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Natural Climate Solutions: Seeing The Wood For The Trees

Dr Paul Jefferiss

Wednesday, 02 February 2022, 11:00 GMT



A Word From Today's Chairman

Simon Mills
Senior Associate
Z/Yen Group





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Today's Agenda

- 11:00 – 11:05 Chairman's Introduction
- 11:05 – 11:25 Keynote Presentation – Paul Jefferiss
- 11:25 – 11:45 Question & Answer



Today's Speaker

Dr Paul Jefferiss



Natural Climate Solutions: Seeing the wood for the trees

Paul Jefferiss

FS Club February 2 2022

NCS – win win win???

What is NCS?

NCS are human activities to increase carbon storage in the biosphere, land and sea, above and below ground

What are the benefits?

NCS has the theoretical potential to help address:

1. [Tropical] forest loss
2. Biodiversity loss
3. Climate change

- What are the benefits and their potential scale and cost?
- What are the risks?
- Are we getting the balance between benefit and risk right to deliver the maximum sustainable NCS potential?



Deforestation in the Western Amazon region of Brazil, taken in September 2017. *Carl de Souza/AFP/Getty Images*



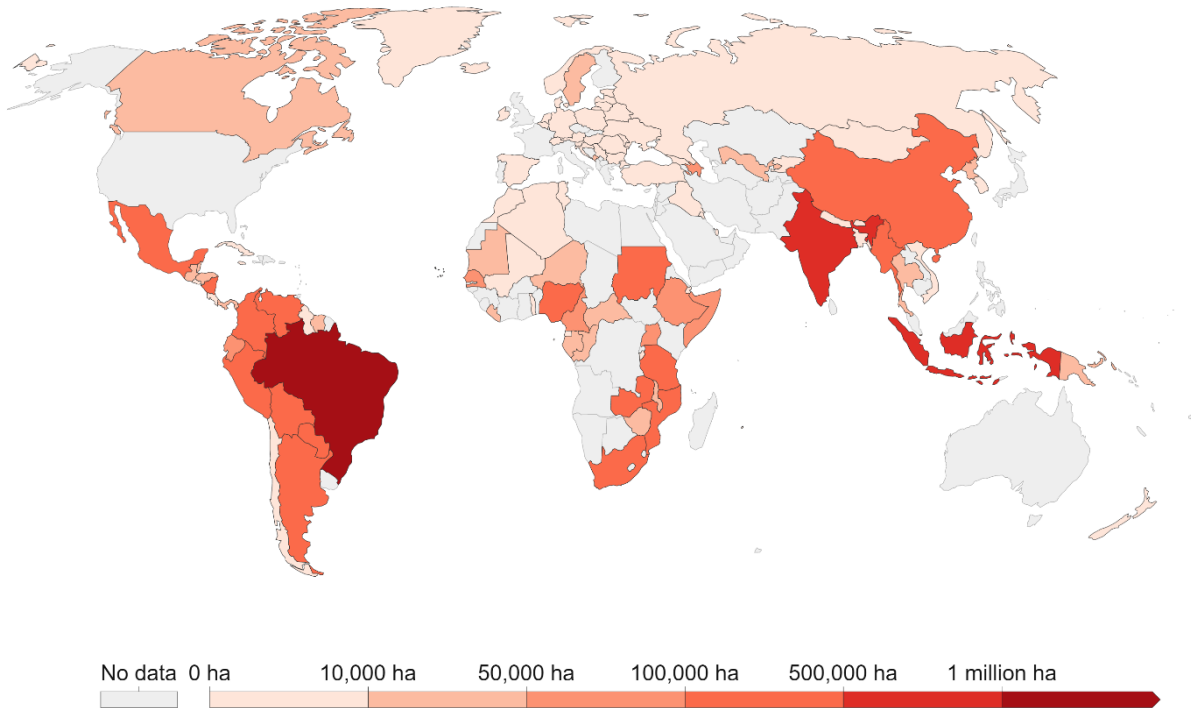
The New York Times



Source: Andreas Edelmann - stock.adobe.com

Forest loss

Annual deforestation, 2015



Source: UN Food and Agriculture Organization (FAO). Forest Resources Assessment.

OurWorldInData.org/forests • CC BY

Note: The UN FAO publish forest data as the annual average on 10- or 5-year timescales. The following year allocation applies: "1990" is the annual average from 1990 to 2000; "2000" for 2000 to 2010; "2010" for 2010 to 2015; and "2015" for 2015 to 2020.

None of the goals of the 2014 New York Declaration on Forests have been met.

