ANNEX A

1. SDG indicator results

1.1. GHG emissions

GHG emissions are an output of GCAM and are determined by the evolution of the socioeconomic drivers as well as the production in the different modules and the technology mix. GHGs included are CO_2, CH_4, N_2O, CF_4, C_2F_6, HFC23, HFC32, HFC43, HFC125, HFC134a, HFC143a, HFC227ea, HFC245fa, SO_2, BC, OC, CO, VOCs and NO_x from both fossil fuel industries and land use changes. Output emissions are converted to CO_2 equivalent through AR5 Global Warming Potential values (IPCC, 2014).

In 2020, almost half of all global GHG emissions came from ASIA, where results suggest that *Lesser & Greener* could the best performer on emissions reduction over the course of the century (Fig A.1**¡Error! No se encuentra el origen de la referencia.**). Both in LAM and OECD, *Bioenergy & Capture* seem to be the most efficient pathway for this objective until 2100, where the biggest GHG emission cutbacks with respect to 2020 could be achieved. *Electrification & Conservation* could be the indicated scenario for this purpose in REF and *Forest & Fossils* in MAF. Nevertheless, at global level, GHG emission reductions achieved along the century would be very similar among scenarios.

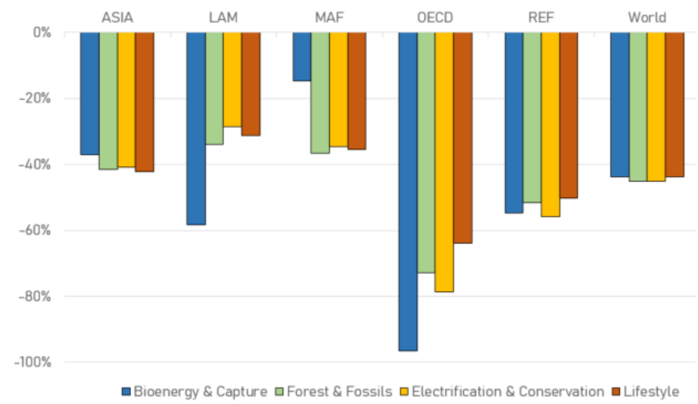

Fig A.1 | Global and regional cumulative GHG emissions reductions in 2100 with respect to 2020 in the *Reference* scenario for *Bioenergy & Capture, Forest & Fossils, Electrification & Conservation* and *Lesser & Greener* scenarios

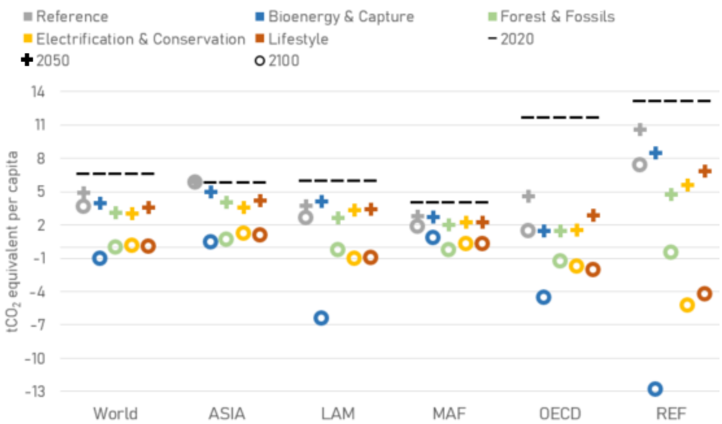

Fig A.2 | Global and regional GHG emissions per capita in 2020, 2050 and 2100 for *Reference, Bioenergy & Capture, Forest & Fossils, Electrification & Conservation* and *Lesser & Greener* scenarios

1.2. GHG emissions per capita

To obtain regional carbon footprints, GHG emission figures were combined with population projections as specified in the Shared Socioeconomic Pathway 2 (O'Neill et al., 2014). All the mitigation pathways compatible with the Paris Agreement objectives could require neutral global GHG emissions footprints by 2100 (Fig A.2). They further suggest that OECD, REF and LAM could become net absorbers of GHG emissions with a negative carbon footprint by that time. In addition, the *Bioenergy & Capture* trajectory could achieve the lowest global per capita footprint by the end of the century. However, this pathway could delay emission reduction compared to the other three mitigation options.

1.3. Food price

Land use module agents in GCAM decide how to allocate land among competing uses within any given land region based on the profit rates and the historical values of production, land use and prices. Profit rates take into account input production costs such as capital, operating and labour costs and other variable costs such as fertilizer and water costs. Food prices are then computed annually for each considering agents' decision and modelled information on assumed annual yield improvements and food income elasticities. All price values in GCAM are in constant prices, so economy-wide inflation is not considered.

