

Appendix 2C: Medium chance scenarios

Data for scenarios with a medium (50–66 per cent) chance of limiting warming to below 2 °C relative to preindustrial during the 21st century.

Medium chance (50–66 per cent)		Global carbon budgets (global total CO ₂ emissions, Gt)			
Limited action until 2020 and cost-optimal mitigation afterwards					
Scenarios relying on net negative CO ₂ emissions from energy and industry during the 21 st century		Number of available scenarios: 4 Year of annual net global CO ₂ (including LULUCF) emissions becoming zero*: 2065 (2065–2065) Average annual reduction rates from 2020 to 2050: 3.0 (2.8–3.3) %/year			
<i>Time window</i>		<i>2015–2025</i>	<i>2025–2050</i>	<i>2050–2075</i>	<i>2075–2100</i>
20 th percentile		369	684	69	-237
median		383	686	91	-225
80 th percentile		396	693	113	-212
Scenarios NOT relying on net negative CO ₂ emissions from energy and industry during the 21 st century		Number of available scenarios: 0 (none) Year of annual net global CO ₂ (including LULUCF) emissions becoming zero*: no data Average annual reduction rates from 2020 to 2050: no data			
<i>Time window</i>		<i>2015–2025</i>	<i>2025–2050</i>	<i>2050–2075</i>	<i>2075–2100</i>
20 th percentile		No data	No data	No data	No data
median		No data	No data	No data	No data
80 th percentile		No data	No data	No data	No data
Cost-optimal mitigation from 2010 onwards					
Scenarios relying on net negative CO ₂ emissions from energy and industry during the 21 st century		Number of available scenarios: 43 Year of annual net global CO ₂ (including LULUCF) emissions becoming zero*: 2075 (2070–2075) Average annual reduction rates from 2020 to 2050: 2.8 (2.4–3.1) %/year			
<i>Time window</i>		<i>2015–2025</i>	<i>2025–2050</i>	<i>2050–2075</i>	<i>2075–2100</i>
20 th percentile		326	542	94	-237
median		343	597	154	-190
80 th percentile		357	671	171	-153
Scenarios NOT relying on net negative CO ₂ emissions from energy and industry during the 21 st century		Number of available scenarios: 16 Year of annual net global CO ₂ (including LULUCF) emissions becoming zero*: 2100 (2090–after 2100) Average annual reduction rates from 2020 to 2050: 1.7 (0.7–3.4) %/year			
<i>Time window</i>		<i>2015–2025</i>	<i>2025–2050</i>	<i>2050–2075</i>	<i>2075–2100</i>
20 th percentile		210	504	155	7
median		260	512	252	129
80 th percentile		323	534	262	161
* Rounded to nearest 5 years. Format: median (20 th –80 th percentile)					

Table 1: Overview of carbon budgets over time between 2015 and 2100 consistent with scenarios with a medium chance of limiting global temperature increase to below 2 °C during the 21st century. Global carbon budgets are provided for total global CO₂ emissions.

Medium chance (50–66 per cent)	Annual emissions of all Kyoto greenhouse gases (Kyoto-GHG) (Gt CO ₂ e)				
Limited action until 2020 and cost-optimal mitigation afterwards					
Scenarios relying on net negative CO ₂ emissions from energy and industry during the 21 st century	Number of available scenarios: 4 Year of annual net global Kyoto-GHG emissions becoming zero†: 2095 (2095–2095) Average annual reduction rates from 2020 to 2050: 2.1 (1.9-2.3) %/year				
<i>Year</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2050</i>	<i>2100</i>
median*	53	50	47	28	-1
range and spread**	50(51/55)55	48(49/51)52	46(46/48)48	27(27/28)29	-2(-2/-1)-1
Scenarios NOT relying on net negative CO ₂ emissions from energy and industry during the 21 st century	Number of available scenarios: 0 (none) Year of annual net global Kyoto-GHG emissions becoming zero†: no data Average annual reduction rates from 2020 to 2050: no data				
<i>Year</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2050</i>	<i>2100</i>
median*	no data	no data	no data	no data	no data
range and spread**	no data	no data	no data	no data	no data
Cost-optimal mitigation from 2010 afterwards					
Scenarios relying on net negative CO ₂ emissions from energy and industry during the 21 st century	Number of available scenarios: 43 Year of annual net global Kyoto-GHG emissions becoming zero†: 2095 (2090–after 2100) Average annual reduction rates from 2020 to 2050: 1.9 (1.7-2.1) %/year				
<i>Year</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2050</i>	<i>2100</i>
median*	47	44	42	27	-2
range and spread**	42(45/48)51	38(42/47)51	35(38/45)50	19(24/28)34	-8(-4/1)10
Scenarios NOT relying on net negative CO ₂ emissions from energy and industry during the 21 st century	Number of available scenarios: 16 Year of annual net global Kyoto-GHG emissions becoming zero†: after 2100 (after 2100–after 2100) Average annual reduction rates from 2020 to 2050: 1.0 (0.2-2.1) %/year				
<i>Year</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2050</i>	<i>2100</i>
median*	37	37	36	27	14
range and spread**	28(31/45)49	30(32/43)46	32(34/41)44	21(24/29)32	5(10/17)19
* Rounded to the nearest 1 Gt CO ₂ e/yr					
** Rounded to the nearest 1 Gt CO ₂ e/yr. Format: minimum value (20 th percentile/80 th percentile) maximum value					
† Rounded to nearest 5 years. Format: median (20 th –80 th percentile)					

Table 2: Overview of annual Kyoto greenhouse gas (Kyoto-GHG) emissions in 2020, 2025, 2030, 2050 and 2100 consistent with scenarios with a medium chance of limiting global temperature increase to below 2 °C during the 21st century, respectively.