Mercator Research Institute on
Global Commons and Climate Change

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What CDR options do we have and are they ready?

Jan C. Minx

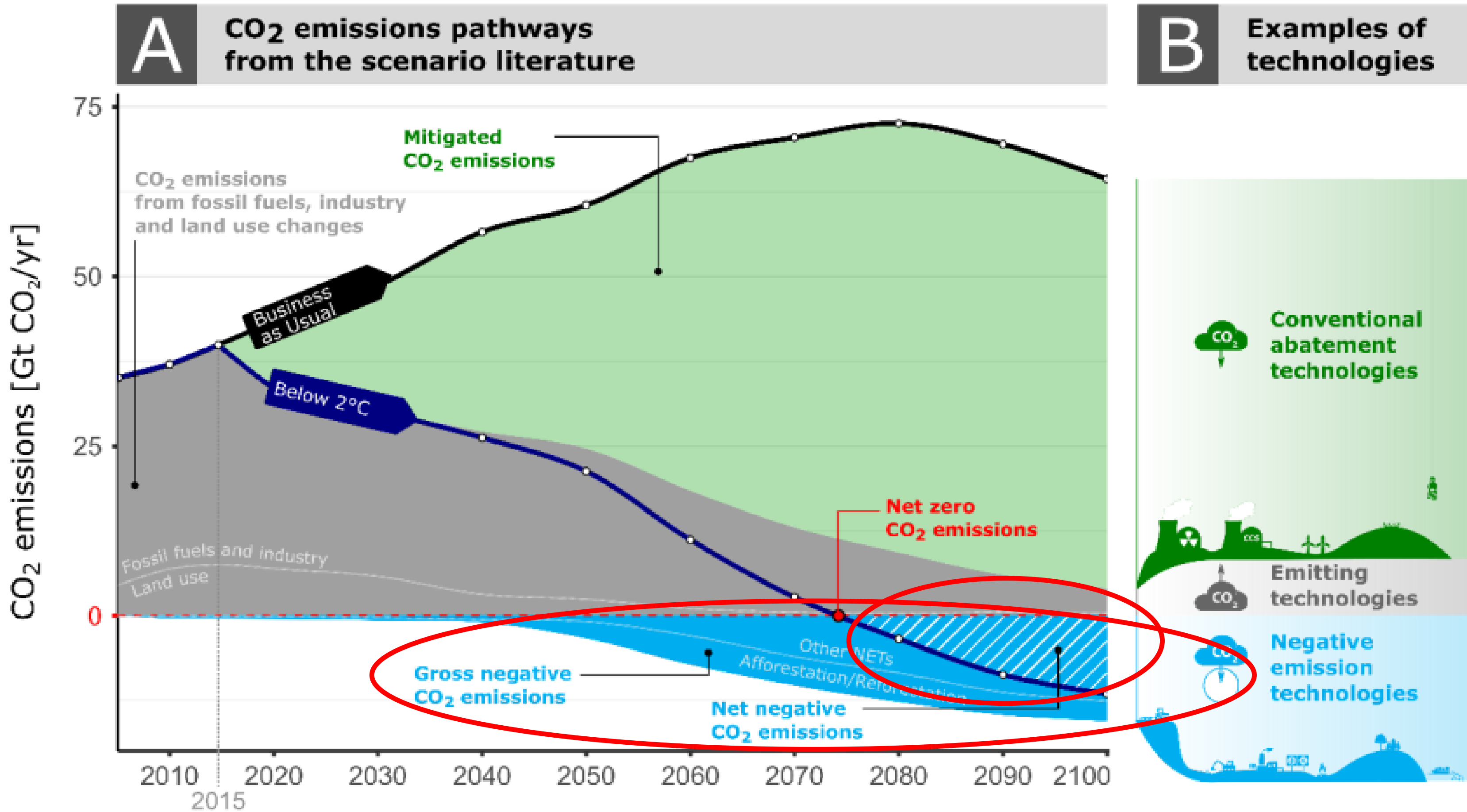
Demystifying negative emissions technologies

