

EMBARGOED until 14:30 BST, 2<sup>nd</sup> June 2026

### Supplementary comments from authors

**Oliver Geden, German Institute for International and Security Affairs (SWP)** said *“Stabilising global temperature requires bringing CO<sub>2</sub> emissions down to net zero, and this is impossible without CDR. Furthermore, once warming exceeds 1.5°C, bringing the global temperature back down will mean removing more carbon dioxide from the atmosphere than we emit, by achieving net-negative emissions to rebalance the global carbon budget.”*

**Steve Smith, Smith School of Enterprise and the Environment, University of Oxford,** said *“The rapid growth of CDR technologies has been notable progress. Many projects are marketing wider environmental benefits and co-products in addition to climate benefits. This partly reflects opportunities for multiple wins, and partly reflects the scarce financial rewards available for the public good of cleaning up CO<sub>2</sub> from the air.”*

**William Lamb, Potsdam Institute for Climate Impact Research** said *“Countries have pledged around 2.7 billion tonnes of carbon removal by 2035 and about 3.6 billion by 2050, but climate pathways require much more, especially in the long term. This leaves a gap that grows significantly over time. Most pledges rely on forests and land, with newer technologies playing only a small role. Delays in cutting emissions would make this gap even larger.”*

**Greg Nemet, La Follette School of Public Affairs at UW Madison,** said, *“Around \$5.7 billion has been committed globally to CDR research and early-stage projects since 2019, and over 40 pilot projects are now underway. But progress on the ground is slower than expected, with only about 20% of planned capacity delivered so far. Recent policy shifts, including the cancellation of more than \$3 billion in US projects, show how quickly momentum can stall without stable, long-term support.”*

**Jan Minx, Potsdam Institute for Climate Impact Research** said, *“Research in CDR is growing quickly, with publications increasing by around 15% a year in recent years and funding rising fast. But progress is uneven – high-value patenting has declined, especially for technologies like bioenergy with carbon capture storage (BECCS). To meet climate goals, we need stronger and more consistent support for innovation across a wide range of approaches.”*

**Matthew J. Gidden, Center for Global Sustainability, University of Maryland,** said *“Every ambitious climate pathway we assessed combines massive emissions cuts with CDR to limit warming well below 2°C. While reducing emissions solves most of the problem, CDR is needed at gigatonne scale to get us to net zero. That means novel and conventional CDR must scale by multiple gigatonnes globally over decades, at rates matching the fastest energy transitions like solar. But real-world delays, uneven global action or climate surprises could demand even more, proactive deployment now is our best hedge against those risks.”*

**Candelaria Bergero, La Follette School of Public Affairs at UW Madison,** said *“Every credible climate pathway we looked at includes CDR alongside deep emissions cuts, reaching billions of tonnes per year*

*by mid-century. But these pathways assume immediate policy action – in the real world, delays would mean we need even more CDR, not less.”*

**Carley Reynolds, Potsdam Institute for Climate Impact Research, said** *“What we see is a clear and growing mismatch between what countries are aiming for and what’s needed to meet climate goals. Today the gap is relatively small, but by mid-century it becomes very large. That gap widens further if action is delayed, meaning we would have to rely much more heavily on large-scale CDR later on.”*

**Franklyn Kanyako, La Follette School of Public Affairs at UW Madison, said** *“Dozens of pilot projects are now up and running, but real-world delivery is still lagging behind expectations. So far, only about 20% of planned capacity has been built, showing how challenging it is to move from announcements to actual projects on the ground.”*

**Friedemann Gruner, Potsdam Institute for Climate Impact Research, said** *“CDR methods vary widely in estimated potential and cost, from under 1 billion tonnes a year and below \$100 per tonne for some conventional methods, up to tens of billion tonnes and potentially over \$1,000 per tonne for some more novel methods. Cheaper methods like reforestation are often associated with co-benefits for nature and food security, but scaling any approach requires managing trade-offs around land, water and energy use. Across methods, uncertainties about both costs and potentials are high, reflecting the still evolving scientific understanding of the scalability of different methods. We urgently need more research to narrow these uncertainties and guide smart investment.”*

**Kirsty Harrington, Smith School of Enterprise and the Environment, University of Oxford, said,** *“Today, around 2.2 billion tonnes of CO<sub>2</sub> are removed each year, almost all of it through forests and land use. Newer novel CDR technologies are growing quickly, but they are still tiny in comparison, about a thousand times smaller. As these approaches scale up, it’s important we carefully measure how much carbon is actually removed to ensure real climate benefits.”*

**Leona Tenkhoff, German Institute for International and Security Affairs (SWP) said,** *“More than 100 countries have set net-zero targets, but very few have clear plans for how CDR will be realised and scaled. Most policies focus on funding projects rather than creating real demand, which makes progress uncertain. How CDR grows next will depend on more stable and predictable policy support.”*

**Sabine Fuss, Potsdam Institute for Climate Impact Research said:** *“We cannot rely on a single CDR method to close the gap. Conservative estimates for removal potentials from different methods are around 1 billion tons of CO<sub>2</sub> per year. A diverse portfolio of CDR methods, with different approaches tailored for different contexts and geographies, would help to preserve flexibility, reduce costs, and maximise sustainability benefits.”*

## **Supplementary comments from other voices in CDR**

**Aaran Patel, Advisory Board, The State of CDR said,** *“Cutting across science, policy, perception and practice, the State of CDR is the authoritative voice on the nascent but vital removals sector. Amongst other themes, the third edition brings a greater focus to the potential agronomic co-benefits of*

*removal pathways like biochar and enhanced rock weathering. From boosting soil health and yields to increasing farmer incomes, if done right, these removals could also increase resilience and open new channels of finance for countries like India in the Global South.”*