 Korea Pavilion
Baku, 13 November 2024



The current climate crisis



* Provisional estimate for 2024 based on 10 months (January to October)



PROGRAMME OF THE
EUROPEAN UNION



IMPLEMENTED BY
ECMWF



Tropical Forests and the Climate Crisis

- **Carbon Storage:** Tropical forests store ca. **250 billion tons of carbon**¹
- **Deforestation** releases around **2.6 billion tons of CO₂ annually**²
- **Biodiversity:** Tropical forests are home to **50% of the world's species**³
- **Climate Regulation:** They influence **global rainfall patterns** and regulate the climate⁴
- **Human Livelihoods:** They support **1.6 billion people globally**⁵

(1) <https://bing.com/search?q=tropical+forests+carbon+storage>

(2) <https://ourworldindata.org/carbon-deforestation-trade>

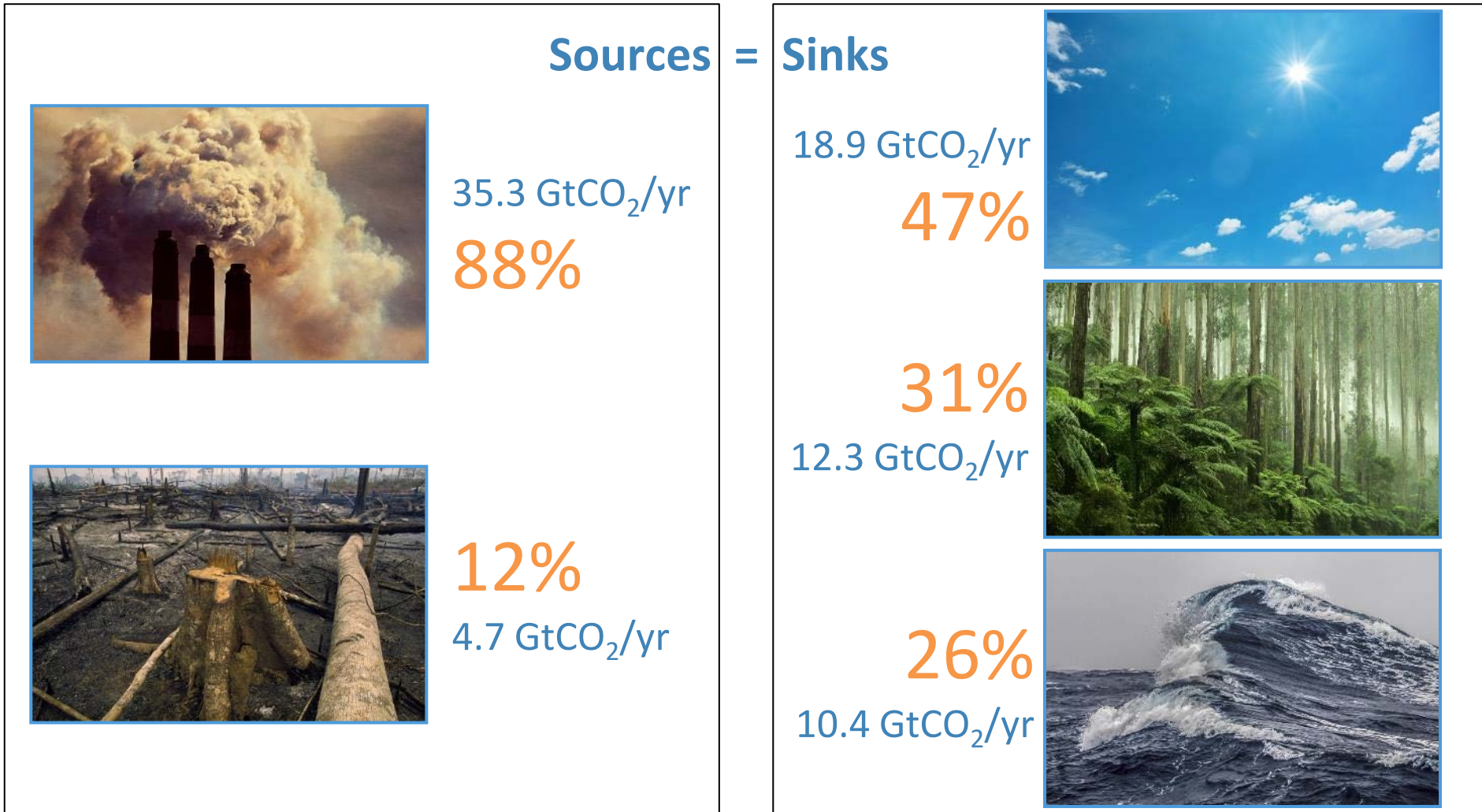
(3) <https://rainforests.mongabay.com/>

(4) <https://bing.com/search?q=tropical+forests+influence+global+rainfall+patterns>

(5) https://wwf.panda.org/discover/our_focus/forests_practice/importance_forests/tropical_rainforest/