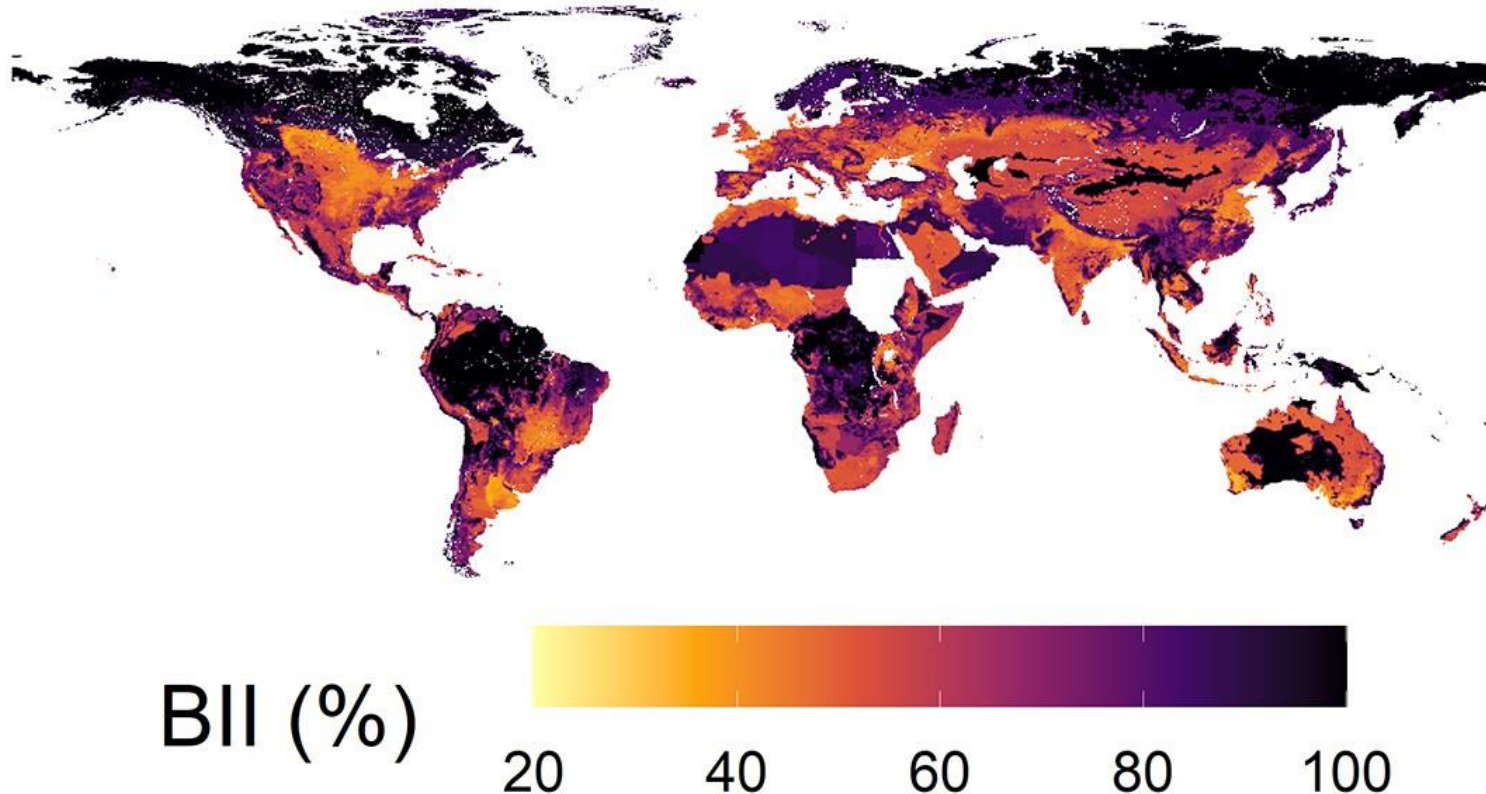
- Gross forest loss up by 43% since 2014 to ca. 26 mha/yr = size of UK
- Irreplaceable primary tropical forest loss up 44% to 4.3mha/yr = 2 x El Salvador
- Net forest loss 4.7 mha/yr – FAO
- Deforestation 10mha/yr – FAO
- Most rapid increase in rate of loss in Africa, especially DRC
- Rate of loss slowing in Indonesia
- Previous slowing in Brazil (2010-15) now increasing again.

Sources: Forestdeclaration.org; FAO

By most metrics progress is too slow or we are going backwards – in spite of major commitments and effort

Biodiversity loss

GLOBAL BIODIVERSITY INTACTNESS INDEX (BII)



Source: natural history museum <https://www.nhm.ac.uk/our-science/data/biodiversity-indicators/global-biodiversity-intactness-index.html>

None of the 2010 Aichi (CBD) biodiversity targets have been met.

- Species extinction threatened for:
 - 1,000,000 species
 - >40% amphibian species
 - A third of reef-forming corals, sharks and marine mammal species
- Population declines of 68% 1970 -2016, 94% in tropical Americas.

