

Large-Scale Carbon Dioxide Removal: *Key governance gaps, and where and how they may be addressed*

Claire Fyson
Climate Policy Analyst, Climate Analytics

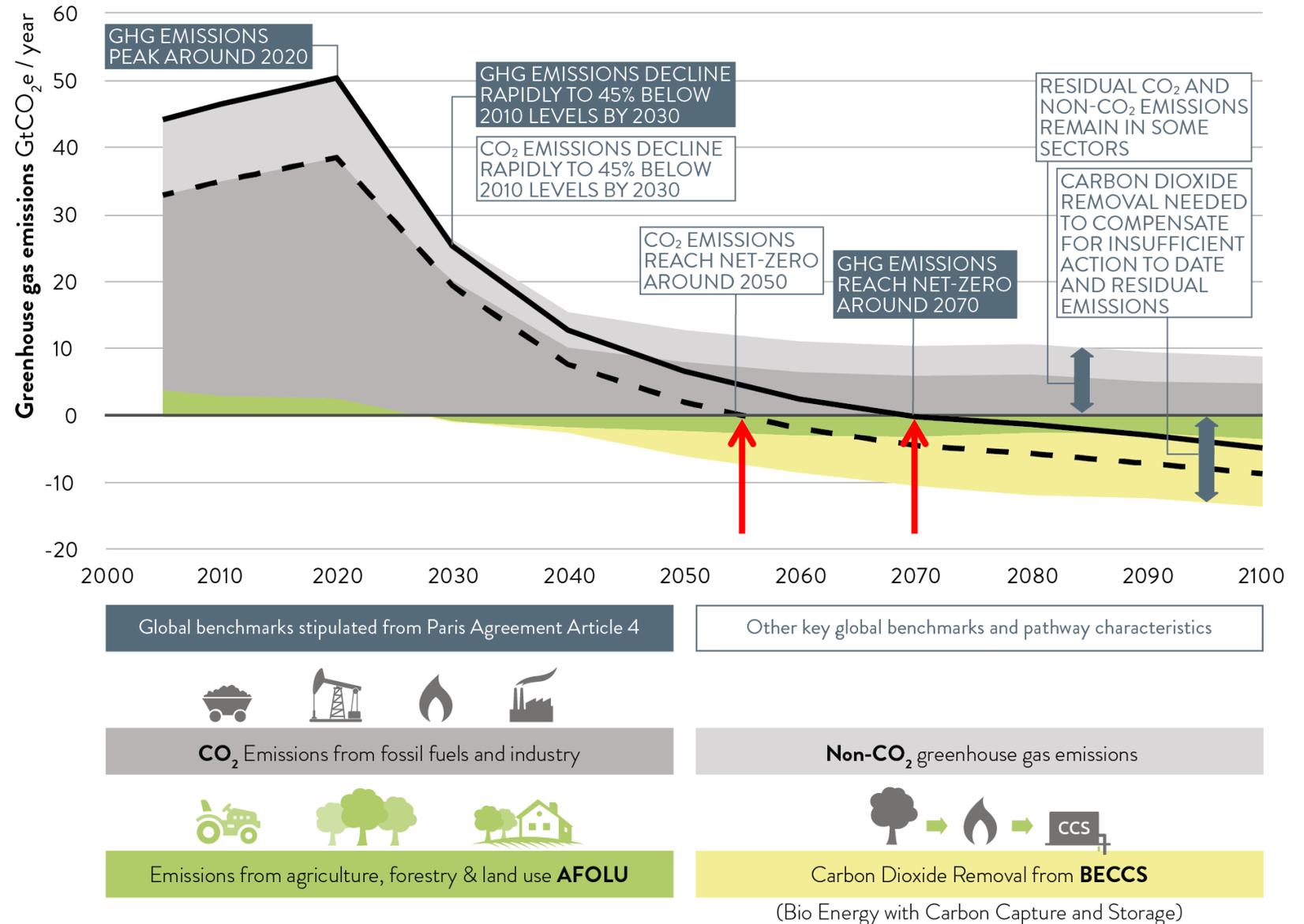
Bill Hare
CEO and Senior Scientist, Climate Analytics