EU Pavilion

COP24 Katowice, Poland

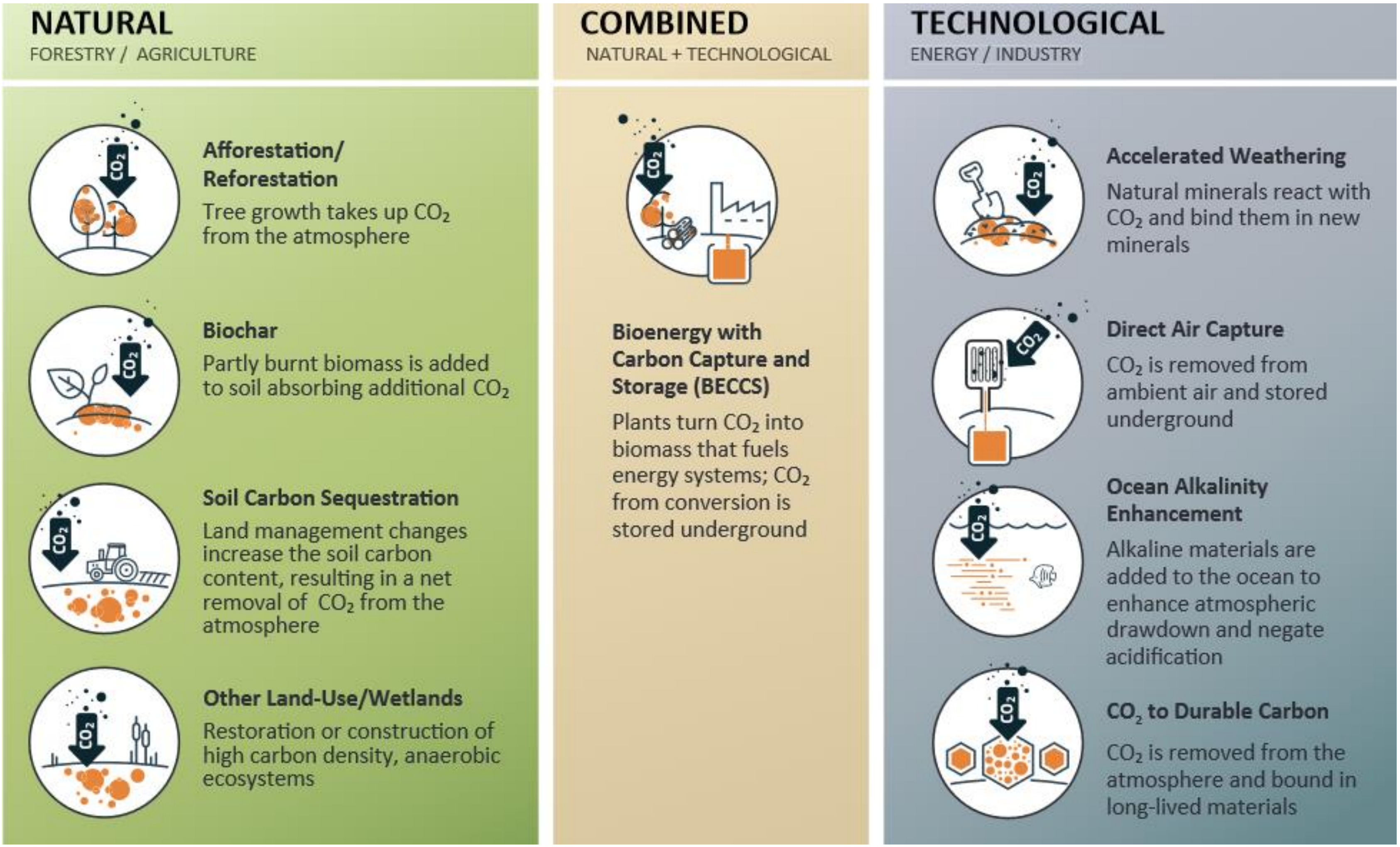
12.12.2018

CO_2 removal is used to compensate for atmospheric overshoot and residual emissions



Fuss et al. (2018), Negative Emissions – Part 2: Costs, potential and side-effects, *Environ Res Lett.*

While the recent discussions have mainly focussed on BECCS, the spectrum of options is large