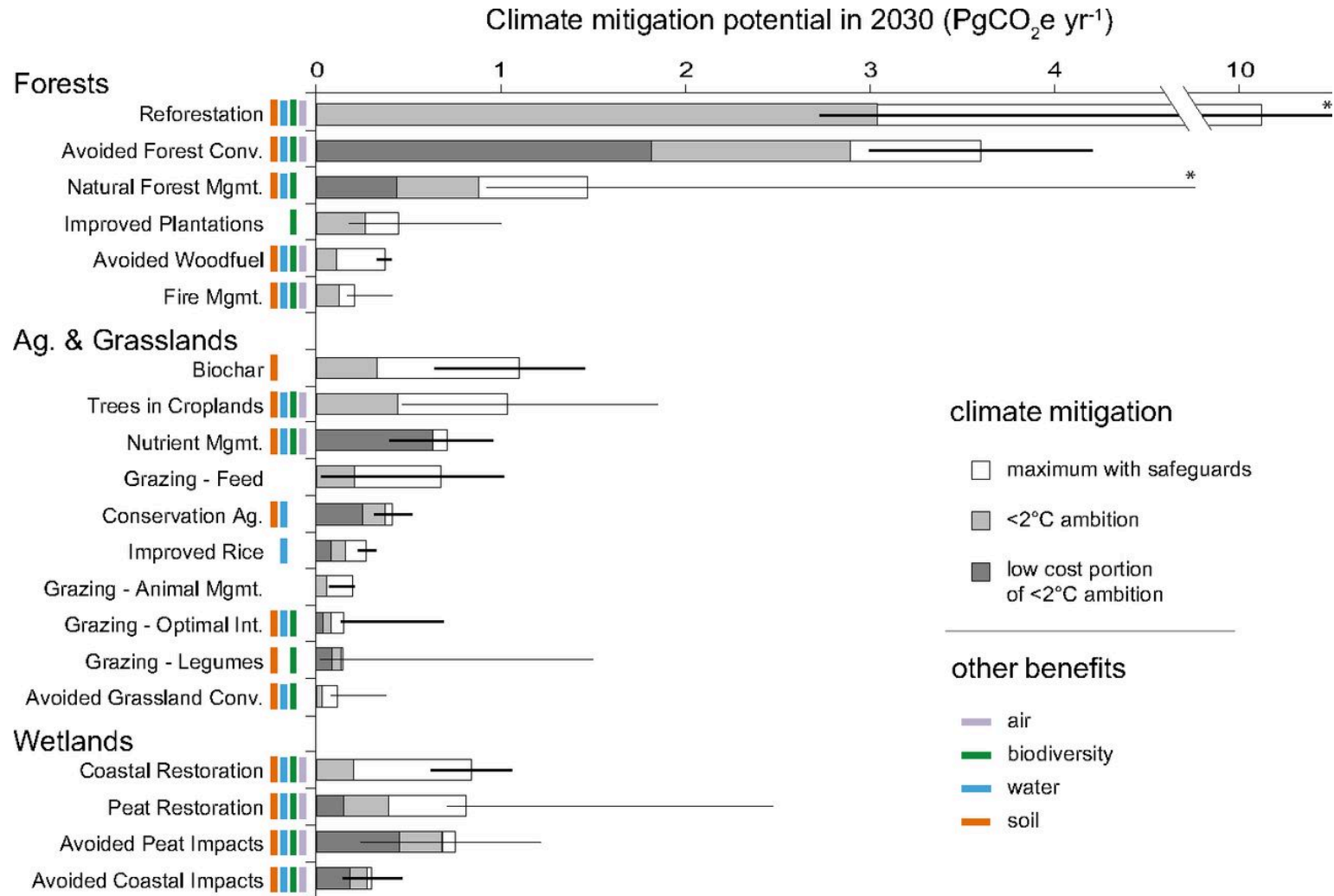


Fate of anthropogenic CO₂ emissions (2013–2022)

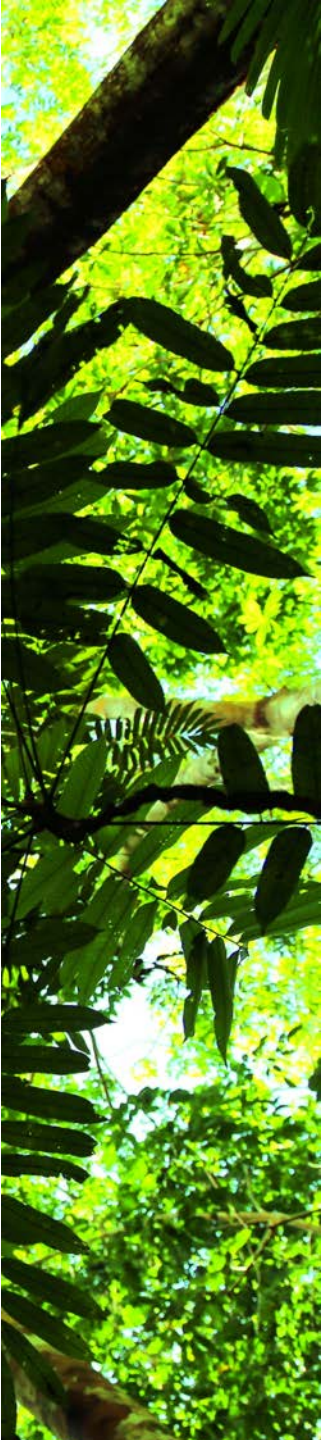


Budget Imbalance:
 (the difference between estimated sources & sinks) **4%**
 -1.6 GtCO₂/yr

Climate mitigation potential of 20 natural pathways (Griscom et al. 2017)

