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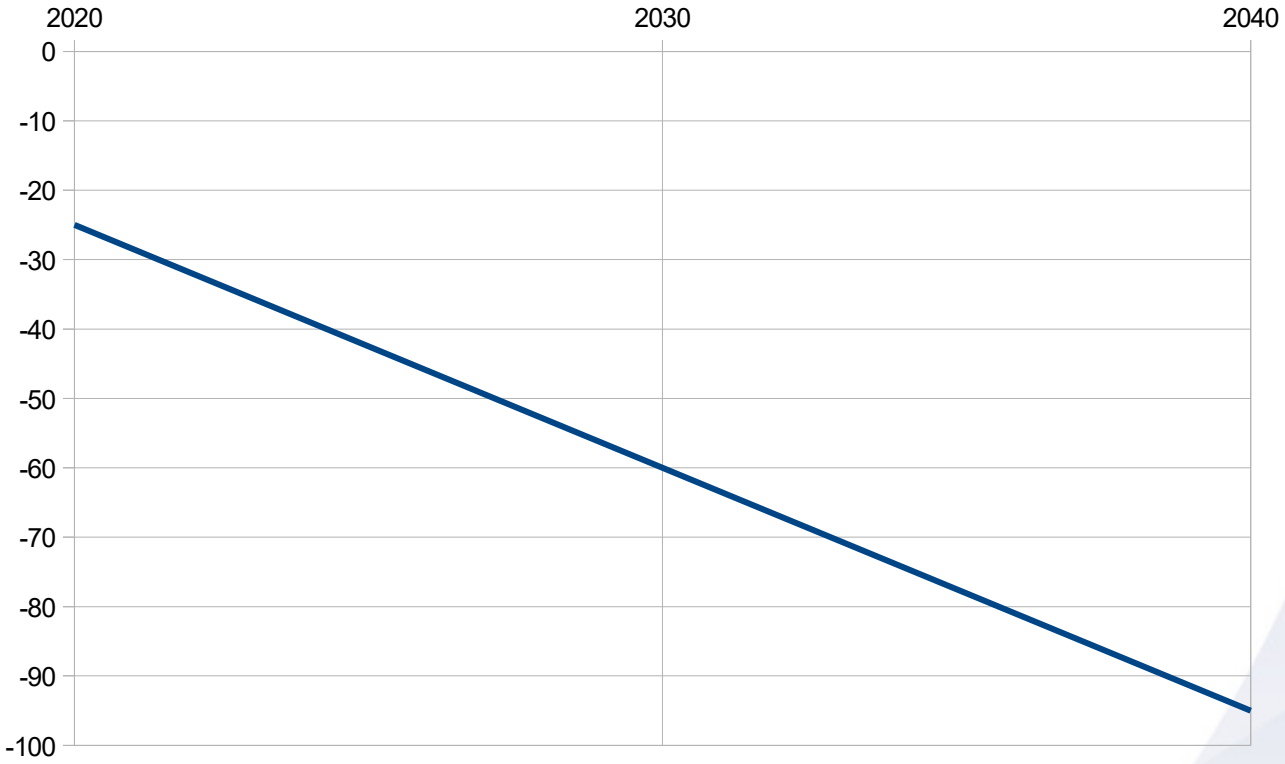
Net zero by 2040 and our 2030 targets