Regional food prices were calculated weighting sectoral price by the sectoral calorie consumption. Sectors covered included crops and meat consumption. Food price changes do not consider effects of water availability, precipitations and temperature changes on agricultural yields. Effects of tropospheric ozone on agricultural yields were only considered in the yield impacts indicator in section 1.4 and not for the food price projections. Atmospheric CO_2 concentration effects on yields were also not considered for this analysis.

Both the mitigation and reference pathways show a raise in food prices with respect to 2020 consistently across all the regions (Fig 5a**¡Error! No se encuentra el origen de la referencia.**). *Electrification & Conservation* and *Forest & Fossils* assume a higher carbon prices to represent the prescribed policies, which raise fertilizer costs. Food input costs are therefore increased and the production in regions with more productive lands is reduced, which, again, increases food prices. The fact that the fertilizer costs drive the food price increase is because GCAM only considers fertilizer production with fossil fuels and bioenergy, which are both constrained in *Electrification & Conservation* and *Forest & Fossils*. In reality, these processes may be switched to rely on alternative technological solutions such as hydrogen, which could smoothen price spikes present in these results.

Forest & Fossils additionally could need to account for the increased land competing as a result of growing afforestation efforts. Land dedicated to grazed pasture and crops could be reduced to accommodate for increased afforestation. This scenario shows the highest food prices increase with respect to 2020 levels across all regions but it could particularly affect MAF and LAM which could face food prices up to 10 times higher than in the *Reference* scenario by 2100. Results also suggest that *Lesser & Greener* could be the only mitigation scenario where food prices could not increase in 2100 with respect to *Reference* at global level.

1.4. Agricultural yield loss

Tropospheric ozone (O_3) is considered the most damaging pollutant for crop yields (Emberson et al., 2018) offsetting potential carbon or other fertilization effects derived from anthropogenic GHG emissions (Shindell, 2016). Tropospheric O_3-induced agricultural damages were computed for wheat, corn, rice and soybeans based on the average across two exposure indicators: the accumulated daytime hourly O_3 concentration above 40 parts per billion and the seasonal mean daytime O_3 concentration (Sampedro et al., 2020). Projections for the agricultural production lost were obtained combining GCAM outputs of GHG emissions with *rfasst*, an R tool that replicates calculation of TM5-FASST. TM5-FASST is a global atmospheric model used to analyse the impact of emission on air quality and climate pollutants. It models the transport and chemical process of particulate matter elements and atmospheric gases. (Van Dingenen et al., 2018). Agricultural yield impacts were calculated ex post and do not include feedbacks with GCAM, so they were not taken into account for the food price indicator analysis detailed in section 1.3. The impacts of water availability or temperature on yields were not taken into account for this indicator either.

As mitigation efforts decrease tropospheric ozone levels, agricultural yield loss could also be reduced. All mitigation pathways could manage to limit the yield loss to levels below 1.5% by 2100, except the OECD in *Bioenergy & Capture*, where results suggest that it could still be almost 2.5% (Fig 5b**¡Error! No se encuentra el origen de la referencia.**). The heavy reliance of this pathway on bioenergy could increase the emission of pollutants associated to the generation of electricity from biomass. The rise of these pollutants could increase the formation of tropospheric ozone prolonging the exposure of agricultural land to higher ozone concentration levels and delaying the crop damage drop.

1.5. Water price

A market mechanism is responsible in GCAM for balancing water supply and demand at basin level. Water price is adjusted so that water demands equal available supplies. Rising water supplies raise water costs, which, in turn, lower water demands with adjustments such as the choice of alternative technologies or crops with reduced irrigation requirements. Interactions with the other modules are also considered since all the other markets are solved simultaneously. For the purpose of this study, regional prices were obtained through a weighted average with the amount of water withdrawn by each sector for each basin.

As with the food price projections, all the analysed pathways suggest an increase in the water prices with respect to 2020 levels (Fig 5c). Results indicate that the most critical scenario could be *Forest & Fossils* in ASIA, where price could be over 3 times higher than in the *Reference* scenario. Global afforestation efforts could push the plantation of trees to regions with high forest yields and higher carbon price (USA, China, EU and Southeast Asia). And, to be able to keep up with food provision, crops like rice and sugar could be shifted to the Indus basin in Asia with low forest yield. This trend could aggravate the pressure on regional water resources and, consequently, increase its price. On the other end, due to reduced water pressure as a consequence of reduced agricultural production and increased afforestation in OECD, *Forest & Fossils* could also bring down water prices in that region by the end of the century which could end up being 40% lower than in the *Reference* scenario. The most optimistic combination of scenario and region is *Lesser & Greener* in OECD, where water prices could rise by 25% in 2100 with respect to prices in 2020.