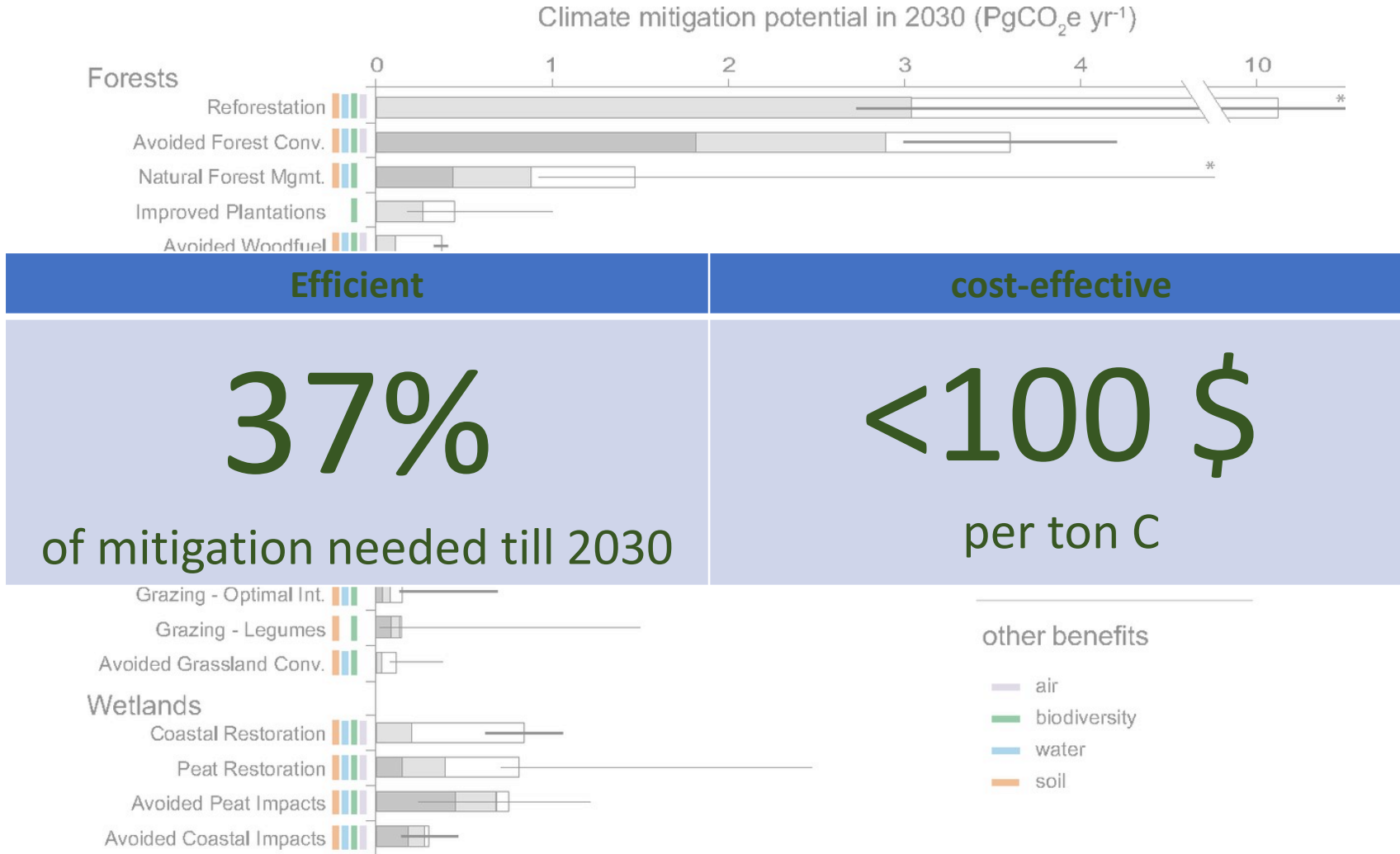


Bronson W. Griscom et al. PNAS 2017;114:44:11645-11650



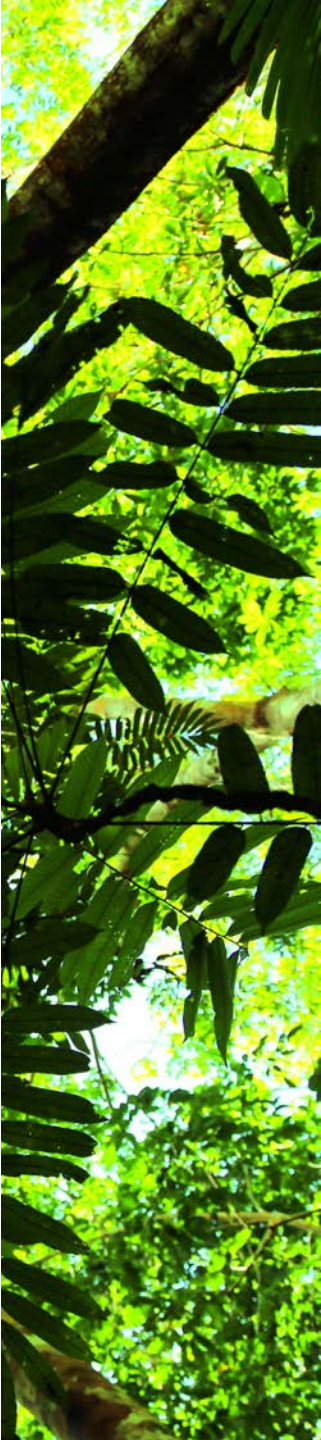
NBS

Climate mitigation potential of 20 natural pathways (Griscom et al. 2017)



Bronson W. Griscom et al. PNAS 2017;114:44:11645-11650

PNAS



Challenges in preserving tropical forests as carbon sinks

- **Dwindling Role:** Tropical forests' capacity to absorb carbon is declining due to deforestation and climate change
- **Carbon Source:** Some tropical forests are now emitting more CO² than they absorb, turning into carbon sources¹
- **Regional Variations:** While some regions show increased carbon uptake due to reforestation, others are losing their carbon sink capacity²
- **Restoration is not the same as conservation: more costly, more complex**
- **Pledges are too high** (Land Gap Report)³



(1) <https://www.nature.com/articles/d41586-022-00934-6>

(2) <https://www.weforum.org/stories/2023/03/regrowth-of-degraded-tropical-forests-offsets-a-quarter-of-deforestation-emissions/>

(3) <https://landgap.org/>

The Tipping Point for Amazonia

- Amazonia risks reaching an irreversible tipping point, potentially shifting from a carbon sink to a carbon source
- Deforestation above 50% is pushing Amazonia towards this critical (no-return?) threshold

15.09.22



24.11.23



Photos: Sarah R. Martius



Forest-Related Instruments under the Paris Agreement (PA)

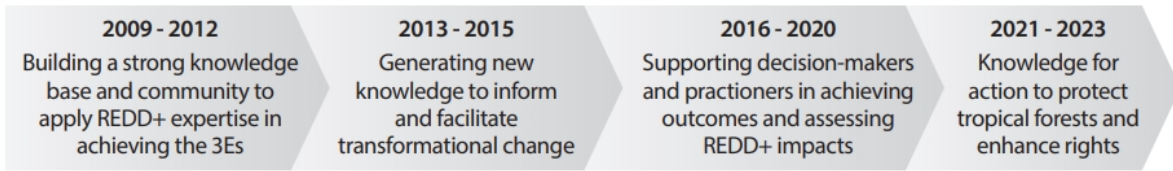
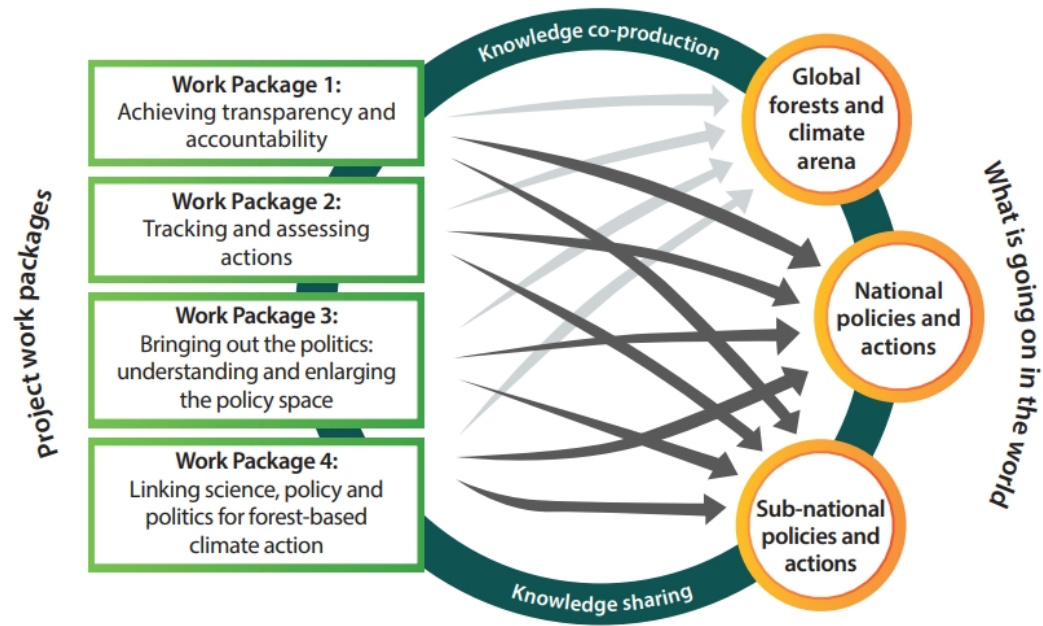
- **REDD+**: A framework to reduce emissions from deforestation and forest degradation, and promote sustainable forest management and carbon stock enhancement in developing countries
 - **Warsaw Framework for REDD+**: methodological and financing guidance for REDD+ activities
- **Carbon Credits (Article 6)**
 - **Article 6.2**: Allows countries to trade emission reductions (Internationally Transferred Mitigation Outcomes) to meet their NDCs
 - **Article 6.4**: Establishes a centralized mechanism for trading emission reductions, similar to the Clean Development Mechanism
 - **Article 6.8**: Promotes non-market approaches for cooperation on mitigation and adaptation, including finance and technology transfer
- **ETF (Enhanced Transparency Framework)**: A system for tracking and reporting progress on climate actions and support, ensuring transparency and accountability under the PA
- **NDCs (Nationally Determined Contributions)**: Climate action plans submitted by countries outlining their efforts to reduce national emissions and adapt to climate impacts