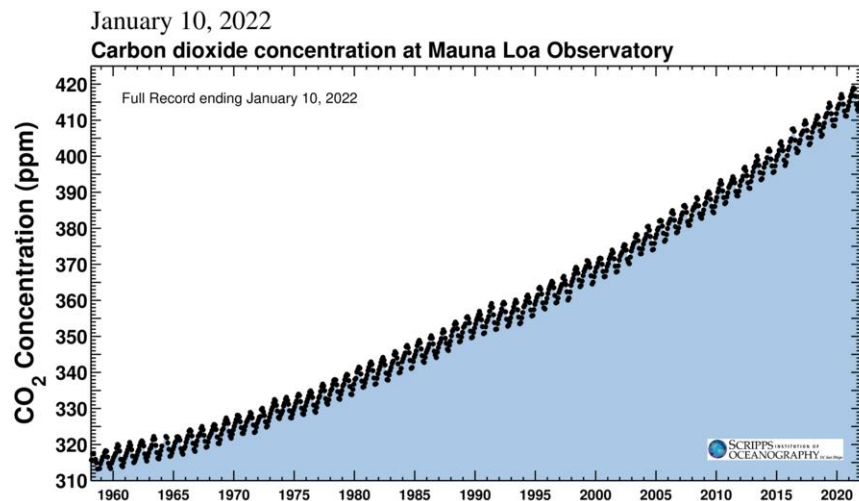
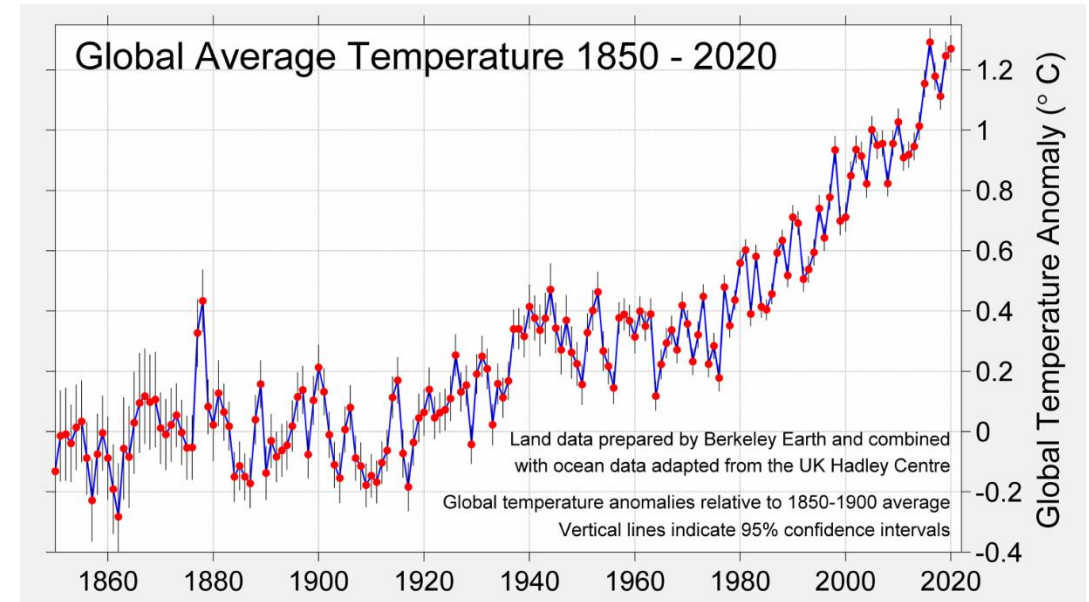
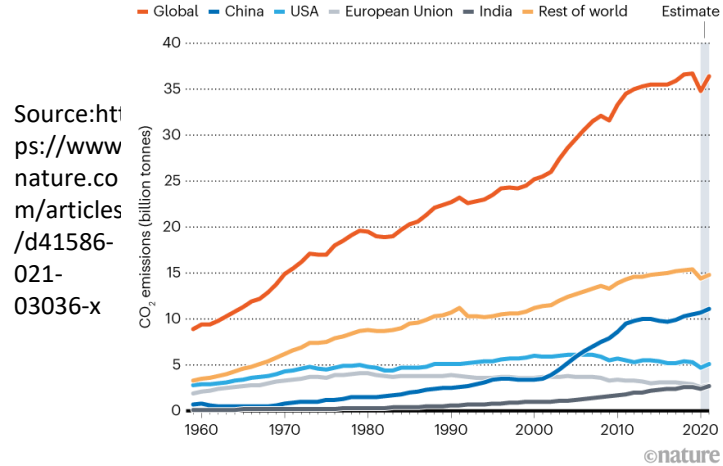
Sources: WWF Living Planet Index 2020; UN Global Biodiversity Outlook 2020, IPBES 2019 Assessment.

By most metrics we are actually going backwards – in spite of major commitments and effort