UN Environment (2017), The Emissions Gap Report 2017

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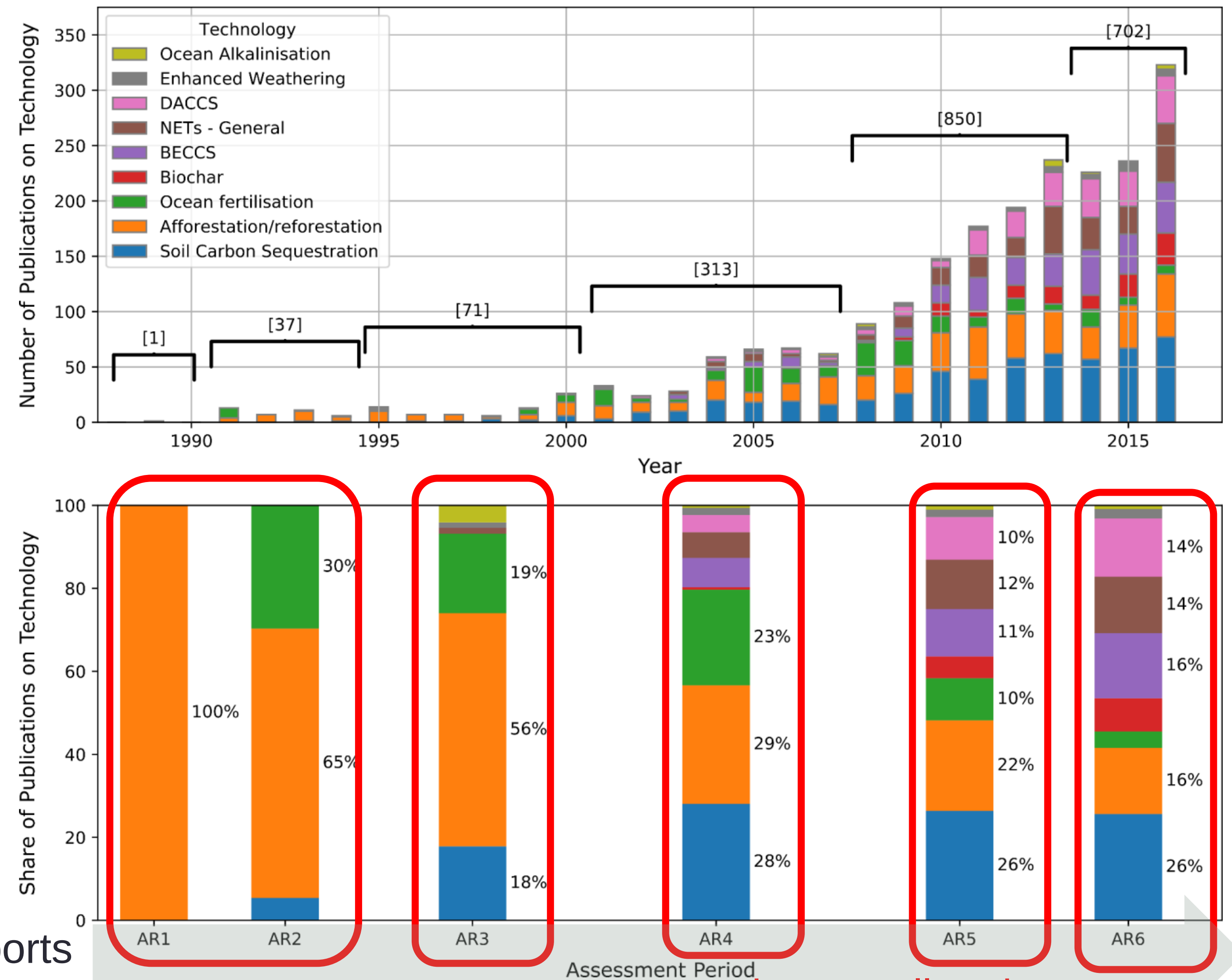
The discussion on CDR is not new, but has diversified over time



IPCC Reports

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Biological sink enhancement

Negative emissions

All major CDR options

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Minx et al. (2018), Negative Emissions – Part 1: Research landscape and synthesis, *Environ Res Lett.*