Not PA related

- Clean Development Mechanism (CDM) is part of the Kyoto Protocol



Global Comparative Study on REDD+



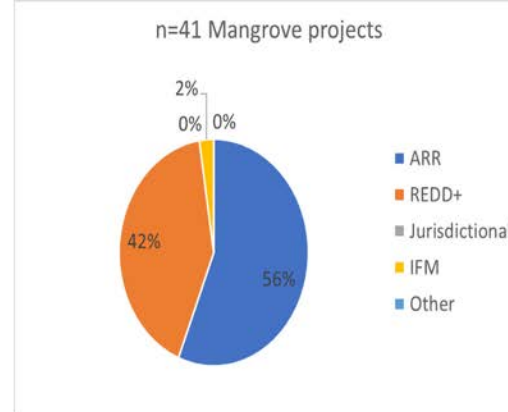
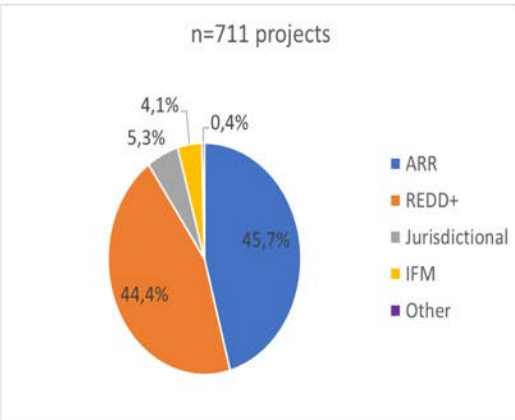
Project website: <https://www.cifor-icraf.org/gcs/>



ID-RECCO

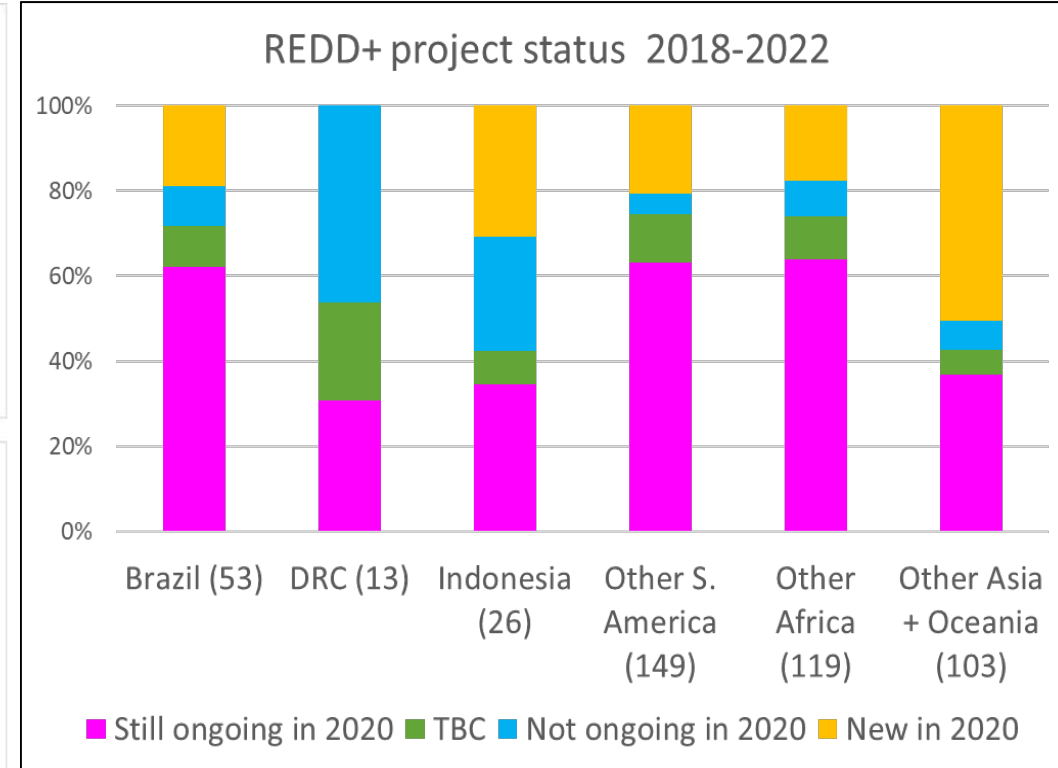
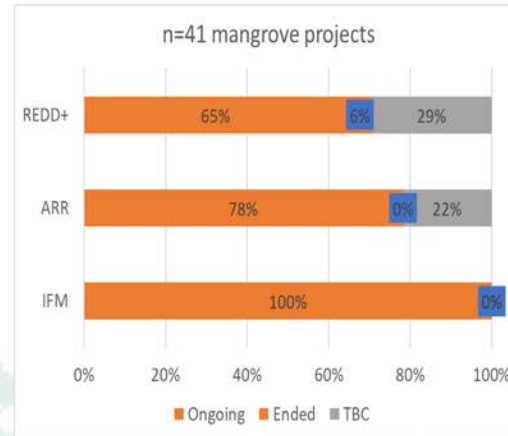
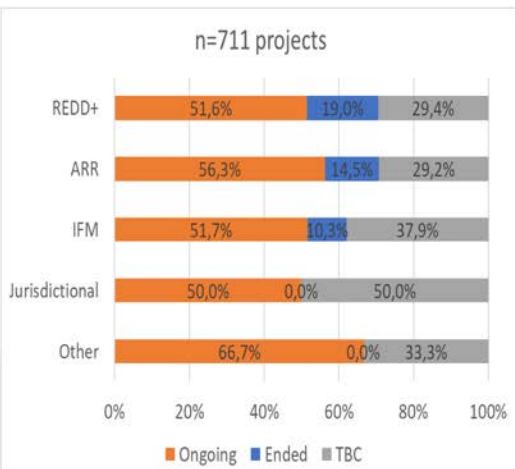
The most comprehensive and updated global database and analysis of REDD+ projects

193,000 global users



BUT
only accounts for

5.9%



Current date cut-off: 2022

Sources: Atmadja et al. forthcoming; Pham et al. forthcoming



<https://www.reddprojectsdatabase.org>



REDD+ Knowledge Products and Impact



Verified policy impact stories:

UNFCCC: stepwise MRV

ID-RECCO

Indonesia: REDD+ strategy, FREL refinement

Peru: legal recognition of peatlands; protected areas

Guyana: forest monitoring capacity

Vietnam: payments for forest environmental services

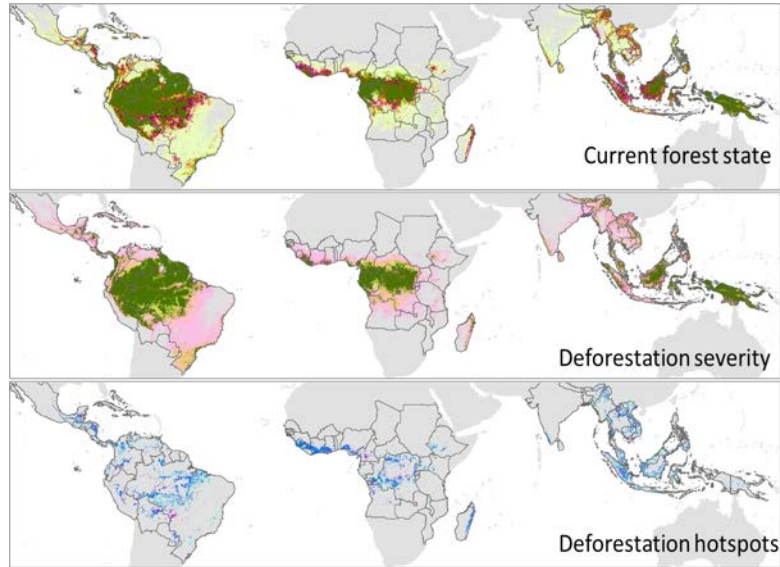
<https://www.cifor-icraf.org/gcs/knowledge/publications/special-collections/stories-of-change/>