1.6. Groundwater withdrawals per capita

Groundwater sources in GCAM only contribute to water supply at basin level if easily accessible renewable water supplies are scarce. As water prices rise, more expensive and less accessible groundwater supplies can be extracted. For the purpose of this study, groundwater withdrawals was used as a proxy for water stress. Data for population projections were taken from the Shared Socioeconomic Pathway 2 database (O'Neill et al., 2014).

The *Bioenergy & Capture* scenario suggests that per capita groundwater withdrawals could increase across most of the regions with respect to the *Reference* scenario, particularly in ASIA and LAM (Fig 5d). Basins in China and Brazil could bear the burden of the additional groundwater extractions used for the transformation of biomass to electricity with CCS. The highest extraction levels by 2100 are projected to take place in REF in the *Bioenergy & Capture* scenario. At global level, *Forest & Fossils* and *Lesser & Greener* scenarios could the best performers with over 30% reduction in 2100 with respect to the *Reference* scenario.

1.7. Household energy costs

The household energy costs indicator is a compound index which aggregates residential and transport service costs weighted by each sector's fuel expenditure. For each simulation period, GCAM simulates costs associated to the energy dedicated for the residential sector and for passenger transport services (including road and air transport). Both services are combined into an index which takes into account service costs, the amount of energy required by type of fuel and the prices of each of these fuels for each period.

The *Electrification & Conservation* scenario shows the most promising results in the long term since it could limit household costs increase more than the *Reference* and the other mitigation scenarios. Globally, these costs could increase up to 70% during this century with the highest increase happening in MAF (Fig 5e). Projections for this region estimate a systematic growth of the main socioeconomic drivers which could raise demand for energy services, but higher electrification rates and lower end-use electricity prices manage to dampen these impacts in comparison with the other scenarios.

1.8. Non-biomass renewable energy share

Choice of a specific energy source is based on the supply curve of each source, which considers factors such as the regional availability of the resource or the cost and efficiencies associated to the corresponding extraction processes. Non-biomass renewable energy shares were obtained comparing the energy generated from non-biomass renewable sources with the total primary energy production for each simulation period. Non-biomass renewable sources include geothermal, hydropower, wind (on- and offshore) and solar (both through concentrated solar power and photovoltaic technologies).

As expected, the *Electrification & Conservation* scenario projects the highest renewable energy share where MAF could reach a share just below 60% in 2100 (Fig 5f). All the decarbonisation pathways in 2100 suggest a renewable energy share increase with respect to the *Reference* scenario except *Bioenergy & Capture* in LAM and REF. As highlighted for the per capita groundwater withdrawals indicator, mitigation through bioenergy with CCS (BECCS) technologies could discourage the use of other renewable energy sources. Consequently, *Forest & Fossils* and *Lesser & Greener* could outperform *Bioenergy & Capture* on this indicator at global level.

1.9. PM 2.5 concentration

TM5-FASST uses GCAM emission outputs of different precursors along with meteorological and atmospheric parameters to estimates PM2.5 concentrations. These were calculated ex post, so they do not include any feedback effects with GCAM which could affect socioeconomic parameters. Concentration levels are calculated based on pollutants per area and, as suggested by the UN Department of Economic and Social Affairs (UNDESA, 2019), weighted by the evolution of the regional population projections from the SSP2 database (O'Neill et al., 2014).

PM2.5 concentration projections show the highest reductions in ASIA, which was in 2020 the region with the highest concentration levels (Fig 5g). In OECD and REF *Electrification & Conservation* and *Lesser & Greener* could achieve lower concentrations than the other two decarbonisation pathways. As highlighted for the agricultural yield loss indicator, PM2.5 concentration reductions in the *Bioenergy & Capture* scenario could happen at a slower pace. If this were the case, over the course of the century the population of these regions would be exposed to high ambient air pollution levels for longer than in the other mitigation scenarios.

1.10. Ocean pH

Hector is a simple climate model which relies on a carbon-cycle model to replicate historical emissions, radiative forcing and surface temperatures and simulate GHG concentration trajectories (Hartin et al., 2015). It also translates GCAM emission outputs from energy, land and water modules into terrestrial and ocean impacts. Hector was used in this study to track the evolution of the ocean components of the carbon cycle to analyse the impact on the ocean pH.

The *Reference* pathway could not be enough to reverse the current ocean acidification process; however, results suggest that this could be the case with all the mitigation pathways explored (Fig 5h**¡Error! No se encuentra el origen de la referencia.**). They could manage to leave pH values in 2100 at similar levels to the 2025-2030 period.

