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CORRIGENDUM

Corrigendum: Exploring risks and benefits of overshooting a 1.5 °C carbon budget over space and time (2023 *Environ. Res. Lett.* 18 054015)

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The original version of the table flipped the four cells for the two scenarios in the rows "Climate policy" and "Mitigation cost". The corrected version in table 1 summarizes that the scenario with "Minimum Overshoot" requires higher "Carbon prices" and implies larger "Reduction in GDP from baseline" than the case with "Full Overshoot". The original version reported the opposite.

Table 1. Summary of results regarding temporal and geographical differences between scenarios; vegetation carbon pools include all terrestrial vegetation.

System	Component	Indicator	Minimum Overshoot	Full Overshoot	Persistency in 2100	Regional heterogeneity	Comment
Mitigation	Overshoot	Max. cumulative emissions above carbon budget	50 $GtCO_2$	700 $GtCO_2$	None, by assumption		Peak in 2060
	CDR deployment	Cumulative carbon removal 2020–2100	800 $GtCO_2$	950 $GtCO_2$	Storage is assumed permanent; persistent land-use changes	With low overshoot more afforestation in tropical countries	Substantial shift from afforestation to BECCS and DACS
	Climate policy	Carbon price in 2030	540 USD/tCO_2	50 USD/tCO_2	Relative difference constant by assumption	Uniform	Shape strongly non-linear
	Mitigation costs	Reduction in GDP from baseline	3.5%	1.2%	Near- and mid-term losses major effect; reversal after 2050	With low overshoot OECD countries 1.2%, but non-OECD countries 5.9%	Immediate effect on non-OECD GDP 12% in 2030
Climate system	Carbon cycle	Peak CO_2 concentration	424 ppmv in 2030	474 ppmv in 2050	With full overshoot CO_2 concentration is slightly lower	Uniformly mixed in global atmosphere	
		Change of $GtCO_2$ in pools 2020–2100	Vegetation +174, permafrost −58 soil −183, ocean +336, sum = +269	Vegetation +112, permafrost −80, soil −136, ocean +407, total +303	Vegetation reversible, permafrost persistent, Ocean slowly reversible	Persistent changes on terrestrial carbon pools that roughly net out	CO_2 fertilization effect is pervasive
	Global mean temperature	GMT in 2065	1.4 °C (−0.2; +0.4)	1.8 °C (−0.2; +0.4)	20% of peak difference	Polar amplification in 2100 is disproportional, particularly in the arctic sea	Fast thermal response to CO_2 emissions and removals
	Ocean heat content	Anomaly in 2080	0.67^*10^{24} Joule	0.88^*10^{24} Joule	>90% of peak difference	Polar amplification and slow movement to deeper layers	Slow thermal reaction; various knock-on effects in ocean
	Sea ice	Arctic sea ice area	0.4 million km^2 drop from 2020	0.61 million km^2 further reduction	40% of peak difference remaining	Arctic effect stronger than antarctic	Sea ice is crucial component for ocean currents

(Continued.)

Table 1. (Continued.)

	Meridional overturning	Reduction compared to 2020	1 Sv in 2100	0.88 Sv in 2100 further reduction	Fully persistent, convergence by 2100	Atlantic ocean, northern hemisphere	
	Sea level rise	Increase compared to 2020	39.7 cm in 2100	Additional 3.6 cm in 2100	No convergence between scenarios before 2100	SLR global, but ice and glacier melting effects high-altitude and polar regions	Also long after 2100 SLR continues under low overshoot
Ecosystem	Maritime ecosystems, coral reefs	Drop of calcification rate in 2065 below 1850 levels	Up to 40%	Up to 50%	Near full reversibility; coral stocks might show different behaviour	Tropical regions, mostly Southeast Asia, Australia	CO_2 has adverse effects
	Vegetation	Carbon density	Concentrated changes due to land-use change (e.g. afforestation)	No additional climate-induced losses from overshoot	More forest carbon stocks in low-overshoot scenario	Largest changes in tropical regions with high afforestation rates	LUC dominates climate; CO_2 fertilization enhances resilience
Impacts and Damage	Lifetime exposure to climate extremes	Projected lifetime exposure by age cohorts in 2020	Substantial increase of cumulative extreme weather event exposure, particularly heat waves	Significantly stronger heat wave exposure	Cumulative effects can effect socioeco-nomic developments (human capital) in the long run	Hot countries (usually non-OECD) are affected more severely	Heat waves most sensitive, other impact sector show different regional results
	GDP reductions	% GDP reduction from baseline	5 yr perm.: 2.1% in 2070 15 yr perm.: 5.9% in 2100	5 yr perm.: 3.4% in 2070 15 yr perm.: 8.3% in 2100	5 yr perm.: 45% of peak difference 15 yr perm.: no convergence	Non-OECD with 5 yr perm 3.1 vs. 4.8% in 2060 and 0.8% difference in 2100.	Huge uncertainty about the permanence parameter

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