- + Factsheets: <http://www.cifor.org/gcs/publications/factsheets/>
- + REDD+ legal studies: <http://www.cifor.org/gcs/publications/redd-legal-studies/>
- + Safeguards: <http://www.cifor.org/gcs/publications/redd-safeguards/>
- + over 1200 scientific publications: <http://www.cifor.org/gcs/publications/> and <https://www.cifor-icraf.org/gcs/redd-lit/>

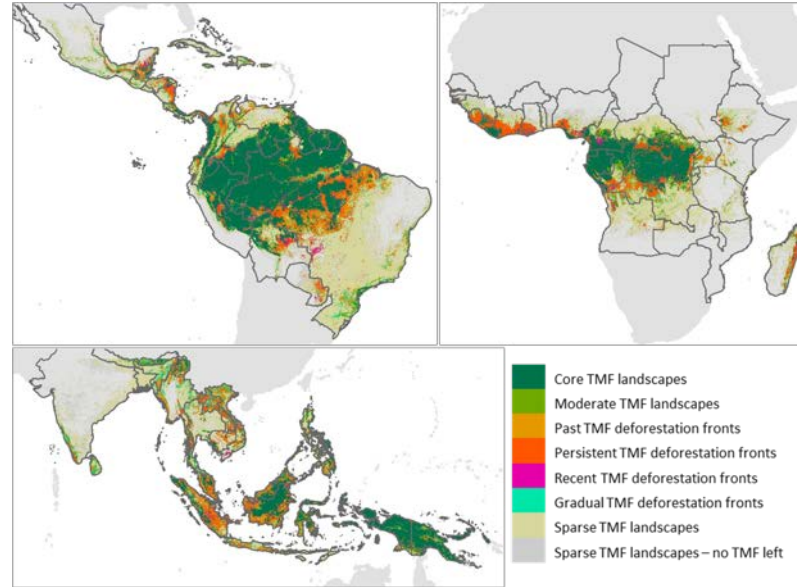


Deforestation diagnostic and typology

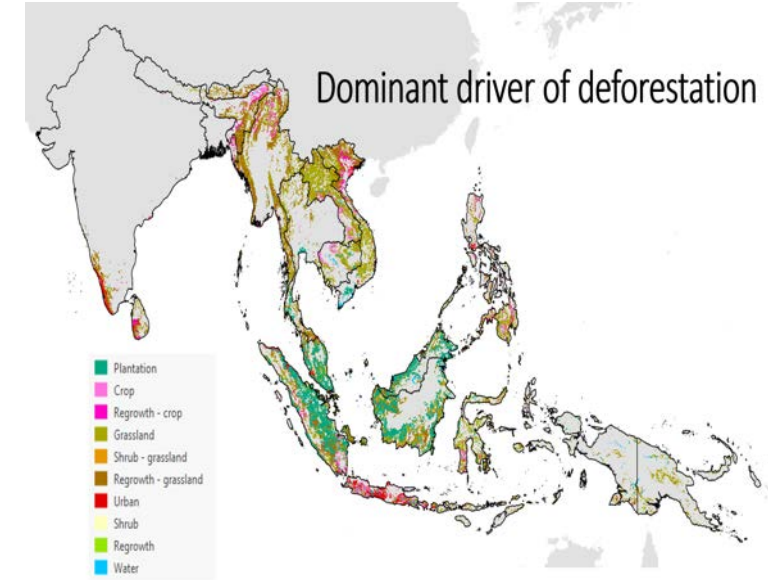
Deforestation typologies



Deforestation archetypes



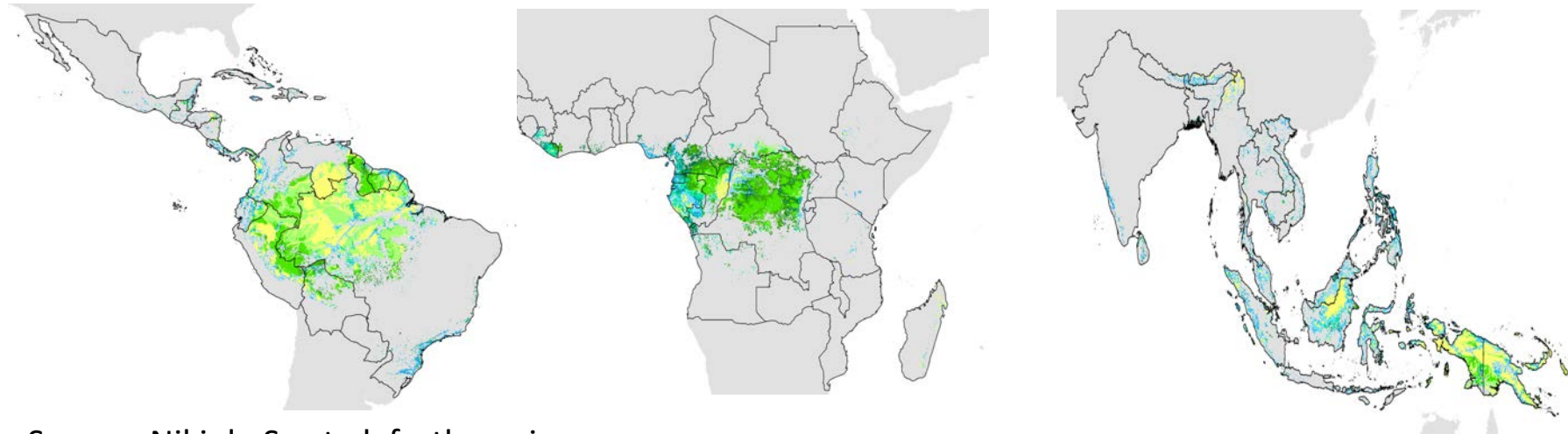
Dominant drivers of deforestation



Deforestation risk

	Low	Medium	High
Accessibility (h)	> 12	4-12	0-4
Suitability	0-25	25-40	40-100

RISK	Low suitability	Medium suitability	High suitability
Low access	Very low	Low	Moderate
Medium access	Low	Moderate	High
High access	Moderate	High	Very high