1.11. Forest cover

Forests are one of the available land cover options for the land use module agents and one of the main focus of the *Forest & Fossils* scenario to mitigate GHG emissions and comply with the Paris Agreement. To compute the indicator, land use covered by forests was compared to the total land use of each region.

As the *Forest & Fossils* scenario is designed to rely on forest for decarbonisation, it is not surprising that it could show the highest forest cover rate across all regions. ASIA and OECD show the highest increase in forest cover with respect to the *Reference* scenario in 2100 (Fig 5i). The combination of high carbon prices and high forest yields in USA, China, EU and Southeast Asia could attract afforestation efforts to these regions and foster terrestrial carbon accumulation while moving crops to basins in other regions with low forest yields. On the other end, the *Bioenergy & Capture* scenario suggests an increase in the land dedicated to biocrops, which could result in a forest share drop across all regions.

2. Summary table

		ASIA	LAM	MAF	OECD	REF
GHG emission per capita	R	1.04	0.61	0.67	0.35	0.74
	BC	0.62	0.21	0.58	-0.03	0.27
	FF	0.57	0.38	0.44	0.06	0.31
	EC	0.58	0.42	0.46	0.04	0.27
	LG	0.58	0.41	0.46	0.10	0.33
Food price	R	1.15	1.44	1.94	1.28	1.30
	BC	1.44	1.95	2.69	1.67	1.73
	FF	3.35	5.61	7.97	4.09	4.24
	EC	1.71	2.73	3.10	2.11	2.10
	LG	1.15	1.35	1.34	1.42	1.31
Agricultural yield loss	R	0.68	0.39	0.59	0.60	0.48
	BC	0.46	0.38	0.50	0.52	0.37
	FF	0.38	0.40	0.43	0.45	0.31
	EC	0.35	0.42	0.42	0.43	0.30
	LG	0.35	0.37	0.40	0.42	0.29
Water price	R	7.73	3.22	8.30	1.62	3.06
	BC	8.12	3.22	11.70	1.81	2.99
	FF	13.42	3.23	11.17	1.28	2.69
	EC	8.65	3.54	8.11	1.28	2.84
	LG	6.84	2.86	7.33	1.14	2.50
	R	0.52	2.54	1.58	1.81	2.37
	BC	0.56	3.12	1.65	2.16	2.92
	FF	0.49	1.98	1.36	1.05	1.76
	EC	0.51	2.05	1.42	1.25	1.55

		ASIA	LAM	MAF	OECD	REF
Household energy costs	R	1.26	1.08	1.64	1.15	1.20
	BC	1.31	1.04	1.66	1.19	1.32
	FF	1.36	1.16	1.73	1.30	1.51
	EC	1.30	1.11	1.64	1.22	1.40
	LG	1.32	1.13	1.71	1.25	1.47
Non-biomass renewable energy share*	R	2.40	1.70	9.72	2.25	2.99
	BC	5.03	1.57	12.50	2.11	3.16
	FF	7.06	3.26	17.75	3.45	6.44
	EC	9.78	3.94	24.22	4.59	8.94
	LG	6.95	2.95	17.63	3.28	5.67
PM 2.5 concentration	R	0.78	0.74	0.89	0.62	0.70
	BC	0.55	0.75	0.88	0.61	0.67
	FF	0.50	0.67	0.87	0.55	0.63
	EC	0.48	0.67	0.86	0.52	0.61
	LG	0.49	0.69	0.87	0.55	0.63
Ocean pH*	R	0.9922				
	BC	0.9955				
	FF	0.9958				
	EC	0.9961				
	LG	0.9956				
Forest cover*	R	1.01	0.99	0.95	0.99	0.98
	BC	0.99	0.98	0.95	0.97	0.97
	FF	1.12	1.04	1.01	1.08	1.06
	EC	1.06	1.01	0.97	1.04	1.02

Groundwater withdrawals per capita	LG	0.49	1.80	1.43	1.09	1.51

	LG	1.07	1.02	1.00	1.04	1.01

Table. B.1 | SDG impacts values averaged for the period 2025-2100 with respect to 2020. Acronyms of the scenario names are R for *Reference*, BC for *Biomass & Capture*, FF for *Forest & Fossils*, EC for *Electrification & Conservation* and L for *Lesser & Greener*. Indicators include per capita GHG emissions, food prices, agricultural yield loss (attributable to exposure to ozone), water prices, groundwater withdrawals per capita, household energy costs, renewable energy shares, PM 2.5 concentrations, ocean pH and forest cover, Values represented are the ratio of the average for the period 2025-2100 and the 2020 value in each scenario.