Climate change

PANDEMIC REBOUND

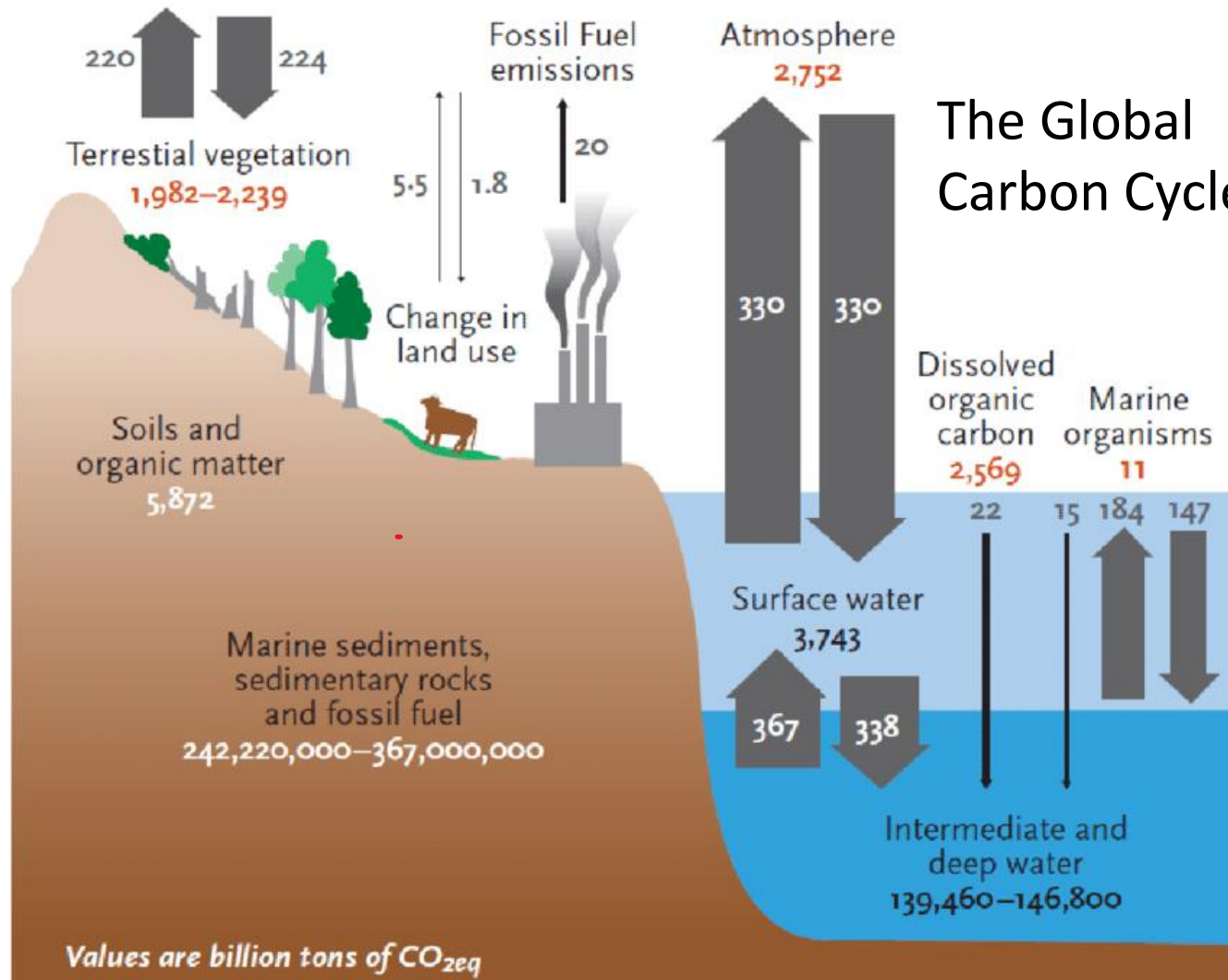
After a drop of more than 5% during the first year of the COVID-19 pandemic, global carbon emissions will rebound in 2021, researchers predict. Among nations that are the largest emitters, the strongest growth compared with pre-pandemic levels is projected for China and India.



In spite of the Paris and Glasgow Agreements, the global economic slowdown of 2008 and the 2020 COVID pandemic:

- GHG/CO2 Emissions, concentrations and global average temperatures continue to rise.
- We're not on track for 1.5 or < 2 degrees.

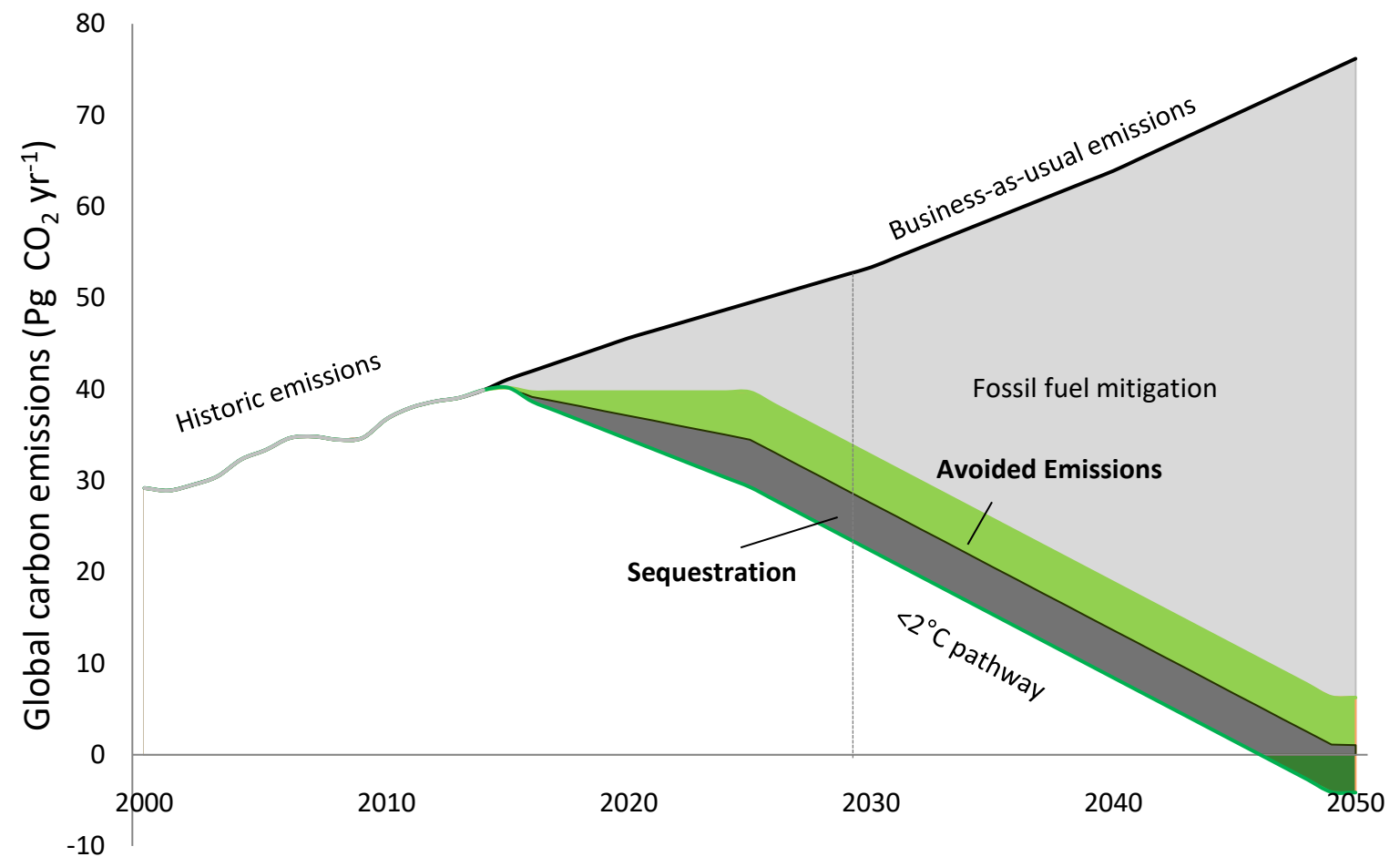
How can NCS help address climate change?