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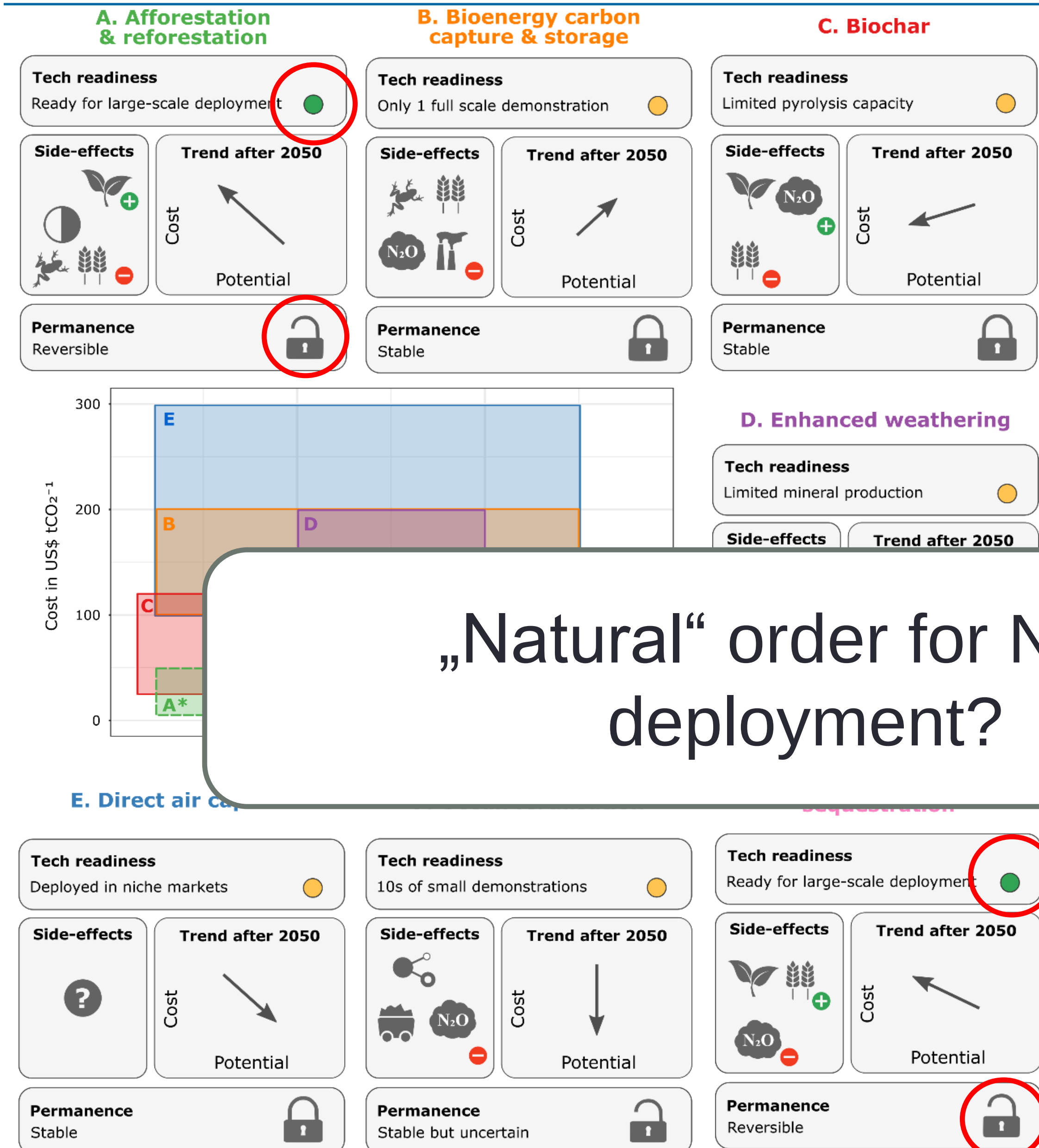
Most CDR options show relevant potentials, but all have limits



„Natural“ order for NETs deployment?