3. Scenario assumptions

3.1. Quantitative scenario setting

3.1.1. CCS supply

The potential and costs of Carbon Capture and Storage is very uncertain due to the lack of real-world applications. We have therefore assumed three different levels of carbon storage costs (panel A of Figure C1.1) in line with the different mitigation narratives, with a low supply (high costs of storage) in *Electrification & Conservation* and *Lesser & Greener*, medium supply (medium costs) in *Reference* and *Forest & Fossils*, and high supply (low costs) in *Bioenergy & Capture*. The implicit assumption here is that there will be learning-by-doing effects effectively reducing the costs of storing CO_2 in a mitigation narrative that builds upon this technology. The geographical distribution of CO2 storage potential is the same in each scenario and visible in panel B of Figure C1.1. We only applied costs differences to the storage of captured CO_2. The costs of capturing CO_2 in the different sectors (e.g. electricity, refining, cement) do not differ between the scenarios.

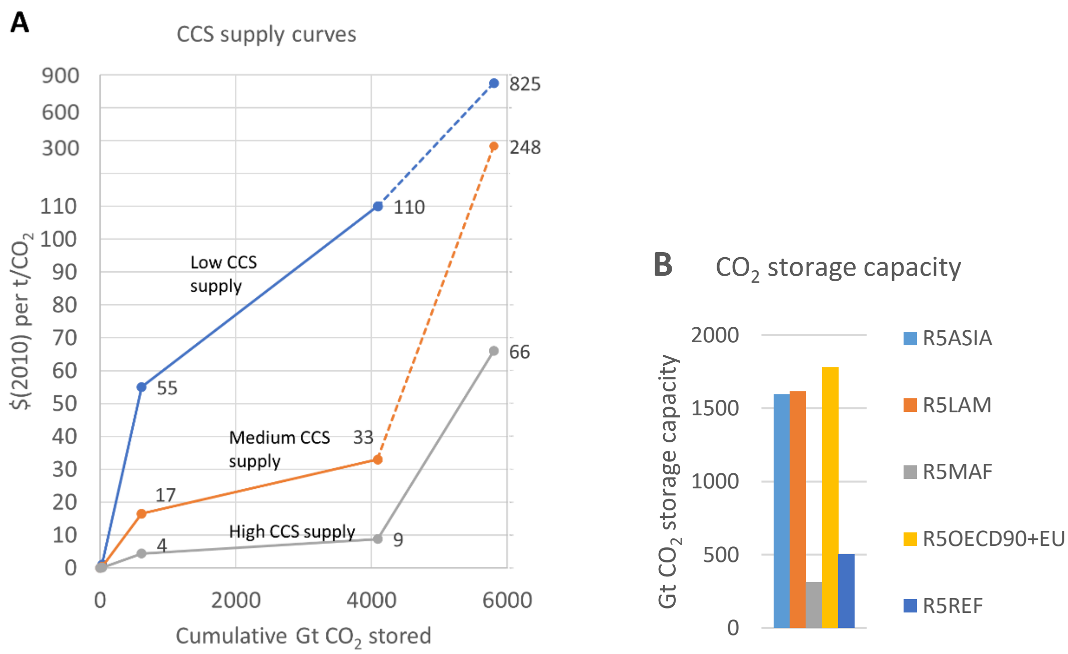

Figure C1.1 | Supply cost curves of CO_2 storage (A) and geographical distribution of potential (B)

3.1.2. Bioenergy

To prevent a large-scale conversion of the land sector towards bioenergy production for energy supply inducing large-scale land competition with other land uses such as good production, a limit on the global production is imposed in *Electrification & Conservation*, *Forest & Fossils* and *Lesser & Greener* to progressive reach a maximum level of 90 EJ by 2050 (Table C1.1) and 140 EJ by 2100. Traditional biomass is, however, not included the policy constraints assumed for the mentioned scenarios, as they only apply to modern biomass use. This limit does not include "traditional biomass" (gathered firewood, agricultural residues and animal dung) used for residential purposes in several developing regions, as this category is modelled to decline as GDP increases regardless of mitigation efforts. The assumed limits have been applied in line with the pre-estimated potential under a "food first" approach as estimated by Haberl *et al.* (2011), recognising that rising yield levels and technological opportunities for both food and bioenergy production gradually increase the potential under a "food first" approach over time (assuming ~1% annual increase). GCAM translates this restriction into a tax on bioenergy use to ensure that the constraint is met.