The Global Carbon Cycle

- Vast stocks of biospheric carbon
- Natural carbon fluxes are huge but in broad equilibrium.
- Human land use (agriculture, forestry, other land uses – AFOLU) disturbs the natural equilibrium by a relatively small proportion by releasing more carbon than it absorbs.
- But this accounts for a large proportion of anthropogenic GHG emissions – up to a **quarter**.
- NCS has an essential role in net zero
 - AFOLU net emissions must be reduced to near zero.
 - AFOLU can increase carbon removal from the atmosphere, necessary at net zero.

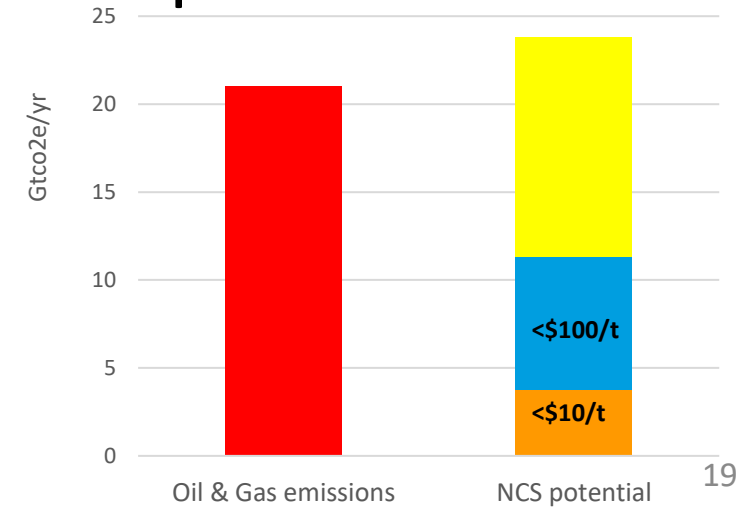
The global carbon mitigation potential of NCS



Source: Adapted from Griscom et al (PNAS 2017)

- NCS could achieve over 20 Gt CO₂e/yr mitigation
- Around half “cost-effectively” at < \$100/t CO₂e.
- One third (37%) of mitigation needed by 2030
- One third of that at <\$10/t
- Half by reducing emissions
- Half by increasing removals