- Relevant potentials for all CDR options, except ocean fertilization
- Potentials are all constrained by bio-physical or economic limits and are not additive
- Any single option unlikely to provide the potentials ... many ... tainably ... ultiple CDR ... deployed at ... s can hedge risks and seem more realistic
- Important differences in development status and secure CO_2 storage

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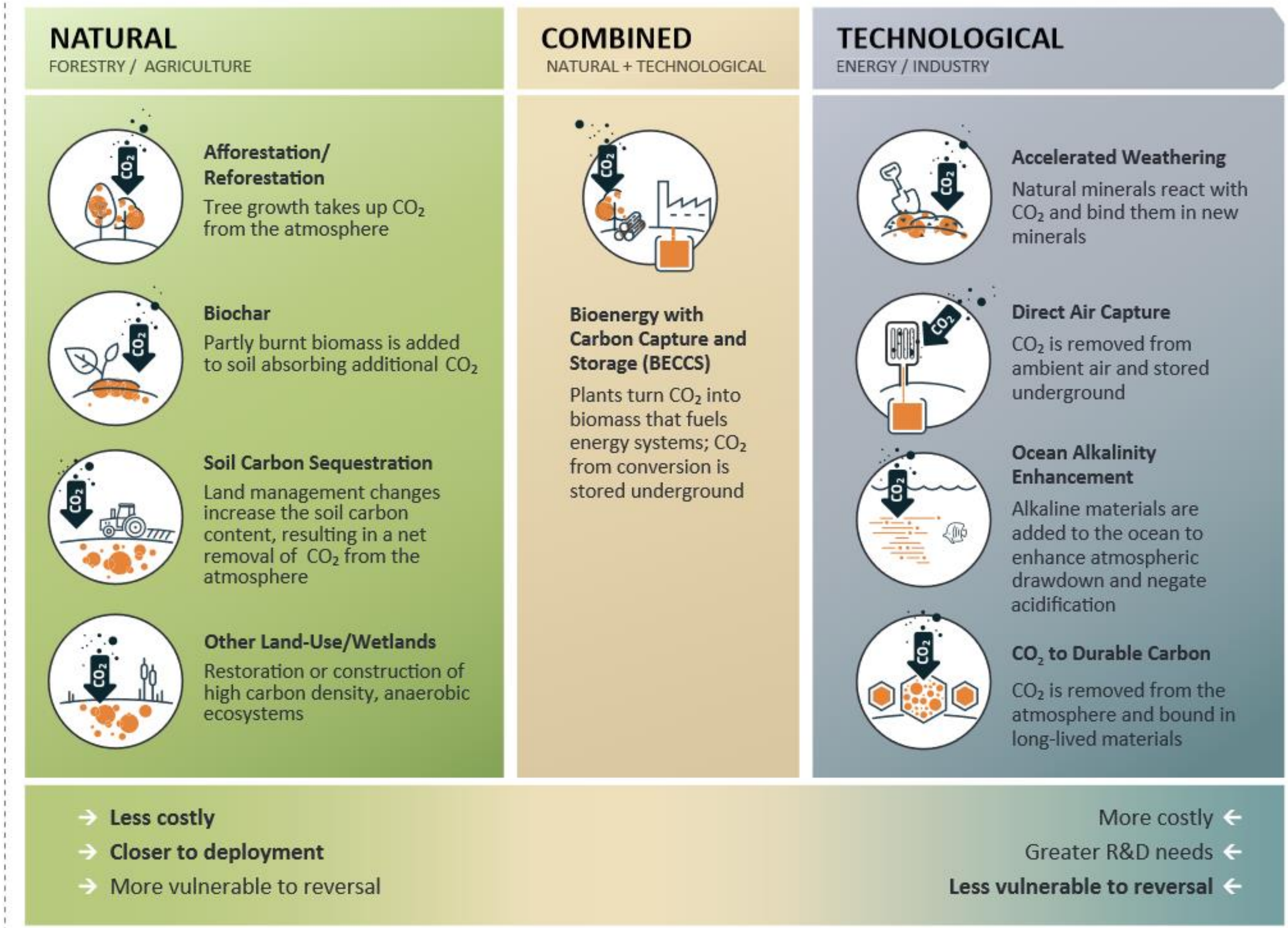
Important trade-offs between timing, costs and reversability



Note: This figure includes the major strategies that have been discussed in the literature so far (Minx *et al.*, 2017).