Brussels, 23 October 2018

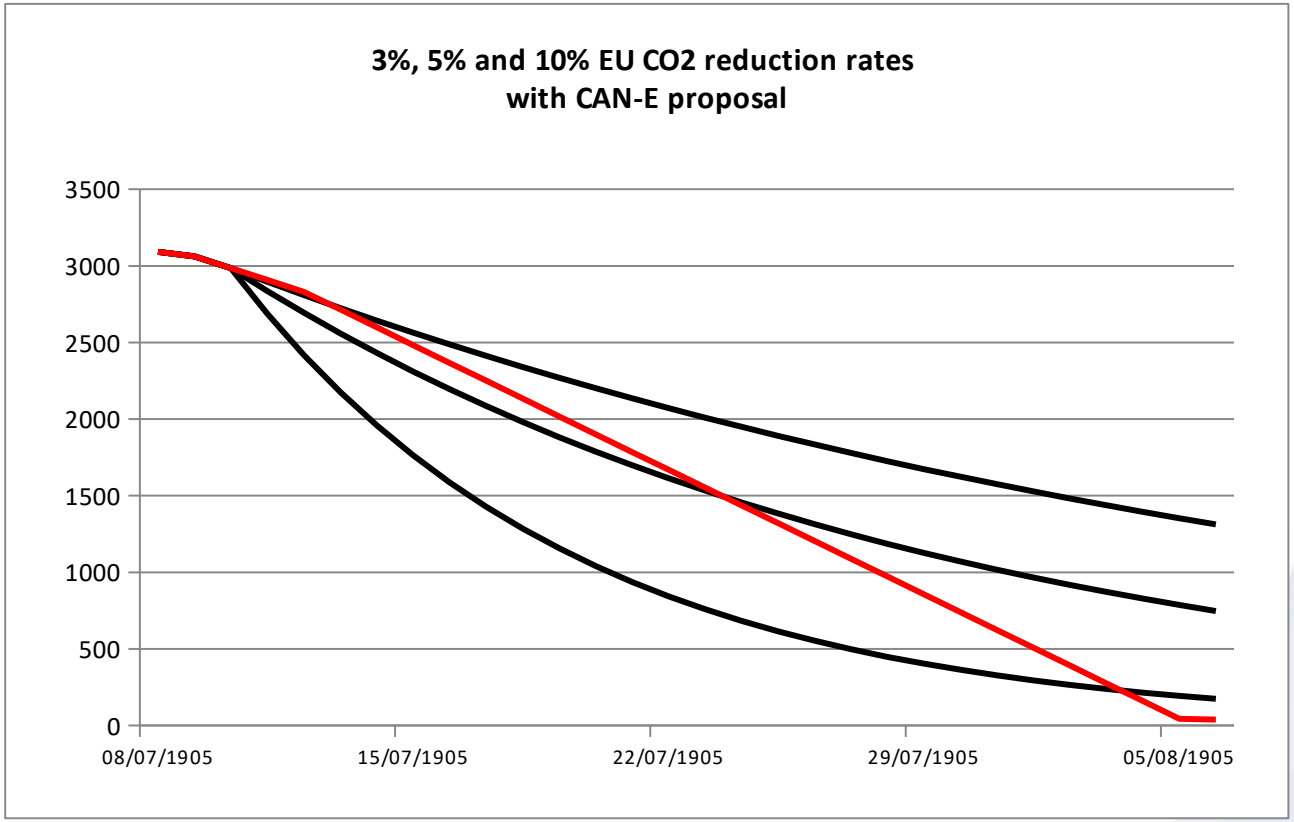
Linear approach

Assume: -95%/2040 and linear from -25%/2020 = -60%/2030



Non linear approach

(E.g. WWF EPO proposal)



IPCC (1)

Global indicators	P1
Pathway classification	No or low overshoot
CO_2 emission change in 2030 (% rel to 2010)	-58
↳ in 2050 (% rel to 2010)	-93
Kyoto-GHG emissions* in 2030 (% rel to 2010)	-50
↳ in 2050 (% rel to 2010)	-82
Final energy demand** in 2030 (% rel to 2010)	-15
↳ in 2050 (% rel to 2010)	-32
Renewable share in electricity in 2030 (%)	60
↳ in 2050 (%)	77
Primary energy from coal in 2030 (% rel to 2010)	-78
↳ in 2050 (% rel to 2010)	-97

-50% compared to 2010 is -57% compared to 1990

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IPCC (2)