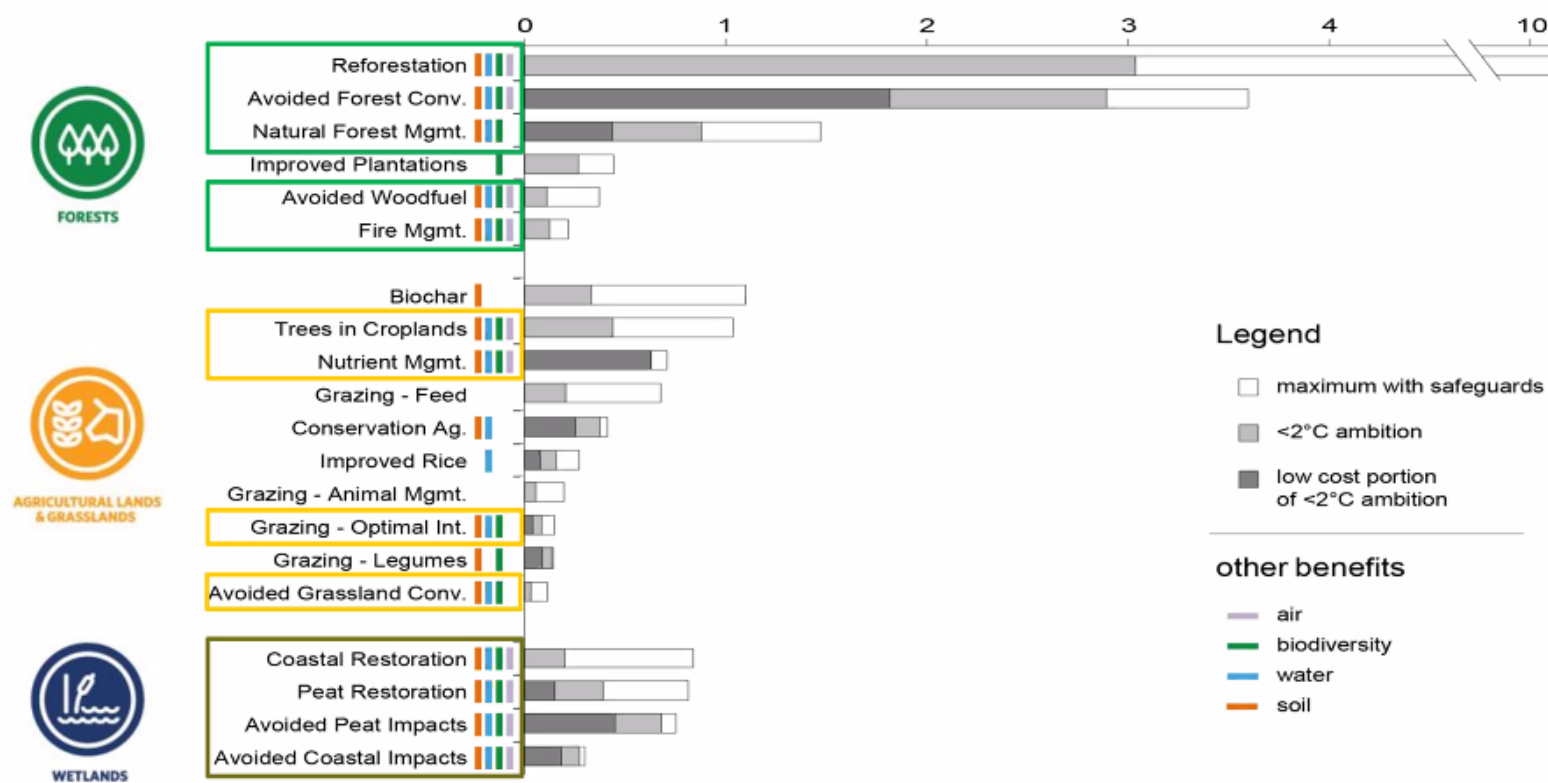
NCS potential O&G emissions



Types, volumes and costs of carbon abatement from NCS

PRIORITY NCS

Climate mitigation potential in 2030 (Gt CO₂e yr⁻¹)



Source: Griscom et al., PNAS (2017)

- The biggest potential comes from forests – more than two thirds
- One third from agriculture and wetlands.
- Around a quarter from soil carbon
- Bar shading indicates cost.

Beyond carbon – other potential NCS benefits

- Forest preservation, improved forest management, re/afforestation.
- Improved biodiversity conservation
 - Up to [80%] plant and animal species thought to be within forest ecosystems
 - Tropical forests, peatland of high conservation value

- **Other improved ecosystem services**
 - nitrogen, phosphorous, water cycling,
- **Sustainable livelihoods** in forest management
- Preservation of **local indigenous culture.**
- **Health, food security, medicine**



Source Tehran Times



Techwatch news



The conversation.com

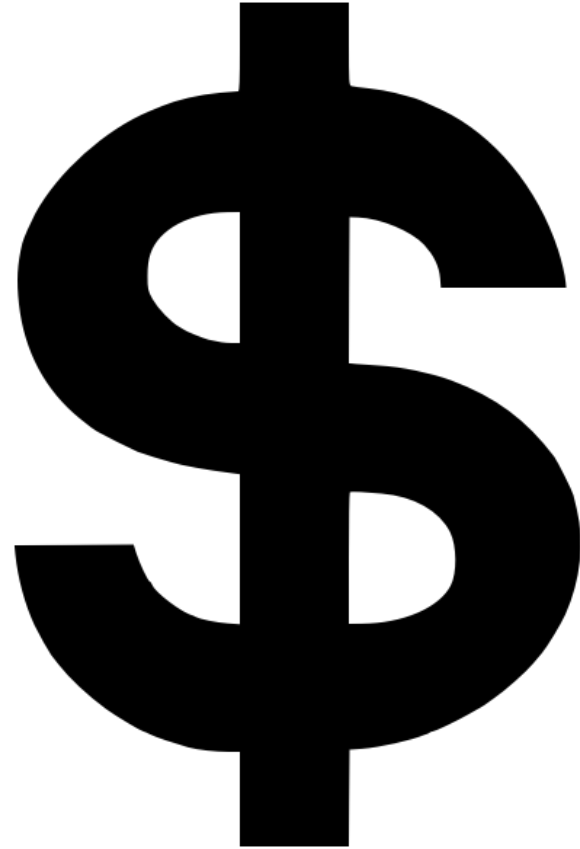


Wwf India



The st kitts nevis observer

Why isn't NCS happening at scale now?