Bill Hare, Michiel Schaeffer, MJ Mace, Claire Fyson

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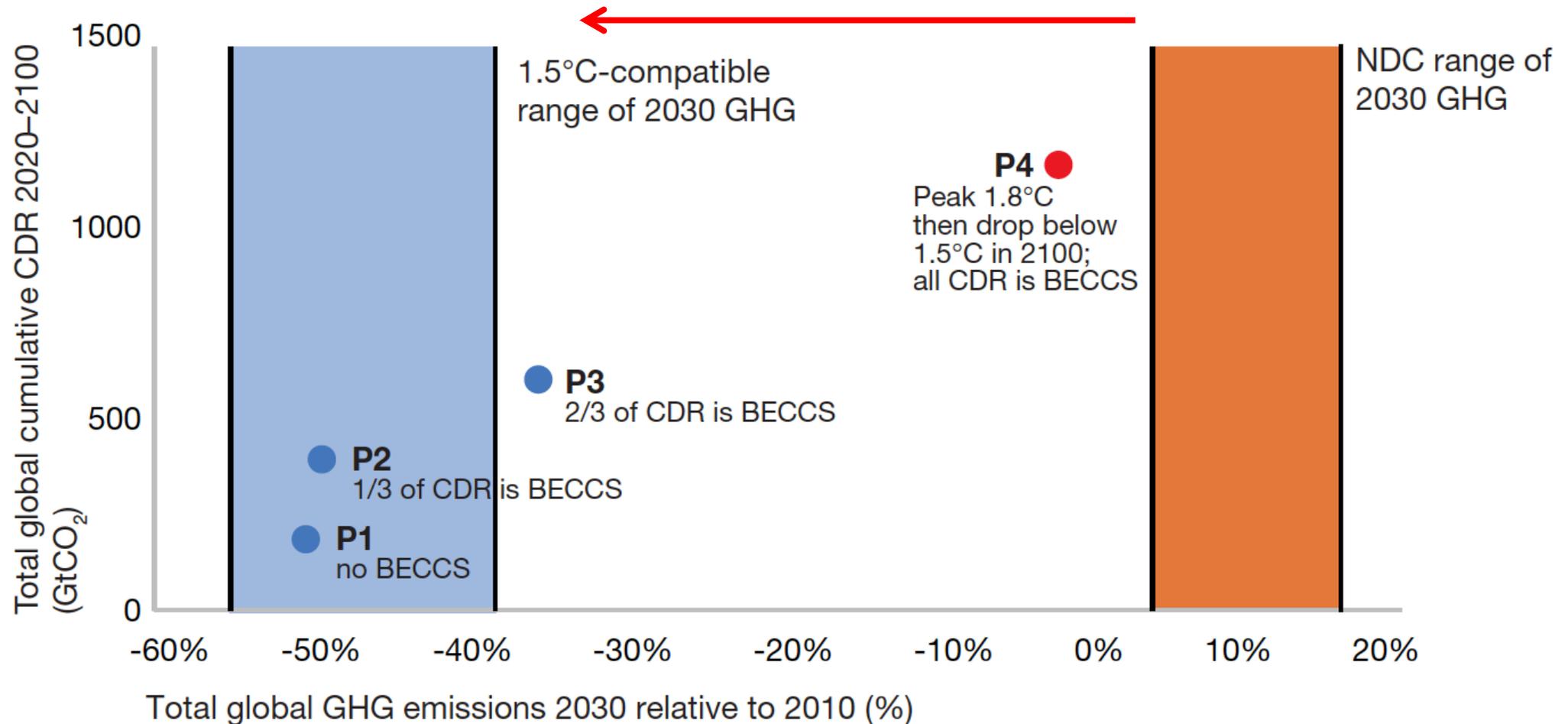
All Paris Agreement compatible 1.5°C pathways require CDR

- CDR needed to compensate for **insufficient action to date** and compensate for **residual emissions** that cannot readily be phased out
- Scale of CDR needed **depends on pace of GHG reduction**



2030 ambition level key for scale and mix of CDR options

Strong reductions in the 2020-2030 period lead to lower need for CDR



The need for CDR raises important questions:

- What **governance tools** need to be in place if large-scale CDR is needed?
- Can provisions under the **current climate change regime** support implementation at scale?
- Who is **responsible** for undertaking CDR in an equitable world?
- Can we **track** CDR implementation?
- Can we **account** for CDR?
- How to avoid **conflating** CDR with needed mitigation measures?
- How to stay within **sustainable development** constraints?

What do we have?

- **Global goal** – 1.5°C, balance in 2nd half of century
- **3 treaties with supporting decisions** to learn from and build upon:
 - **UNFCCC** – report emissions & removals, promote enhancement of GHG sinks
 - **Kyoto Protocol** – land sector accounting, provisions related to afforestation / reforestation and carbon capture and storage
 - **Paris Agreement** – national mitigation targets (NDCs), transparency framework, Global Stocktake, market mechanisms, finance goals
- **IPCC guidance** for reporting emissions & removals
- **IPCC Land report**, which now provides a clearer understanding of the potential role of the land sector in meeting Paris Agreement goals

What are we missing?

- Mitigation gap
- Information gaps
- Accounting gaps
- Knowledge gaps
- Incentive gaps



→ And there are both *political* and *scientific* governance challenges in closing these gaps

- **Insufficient mitigation ambition**
 - Current NDCs inconsistent with 1.5C goal
 - No minimum ambition specified; only political levers for improvement
- **Responsibility for CDR deployment has yet to be addressed**
 - Equity considerations affect CDR responsibility (see Fyson et al. (2020))

- **NDC formulation – few rules**
 - Common timeframes not yet agreed
 - Not all NDCs are **economy wide**
 - No common approach to land sector** – sector often treated ambiguously or omitted altogether
- **NDC reporting and accounting – flexibility remains**
 - No common accounting approach**, including for land sector (natural disturbances, wood products)
 - Accounting rules **only apply to second NDC period** (e.g., from 2025 or from 2030)
 - Countries **choose their own indicators for tracking progress**
 - Biennial reporting not required of all Parties
- **Inventory Reporting – inconsistent among Parties**
 - Flexibility** for developing countries who need it (e.g. not all gases need to be reported)