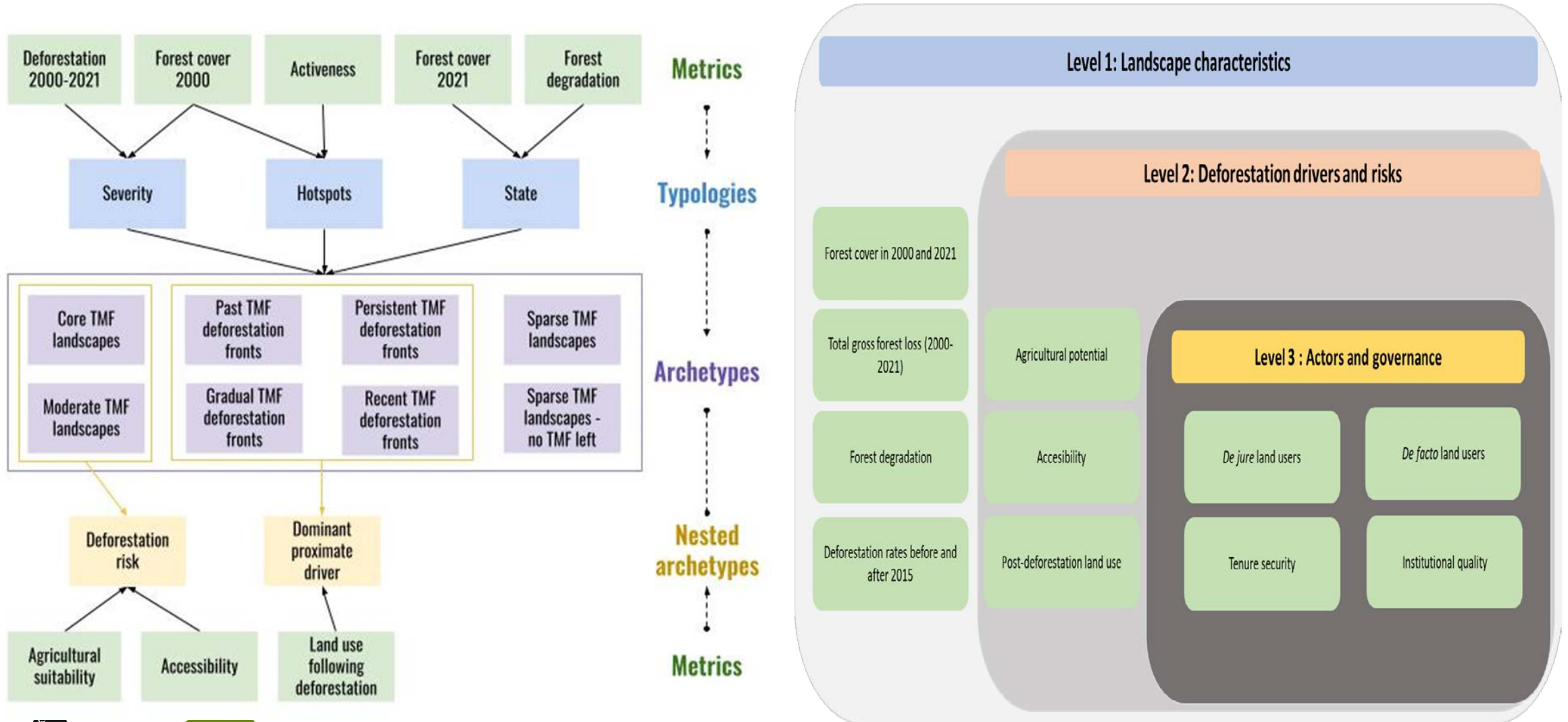


Source: Niki de Sy et al. forthcoming



Innovative, science-based deforestation diagnostics approach

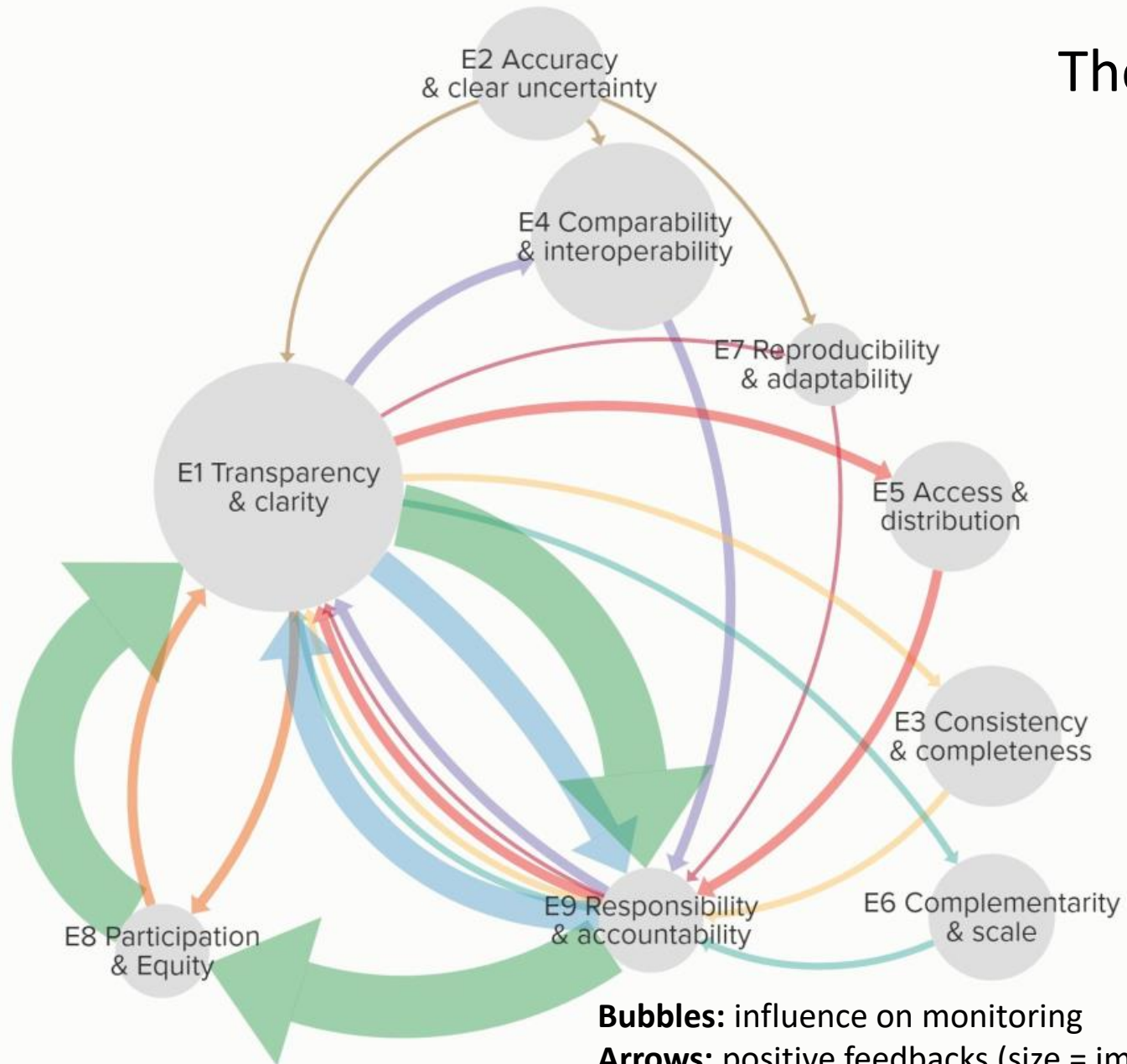
A decision making and research tool to address *which policies and measures are likely to work where, and why to address deforestation and degradation?*