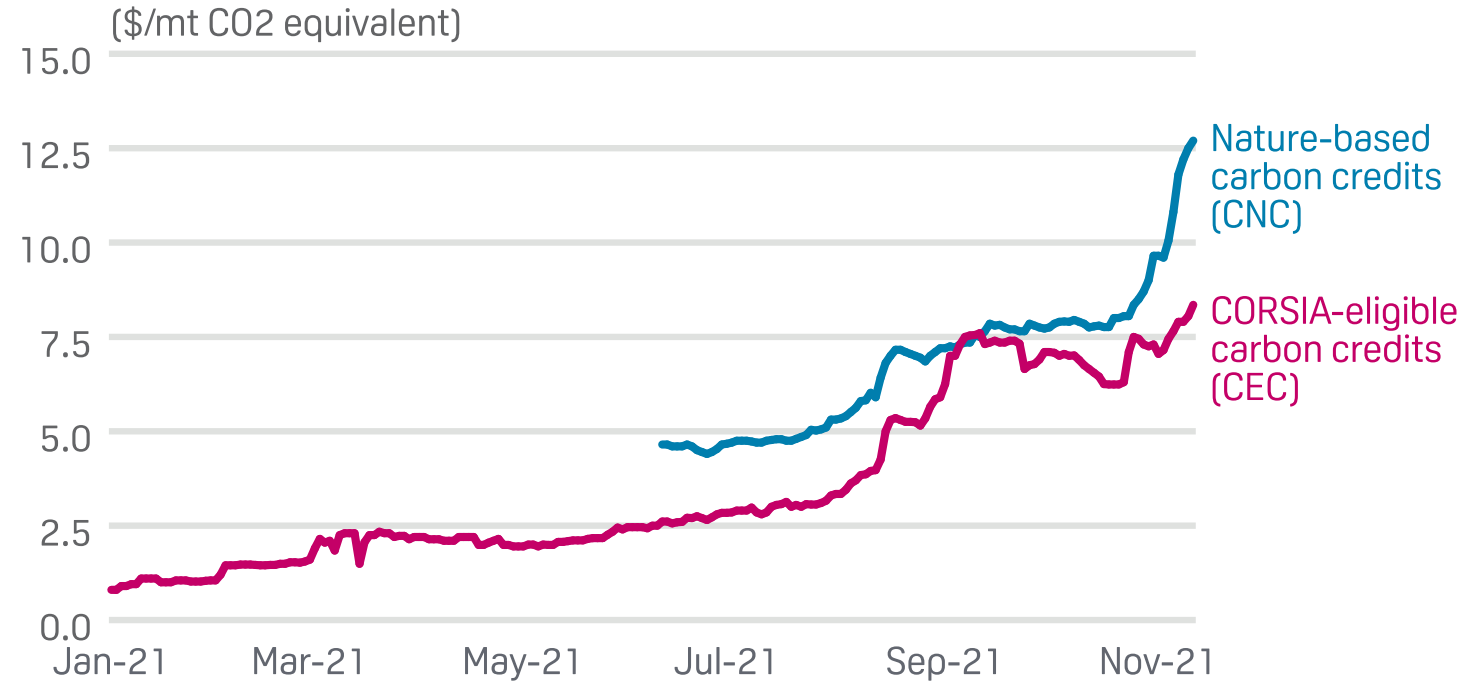
Low value = limited finance

How can we confer value to attract finance to NCS?

- Direct regulation (requirements or bans) is necessary but insufficient because:
 - Costly
 - Politically resisted by governments and practitioners
 - If introduced, often ignored and hard to police/enforce
- Philanthropic giving is helpful but small scale
- Indirect carbon pricing of land sectors by allowing NCS offsetting for industrial emissions
 - On a “voluntary” basis to meet or exceed corporate climate targets
 - On a regulated basis within carbon tax or cap and trade systems.
- This has happened but to a limited extent relative to the potential
 - A few examples of NCS offsets within regulated schemes: Ca, NZ, Aus, Colombia [CORSIA]
 - Voluntary carbon markets, including for NCS, have existed for decades but have bounced along at very low prices and volumes ...

Can these markets be scaled to deliver “cost effective” NCS potential?

PLATTS CARBON CREDIT PRICES



Source: S&P Global Platts

- Driven by COP26 and Race to Zero, voluntary carbon markets exploded in 2021 to ca 0.3 Gt/CO2e and > \$1bn.
- For 2030, for all offsets, TSVCM estimates
 - 15 fold demand growth to 1-2 Gt CO2e/yr at prices up to \$100/te CO2e, value \$100 - 180bn/yr.
- Trove Research estimate smaller volumes at lower prices - 0.5-1 Gt CO2e/yr for \$10-40/t, value \$10 - 40bn/yr.
- These are significant projections but well below (< 20%) of cost-effective potential by 2030 (~ 11 Gt/yr at < \$100/te CO2e).
- On the supply side TNC estimates max NCS supply up to 0.3 Gt/yr to 2023.

Will growth be sustained – or plateau or fall?

All depends on how society chooses to deal with concerns about the sustainability of offsets/NCS

What are concerns about NCS supply – and are there solutions?