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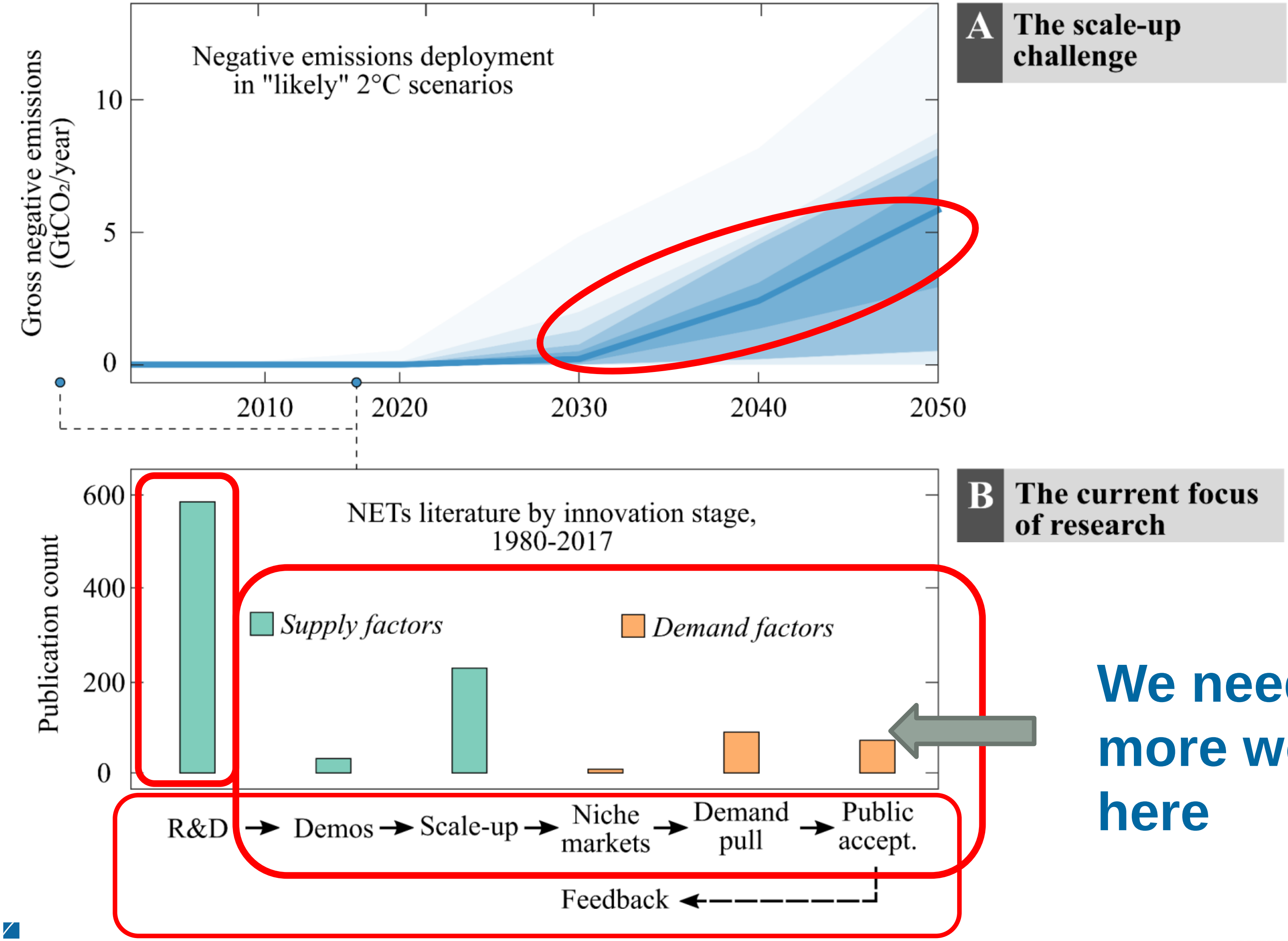
UN Environment (2017), The Emissions Gap Report 2017

Technological transitions often take time! Urgency in developing CDR portfolios



We need more work here

Nemet et al. (2018), Negative Emissions – Part 3: Innovation and upscaling, *Environ Res Lett.*

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The need for acceleration in innovation and diffusion of CDR technologies

Minx and Nemet (2018), The inconvenient truth about carbon capture, *Washington Post;* Figure by William Lamb (MCC)

Thanks!

Contact: Jan Minx

Mercator Research Institute on
Global Commons and Climate Change gGmbH
Torgauer Str. 12–15 | 10829 Berlin | Germany
tel +49 (0) 30 338 55 37 - 250
mail minx@mcc-berlin.net
web www.mcc-berlin.net

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