	Global bioenergy consumption limit in EJ
2035	75
2040	80
2045	85
2050	90
2055	95
2060	100
2065	105
2070	110
2075	115
2080	120
2085	125
2090	130
2095	135
2100	140

Table C1.1 | Limit of bioenergy consumption in EJ

3.1.3. Solar and wind technology costs

Future costs for renewable energy technologies are an important variable for potential mitigation pathways, yet uncertain due to the many factors that influence costs of emerging technologies. In this study, we took the default medium and low cost assumptions for solar and wind energy from GCAM 5.3. Recent data shows that capital costs may be lower than the "Low" scenarios in our study, especially for utility-scale PV (IRENA, 2021). Nevertheless, the relevance of these costs assumptions is the relative difference, which will favour solar and wind deployment more in *Electrification & Conservation* (Low) than in the other mitigation narratives (Medium). No differences between geographical regions have been applied.

Technology		Year	Costs assumption	
			Medium	Low
			$(2010)/kW	
Solar	Utility-scale PV	2015	1867	1867
		2030	1663	1466
		2050	1502	1244
		2100	1350	1129
	Rooftop PV	2015	4703	4703
		2030	4186	3695
		2050	3779	3133
		2100	3398	2846
	CSP with storage	2015	8007	8007
		2030	6622	5087
		2050	5775	3840
		2100	5220	3385
Wind	Onshore	2015	2003	2003
		2030	1780	1573
		2050	1609	1334
		2100	1447	1211
	Offshore	2015	3356	3356
		2030	2988	2636
		2050	2697	2235
		2100	2426	2032

Table C1.2 | Capital costs for solar and wind technologies

3.1.4. Social acceptance of fossil fuels

In order to simulate social acceptance of fossil fuels, extraction costs and use costs are translated into a yearly technical change on extraction cost and a cost adder according to the assumptions made in Table 2 of the manuscript and detailed in Table C1.3 (Calvin et al., 2019)

	Cost Adder ($/GJ)		Technical Change on Extraction Cost (% per year)	
	Medium	High	Medium	High
2015	0	0	0.005	0.01
2020	0.016	0	0.005	0.01
2025	0.032	0	0.005	0.01
2030	0.048	0	0.005	0.01
2035	0.064	0	0.005	0.01

2040	0.080	0	0.005	0.01
2045	0.096	0	0.005	0.01
2050	0.112	0	0.005	0.01
2055	0.128	0	0.005	0.01
2060	0.145	0	0.005	0.01
2065	0.161	0	0.005	0.01
2070	0.177	0	0.005	0.01
2075	0.193	0	0.005	0.01
2080	0.209	0	0.005	0.01
2085	0.225	0	0.005	0.01
2090	0.241	0	0.005	0.01
2095	0.257	0	0.005	0.01
2100	0.273	0	0.005	0.01

Table C1.3|: Quantitative evolution of the cost adder and technical change on extraction cost assumptions corresponding to the configurations detailed in Table 2

3.1.5. Energy and meat demand

In the mitigation narrative *Lesser & Greener*, energy and food demand assumptions from the Shared Socioeconomic Pathway reflecting Sustainability (SSP1) were used. These assumptions reduce demand in 5 different sectors:

- Food: substitution of protein demand away from ruminant meat (1% reduced preference for each 1% increase in GDP)
- Buildings: reduced demand for residential and commercial floorspace, reduced non-thermal residential and commercial energy use (10% lower satiation levels, e.g. the desired level of demand if income were not a constraining factor), and a substitution away from coal use for heating (1.5% reduced preference for each 1% increase in GDP).
- Transportation: reduced demand through lower income elasticity for passenger (20% lower) and freight (33% lower) transport, and higher fuel efficiency in passenger transport (16.5%, 27% and 31% higher by 2030, 2050 and 2100 respectively).
- Industry: lower elasticity of industrial production to GDP (0 to 21% lower average 2020-2100 elasticity, depending on region)
- Cement: lower elasticity of cement production to GDP (0 to 32% lower average 2020-2100 elasticity, depending on region)

3.2. Carbon prices

GCAM translates policies into economy-wide carbon prices which vary among regions but gradually converge towards the end of the century to simulate global cooperation in climate ambition as described in Kriegler et al. (2014). These carbon prices are detailed in Tables C2.1 to C2.4,