- **International transfers of mitigation outcomes via market mechanisms pose environmental integrity and double counting risks**
 - **No agreement yet on rules for accounting transfers** or environmental integrity protections
 - Risk of **double counting** reductions between Parties
 - Some Parties seek to **use old reductions** toward future commitments, undermining ambition
 - **Oversight systems not in place**
- **Political opportunities for distortion of efforts amplifies governance challenges**
 - Makes tracking progress toward net zero difficult
 - Obscures role and contribution of land sector, CCS, BECCS
 - May weaken actual ambition in reducing emissions, impacting scale of CDR needed to compensate

- **Access to information needed to monitor progress towards the goal of balancing emissions and removals**
 - GHG inventory **gaps and uncertainties**
 - Discrepancies between **GHG inventories and models**
 - Uncertainties in measuring the future effect of NDCs – what role for removals?
 - Monitoring **across supply chains** (e.g. for BECCS)
 - **Issues of storage:** permanence, leakage, outgassing and saturation
 - Planning for and monitoring the **biophysical effects** of deployment, beyond CO₂ removal
- **Safeguards for sustainable development**
 - How to deploy a **portfolio of CDR options** in a way that **maximises co-benefits** for sustainable development and prevents adverse impacts?

Priority governance needs from a range of actors

WHAT?

1. Enhanced mitigation ambition

- New and enhanced NDCs, shift to economy-wide
- Long-term LED strategies (1.5°C consistent)
- Evolve a shared understanding of net zero
- Distinct targets for the land sector / removals

2. Improved inventory data and information management systems

- Develop data sources for GST to fill gaps
- Further IPCC guidance (e.g., BECCS, DACCS)
- Further research on geophysical feedbacks
- Data sharing, collaboration between bodies
- Tracking of CDR initiatives, land sector, CDR targets

3. Robust accounting rules to avoid double counting and asymmetries

- Adopt robust rules for accounting emissions / removals
- Adopt robust rules for transfers under Article 6 market mechanisms
- Encourage results-based finance for land sector, rather than use of Article 6 markets

WHO?

- Governments
- Encouragement from UNSG, UNFCCC Exec Secretary

- Governments
- IGOs, CSOs, NGOs
- IPCC
- ICAO, IMO
- Climate Action Tracker and UNEP

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- IGOs, NGOs, CSOs

WHAT?

4. Incentives to accelerate research, drive investment and implementation

- Identify no regrets options
- Develop policy packages for mature CDR options or those in development to support deployment when ready
- Consider ways to share risk and responsibilities for R&D
- Consider public/private partnerships

5. Improved understanding of how best to safeguard sustainable development while scaling-up CDR rapidly, e.g.,

- Build scenarios around specific CDR options, CDR value chains and their SD implications
- Research environmental aspects of CDR options and portfolios
- Regional bottom up studies to identify SD potential

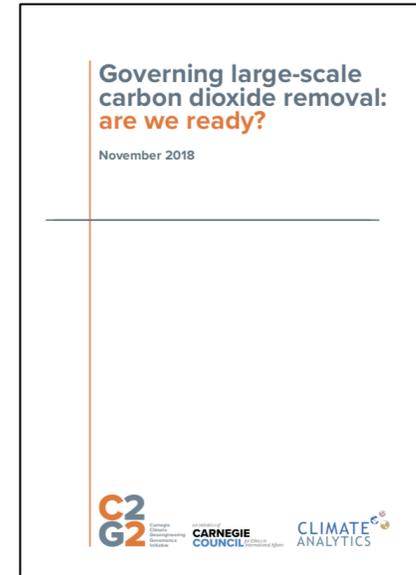
WHO?

- Governments,
- Research community

- Research community
- IGOs, e.g., IEA, IRENA, IIASA

Thank you

claire.fyson@climateanalytics.org
bill.hare@climateanalytics.org
michiel.schaeffer@climateanalytics.org
mjmace02@yahoo.com



Mace, Fyson, Schaeffer, Hare (2018), update forthcoming

Earth's Future

Research Article | Open Access | Ambiguity in the Land Use Component of Mitigation Contributions Toward the Paris Agreement Goals

C. L. Fyson, M. L. Jeffery

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Abstract

Land use, land use change, and forestry (LULUCF) activities, including deforestation and forest restoration, will play an important role in addressing climate change. Countries have stated their contributions to reducing emissions and enhancing sinks in their Nationally Determined Contributions (NDCs); in 2023, the Global Stocktake will assess the collective impact of these NDCs. Clarity in the contribution of LULUCF to NDC targets is necessary to prevent high LULUCF uncertainties from undermining the strength and clarity of mitigation in other sectors. We assess and categorize all 167 NDCs and find wide variation in how they incorporate LULUCF; many lack the clear information necessary to understand what land-based mitigation is anticipated. The land sector is included in 121 NDCs, but only 11 provide a LULUCF target that can be fully quantified