Source: Julia Naime et al. forthcoming



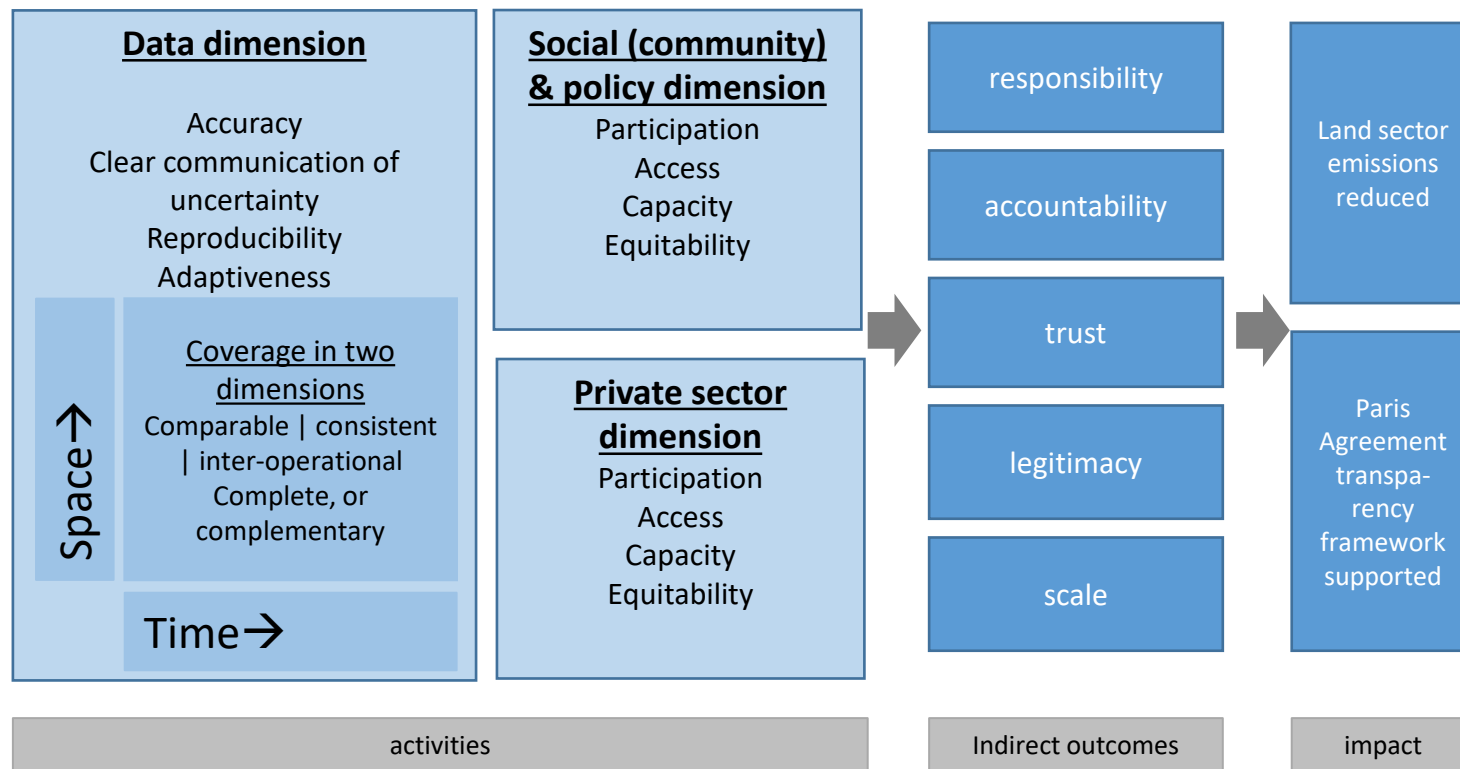
The Eight Elements of Transparency



Own compilation with <http://www.consideo.com/imodeler24.html>

- **Transparency and clarity**
- **Accuracy and *communicating* uncertainty**
- **Consistency and completeness**
- **Comparability and interoperability**
- **Complementarity and scale**
- **Reproducibility and adaptability**
- **Access and distribution**
- **Participation and equity**
- **Responsibility and accountability**

Project working towards increased transparency



Factors hindering transparency

Lack of information and data | Lack of access to information and data | lack of confidence and trust



Overview of REDD+

REDD+ is a key mechanism to mitigate emissions from deforestation and degradation

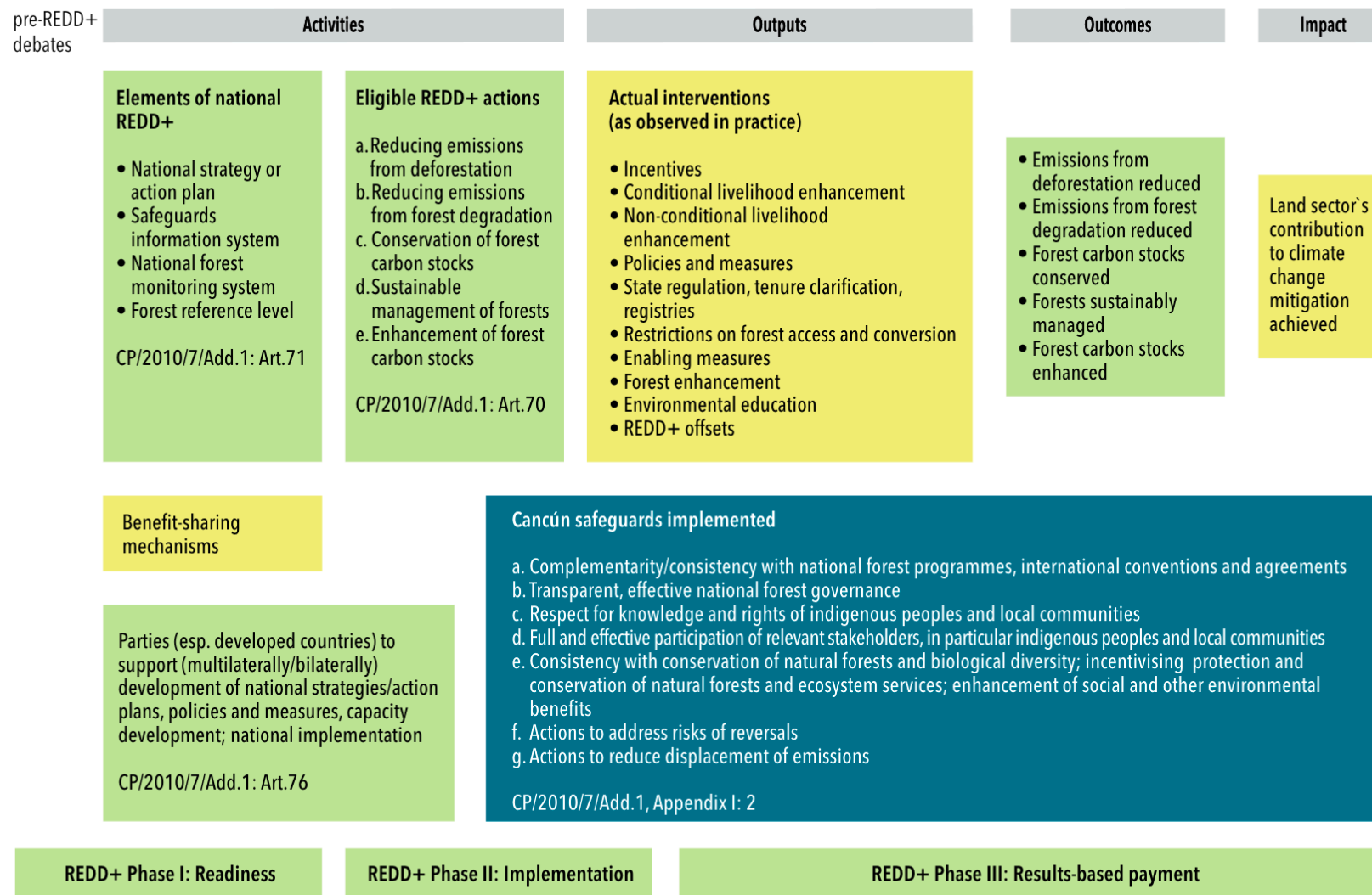


Figure 2.2 The UNFCCC REDD+ decisions in a theory of change (Warsaw Framework)