Scenario	Region	2030	2050	2070	2090	2100
EC	Africa_Eastern	28.28	149.84	639.60	2456.79	4700.96
EC	Africa_Northern	31.57	156.53	651.31	2468.18	4700.96
EC	Africa_Southern	14.07	120.96	589.05	2407.63	4700.96
EC	Africa_Western	14.06	120.93	589.00	2407.58	4700.96
EC	Argentina	51.59	197.24	722.58	2537.50	4700.96
EC	Australia_NZ	81.24	257.48	828.06	2640.08	4700.96
EC	Brazil	34.76	163.02	662.68	2479.24	4700.96
EC	Canada	70.22	235.09	788.85	2601.95	4700.96
EC	Central America and Caribbean	18.68	130.34	605.46	2423.59	4700.96
EC	Central Asia	52.88	199.85	727.15	2541.95	4700.96
EC	China	10.48	113.66	576.28	2395.20	4700.96
EC	Colombia	22.81	138.73	620.15	2437.88	4700.96
EC	EU	57.62	209.49	744.03	2558.36	4700.96
EC	Europe_Eastern	3.16	98.78	550.21	2369.86	4700.96
EC	Europe_Non_EU	6.84	106.27	563.33	2382.62	4700.96
EC	European Free Trade Association	113.60	323.27	943.22	2752.09	4700.96
EC	India	0.00	92.36	538.98	2358.93	4700.96
EC	Indonesia	0.00	92.36	538.98	2358.93	4700.96
EC	Japan	53.36	200.81	728.85	2543.59	4700.96
EC	Mexico	62.25	218.90	760.51	2574.39	4700.96
EC	Middle East	19.50	132.01	608.38	2426.43	4700.96
EC	Pakistan	0.00	92.36	538.98	2358.93	4700.96
EC	Russia	13.30	119.40	586.32	2404.97	4700.96
EC	South Africa	74.92	244.64	805.57	2618.22	4700.96
EC	South America_Northern	0.00	92.36	538.98	2358.93	4700.96
EC	South America_Southern	33.42	160.29	657.90	2474.59	4700.96
EC	South Asia	18.53	130.02	604.90	2423.05	4700.96
EC	South Korea	74.57	243.94	804.35	2617.02	4700.96
EC	Southeast Asia	47.37	188.64	707.53	2522.86	4700.96
EC	USA	88.15	271.54	852.66	2664.01	4700.96

Table. C2.1 | Equivalent carbon prices in 1990USD per ton of CO2 for all the GCAM regions in the *Electrification and Conservation* scenario

Scenario	Region	2030	2050	2070	2090	2100

FF	Africa_Eastern	16.60	111.16	506.14	2007.29	3881.80
FF	Africa_Northern	23.54	125.75	531.69	2032.13	3881.80
FF	Africa_Southern	3.50	83.62	457.93	1960.39	3881.80
FF	Africa_Western	1.59	79.62	450.92	1953.58	3881.80
FF	Argentina	36.85	153.72	580.66	2079.76	3881.80
FF	Australia_NZ	70.47	224.40	704.39	2200.09	3881.80
FF	Brazil	12.20	101.91	489.96	1991.54	3881.80
FF	Canada	31.66	142.82	561.57	2061.19	3881.80
FF	Central America and Caribbean	15.35	108.54	501.55	2002.82	3881.80
FF	Central Asia	48.44	178.09	623.32	2121.25	3881.80
FF	China	11.58	100.61	487.67	1989.32	3881.80
FF	Colombia	16.05	110.01	504.13	2005.33	3881.80
FF	EU	53.60	188.94	642.32	2139.73	3881.80
FF	Europe_Eastern	3.37	83.35	457.45	1959.93	3881.80
FF	Europe_Non_EU	7.14	91.27	471.33	1973.43	3881.80
FF	European Free Trade Association	90.71	266.94	778.86	2272.52	3881.80
FF	India	0.00	76.27	445.06	1947.88	3881.80
FF	Indonesia	0.00	76.27	445.06	1947.88	3881.80
FF	Japan	52.76	187.17	639.22	2136.71	3881.80
FF	Mexico	57.85	197.87	657.95	2154.93	3881.80
FF	Middle East	17.34	112.71	508.86	2009.92	3881.80
FF	Pakistan	0.00	76.27	445.06	1947.88	3881.80
FF	Russia	7.37	91.76	472.19	1974.26	3881.80
FF	South Africa	71.42	226.40	707.90	2203.51	3881.80
FF	South America_Northern	0.00	76.27	445.06	1947.88	3881.80
FF	South America_Southern	24.12	126.98	533.84	2034.22	3881.80
FF	South Asia	16.37	110.68	505.31	2006.47	3881.80
FF	South Korea	75.03	233.99	721.18	2216.42	3881.80
FF	Southeast Asia	32.30	144.16	563.91	2063.47	3881.80
FF	USA	81.96	248.55	746.66	2241.21	3881.80

Table. C2.2 | Equivalent carbon prices in 1990USD per ton of CO2 for all the GCAM regions in the *Fores and Fossils* and Conservation scenario