Concern	Problem	Solution
Measurement and monitoring	It is technically difficult to estimate or calculate carbon baselines and then monitor loss or gain.	Satellite, drone and other technology is increasingly able to provide accurate, real-time measurement.
Leakage	If harmful land use is stopped in one place it may move elsewhere.	Leakage can be partly addressed by jurisdictional rather than project-based
Additionality	Proving that beneficial outcomes wouldn't have happened anyway depends on hypothetical counterfactuals.	Additionality can be addressed by measurement and jurisdictional accounting.
Permanence	Beneficial changed may reversed in the future, deliberately or inadvertently (e.g. forest cut or burned down).	Permanence can be partially addressed in market terms by insurance credit buffer pools.
Environmental sustainability	Optimising for carbon (e.g. Eucalyptus monoculture) might do other environmental harm (e.g. damage biodiversity)	Environmental safeguards can be specified and carbon synergies optimised.
Social sustainability	Local communities and traditional cultural owners might be excluded, harmed or not receive appropriate benefits/a fair price.	Social safeguards can be specified
Food security	NCS competes with food for land	Food security safeguards can be specified

- Concerns are real and must be addressed robustly
- Solutions exist and can be required through independently verified sustainability standards
- Sustainability standards exist for offset and NCS supply – but need strengthening
- Higher standards will raise costs/prices and limit demand – but are essential
- If NCS is not real and sustainable it will lose credibility and be worse than useless

What are concerns about offset/NCS use – and are there solutions?

Concerns are real and must be addressed

- **“Get out of jail free”** card for industry
 - Dilute corporate (or national) ambition
 - Delay or distract attention from necessary (but more costly) direct industrial abatement.
- **Enduring** – Be seen as a permanent not a “bridging” solution.
- **Double counting** – Between countries and/or companies

- But no universally agreed solutions on how [much] to limit or condition offset/NCS use
- Default is “mitigation hierarchy” – Avoid, Reduce, Offset
 - But poorly defined with offsets at the bottom
- Clearer and stricter rules are needed and hotly debated in multiple forums now
 - SBTi, NCSA, TSVCM, TNFD, SMI, CORSIA, ICROA, etc
- **Key question is how stringent conditions or limits on NCS/offsets should be.**

In that debate are we getting the balance right?

Strict direct industrial abatement pathways to NZ 2050 with limited contribution from offsets/NCS except removals at NZ – to accelerate direct industrial abatement

Need for speed, scale, action to reduce AFOLU emissions and deliver forest and biodiversity co-benefits



- Most focus is on climate and carbon mitigation, less on biodiversity, forestry loss.
- Within a climate focus, most attention is on industrial carbon abatement, less on land emissions
- Within an industrial focus, most emphasis on voluntary carbon action, less on regulated.
- Within a focus on voluntary industrial carbon action, a very strong emphasis on direct abatement, with less emphasis on offsets.
 - Offsets allowed only as an optional extra if on a science-based direct abatement path to NZ 2050
- Within offsets, most emphasis on removals – permitted/required at net zero – less on reductions.

The focus on climate and direct industrial abatement is necessary – but is the current emphasis too strict?

- On demand side, large emitters are struggling to make science-based commitments. Unless this changes offsets/NCS won't be an option for the very stake holders who could move the dial.
 - Offset/NCS demand may plateau or fall.
- On supply side, potential investors can manage most forms of NCS project risk but can't predict demand
 - Chilling effects on NCS investment appetite.

Could more flexibility promote NCS AND preserve carbon integrity?

1. If offsets are real and sustainable, and a NZ 2050 target has been set, allow them as an economic – i.e. first – choice towards that target (perhaps with time/volume limits).
 - Extends carbon pricing coverage, accelerates delivery, lowers cost
 - Allows time for innovation to enable better direct industrial abatement options.
2. Prioritise offsets/NCS as an economic choice (with time/volume limits) in regulatory schemes too:
 - Order of magnitude increase in NCS demand overnight – US, China, EU
 - Sustainability of supply can be more tightly regulated

3. If not for all offsets consider more flexibility for NCS because NCS is special and different:

- AFOLU emissions are huge and must be reduced to near zero
- There are no other policies to deliver quickly at scale within this value chain.
- NCS co-benefits are enormous but largely ignored and unrewarded
- NCS reductions – especially avoided tropical deforestation – need help now and offer the largest, fastest and lowest cost abatement and most co-benefits.

Conclusion: Should we rebalance to a more flexible approach?

- If we had ample time, wide optionality (even for carbon abatement), little socio-economic-political friction and could see rapid progress on the ground, current thinking on constraints on industrial use of NCS/offsets might make sense.
- But we have no time, few options (almost none for biodiversity or forests), immense socio-economic-political barriers and see limited progress on the ground.
- Is there reason to expect this will change quickly – or quickly enough – to justify current thinking?

Time to redress the balance

Strict industrial NZ 2050 targets but more flexibility on use of offsets/NCS on the path to NZ 2050.



Speed, scale, action to reduce industrial emissions AND land emissions AND get forest and biodiversity co-benefits.



Comments, Questions & Answers



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- Thu, 03 Feb (10:00-10:45) National Audit Office Good Practice Guide For Managing The Commercial Lifecycle
- Tue, 08 Feb (10:00-10:45) The Future Of Finance: How The Next Generation Builds Tomorrow
- Wed, 09 Feb (11:00-11:45) Can We Trust AI?
- Wed, 16 Feb (15:00-15:45) Trade Friction Points – Measuring Contractual Ecosystems

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