Note: Green and blue boxes represent formal decisions on carbon (green) and co-benefits (blue). Yellow boxes represent crucial elements in the ToC that are not formally part of the Warsaw Framework. The corresponding ToC steps are shown in grey boxes at the bottom.

Source: UNFCCC 2011



Table 2.1 Main rationales underlying REDD+ theories of change

Rationale	Description	Main policy	Underlying ideology	Key proponents
<i>Economic incentives</i>	Excessive emissions are a market failure, to be corrected through PES	Payments for environmental services (PES/ market approach)	Neoclassical environmental economics (rational choice); 'bio-environmentalists' (Hiraldo and Tanner 2012)	Key donors, World Bank, UN-REDD, Green Climate Fund (GCF), many NGOs
<i>Institutional change and coordination</i>	Good climate policy will be enshrined in laws, regulations and institutions	Institutional reforms; laws and regulations related to climate change	Institutionalism Managerial paradigm (Sunderlin 2002)	UN-REDD Programme
<i>Empower local people, women and marginalised groups</i>	'All you need is rights' to achieve long-lasting impact	Tenure reforms and local rights; gender mainstreaming	Deforestation resulting from unbalanced power, which allows forest exploitation by commercial outsiders	Rights and Resources Initiative (RRI), indigenous peoples' organisations, gender organisations, civil society organisations
<i>Information</i>	Equipped with the right and sufficient information, stakeholders can make the right decisions	Public information and transparency; information exchange and coordination among stakeholders	Available information and enlightened public debate producing socially and environmentally optimal outcomes ¹	UN-REDD Academy; academics
<i>Planning</i>	Rational planning by governments at various levels and in its diverse sectors is the key	Planning, and command and control measures	Deforestation is a result of insufficient (landscape) planning and zoning	National administrations; some donors



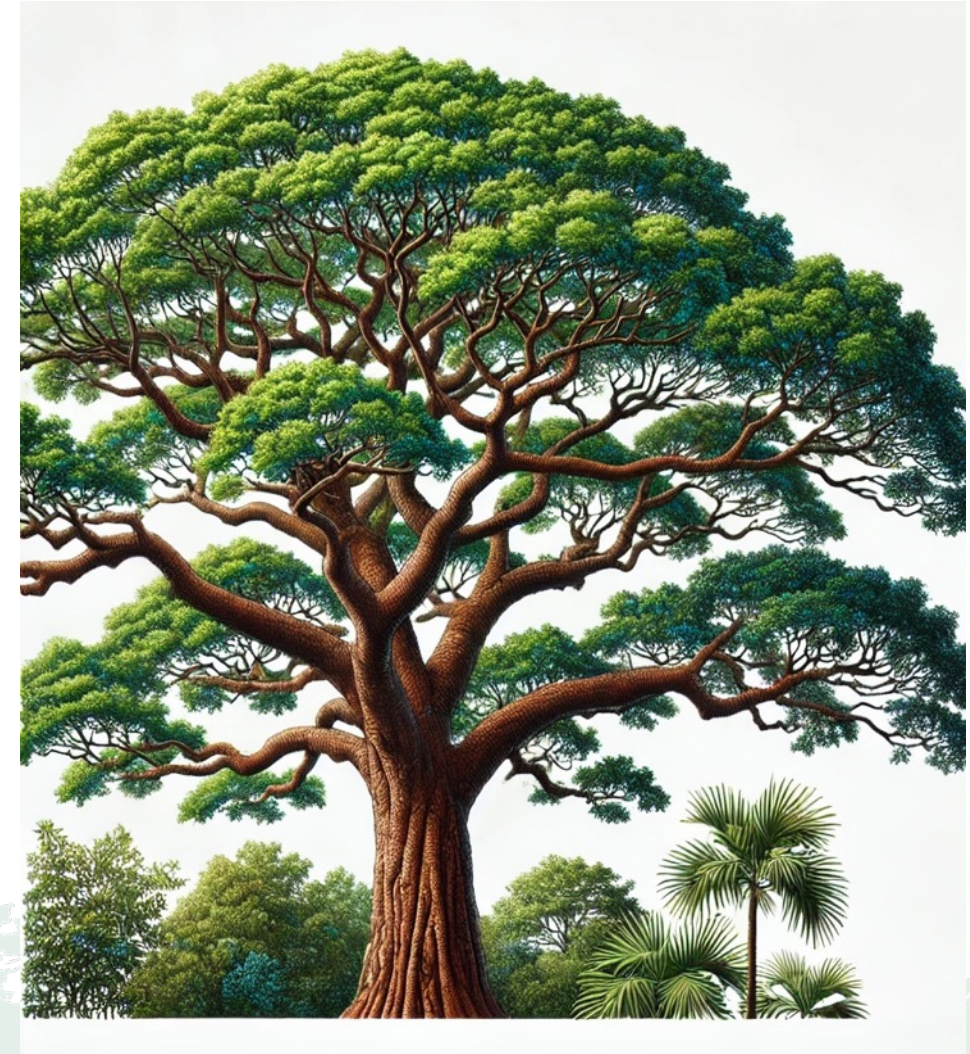
Learning from REDD+ *Challenges and Insights*

REDD+ offers important lessons for climate policy design, finance, and implementation

- Key elements are not defined and left for countries to decide
- Types of interventions not defined
- Monitoring and Forest Reference Levels in tiers
- Participation
- Benefit sharing mechanisms: equity
- Safeguards loosely defined

Learning from REDD+ means paying attention to these elements from the start, in any new mechanism

→ e.g. high-integrity carbon credits



Best science to answer the big questions

“forest finance that is good for forests, climate, biodiversity, forests and people”

how to integrate social and environmental objectives

- Complexity versus simplicity in a holistic world
- Social safeguards
- Fair and equitable benefit sharing

how to achieve permanence

- Solve technical questions around leakage
- How to inoculate against policy swings
- address anticipated demand for forest products (from defossilization)

shifting the trillions

- the land use sector vs. fossil fuels and energy: ending perverse subsidies
- Designing financing mechanisms, stepping up finance / Carbon markets
- How to achieve zero-deforestation



Thank you!

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The Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF) envision a more equitable world where trees in all landscapes, from drylands to the humid tropics, enhance the environment and well-being for all. CIFOR and ICRAF are CGIAR Research Centers.



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