Scenario	Region	2030	2050	2070	2090	2100
BC	Africa_Eastern	27.67	81.68	202.64	465.52	692.50
BC	Africa_Northern	22.23	74.50	194.86	460.83	692.50
BC	Africa_Southern	13.48	62.94	182.33	453.29	692.50
BC	Africa_Western	14.19	63.87	183.34	453.90	692.50
BC	Argentina	50.18	111.43	234.87	484.92	692.50
BC	Australia_NZ	79.21	149.78	276.43	509.95	692.50
BC	Brazil	34.16	90.27	211.94	471.12	692.50
BC	Canada	69.34	136.74	262.30	501.44	692.50
BC	Central America and Caribbean	17.18	67.83	187.62	456.48	692.50

BC	Central Asia	51.39	113.03	236.61	485.97	692.50
BC	China	10.01	58.36	177.36	450.30	692.50
BC	Colombia	22.41	74.73	195.11	460.98	692.50
BC	EU	53.74	116.13	239.97	487.99	692.50
BC	Europe_Eastern	3.05	49.16	167.39	444.30	692.50
BC	Europe_Non_EU	6.05	53.13	171.70	446.89	692.50
BC	European Free Trade Association	85.40	157.96	285.30	515.28	692.50
BC	India	0.00	45.13	163.03	441.67	692.50
BC	Indonesia	0.00	45.13	163.03	441.67	692.50
BC	Japan	51.27	112.87	236.44	485.87	692.50
BC	Mexico	57.28	120.81	245.04	491.05	692.50
BC	Middle East	15.40	65.48	185.08	454.95	692.50
BC	Pakistan	0.00	45.13	163.03	441.67	692.50
BC	Russia	13.26	62.66	182.02	453.10	692.50
BC	South Africa	67.70	134.57	259.95	500.02	692.50
BC	South America_Northern	0.00	45.13	163.03	441.67	692.50
BC	South America_Southern	32.41	87.95	209.43	469.61	692.50
BC	South Asia	14.54	64.34	183.85	454.21	692.50
BC	South Korea	76.09	145.66	271.97	507.26	692.50
BC	Southeast Asia	44.57	104.02	226.84	480.09	692.50
BC	USA	82.48	154.11	281.12	512.77	692.50

Table. C2.3 | Equivalent carbon prices in 1990USD per ton of CO2 for all the GCAM regions in the *Bioenergy and Capture* scenario

Scenario	Region	2030	2050	2070	2090	2100
LG	Africa_Eastern	1.55	64.06	297.16	1060.69	1914.36
LG	Africa_Northern	9.43	80.37	320.76	1079.67	1914.36
LG	Africa_Southern	2.12	64.54	297.85	1061.25	1914.36
LG	Africa_Western	0.18	62.53	294.94	1058.91	1914.36
LG	Argentina	29.97	112.69	367.51	1117.26	1914.36
LG	Australia_NZ	68.66	178.36	462.55	1193.66	1914.36
LG	Brazil	22.02	98.55	347.07	1100.82	1914.36
LG	Canada	59.80	160.92	437.31	1173.37	1914.36
LG	Central America and Caribbean	4.06	70.04	305.81	1067.65	1914.36
LG	Central Asia	42.95	135.84	401.01	1144.19	1914.36
LG	China	4.06	70.88	307.01	1068.62	1914.36
LG	Colombia	0.39	63.31	296.07	1059.82	1914.36
LG	EU	51.34	143.60	412.25	1153.22	1914.36
LG	Europe_Eastern	1.22	63.37	296.15	1059.89	1914.36
LG	Europe_Non_EU	1.25	65.41	299.10	1062.26	1914.36
LG	European Free Trade Association	107.00	211.94	511.14	1232.71	1914.36
LG	India	0.00	60.55	292.08	1056.61	1914.36

LG	Indonesia	0.00	60.55	292.08	1056.61	1914.36
LG	Japan	50.69	143.48	412.07	1153.07	1914.36
LG	Mexico	45.66	139.09	405.72	1147.97	1914.36
LG	Middle East	13.29	81.55	322.46	1081.04	1914.36
LG	Pakistan	0.00	60.55	292.08	1056.61	1914.36
LG	Russia	7.82	75.24	313.33	1073.69	1914.36
LG	South Africa	71.26	175.68	458.67	1190.53	1914.36
LG	South America_Northern	0.00	60.55	292.08	1056.61	1914.36
LG	South America_Southern	10.43	81.00	321.66	1080.39	1914.36
LG	South Asia	3.59	70.57	306.57	1068.26	1914.36
LG	South Korea	71.70	183.27	469.66	1199.37	1914.36
LG	Southeast Asia	29.28	116.25	372.67	1121.40	1914.36
LG	USA	82.27	194.45	485.83	1212.37	1914.36

Table. C2.4 | Equivalent carbon prices in 1990USD per ton of CO2 for all the GCAM regions in the *Lifestyle* scenario

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