Primary energy from coal in 2030 (% rel to 2010)	-78
↳ in 2050 (% rel to 2010)	-97
from oil in 2030 (% rel to 2010)	-37
↳ in 2050 (% rel to 2010)	-87
from gas in 2030 (% rel to 2010)	-25
↳ in 2050 (% rel to 2010)	-74
from nuclear in 2030 (% rel to 2010)	59
↳ in 2050 (% rel to 2010)	150
from biomass in 2030 (% rel to 2010)	-11
↳ in 2050 (% rel to 2010)	-16
from non-biomass renewables in 2030 (% rel to 2010)	430
↳ in 2050 (% rel to 2010)	832
Cumulative CCS until 2100 ($GtCO_2$)	0
↳ of which BECCS ($GtCO_2$)	0
Land area of bioenergy crops in 2050 (million hectare)	22

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Table 2.4: Emissions in 2030, 2050 and 2100 in 1.5°C and 2°C scenario classes and absolute annual rates of change between 2010–2030, 2020–2030 and 2030–2050, respectively. Values show: median (25th and 75th percentile), across available scenarios. If less than seven scenarios are available (*), the minimum-maximum range given instead. For the timing of global zero of total net CO_2 and Kyoto-GHG emissions, the interquartile range is given. Kyoto-GHG emissions are aggregated with GWP-100 values from IPCC AR4. 2010 emissions for total net CO_2, CO_2 from fossil-fuel use & industry, and AFOLU CO_2 are estimated at 38.5, 33.4, and 5 GtCO respectively (Le Quéré et al., 2018). A difference is reported in estimating the "anthropogenic" sink by countries or the global carbon modelling community (Grassi al., 2017), and AFOLU CO_2 estimates reported here are thus not necessarily comparable with countries' estimates. Scenarios with year-2010 Kyoto-GHG emissions outside the range assessed by IPCC AR5 WGIII are excluded (IPCC, 2014b).

	type					Absolute annual change (GtCO2/yr)			Timing of global zero
name	category	count	2030	2050	2100	2010-2030	2020-2030	2030-2050	year
Total CO_2 (net)	Below-1.5°C	5	13 (11 15)	-3 (-11 2)	-8 (-14 -3)	-1.2 (-1.3 -1.0)	-2.5 (-2.8 -1.8)	-0.8 (-1.2 -0.7)	(2037 2054)
	1.5°C-low-OS	37	21 (18 22)	0 (-2 3)	-11 (-14 -8)	-0.8 (-1 -0.7)	-1.7 (-2.3 -1.4)	-1 (-1.2 -0.8)	(2047 2055)
	1.5°C-high-OS	36	29 (26 36)	1 (-1 6)	-14 (-16 -11)	-0.4 (-0.6 0)	-1.1 (-1.5 -0.5)	-1.3 (-1.8 -1.1)	(2049 2059)
	Lower-2°C	67	27 (22 30)	9 (7 13)	-4 (-9 0)	-0.5 (-0.7 -0.3)	-1.2 (-1.9 -0.9)	-0.8 (-1 -0.6)	(2065 2096)
	Higher-2°C	54	33 (31 35)	18 (12 19)	-3 (-11 1)	-0.2 (-0.4 0)	-0.7 (-0.9 -0.5)	-0.8 (-1 -0.6)	(2070 post-2100)
CO_2 from fossil fuels and industry (gross)	Below-1.5°C	5	18 (14 21)	10 (0 21)	8 (0 12)	-0.7 (-1.0 -0.6)	-1.5 (-2.2 -0.9)	-0.4 (-0.7 -0.0)	-
	1.5°C-low-OS	37	22 (19 24)	10 (8 14)	6 (3 8)	-0.5 (-0.6 -0.4)	-1.3 (-1.7 -0.9)	-0.6 (-0.7 -0.5)	-
	1.5°C-high-OS	36	28 (26 37)	13 (12 17)	7 (3 9)	-0.2 (-0.3 0.2)	-0.8 (-1.1 -0.2)	-0.7 (-1 -0.6)	-
	Lower-2°C	67	26 (21 31)	14 (11 18)	8 (4 10)	-0.3 (-0.6 -0.1)	-0.9 (-1.4 -0.6)	-0.6 (-0.7 -0.4)	-
	Higher-2°C	54	31 (29 33)	19 (17 23)	8 (5 11)	-0.1 (-0.2 0.1)	-0.5 (-0.7 -0.2)	-0.6 (-0.7 -0.5)	-
CO_2 from fossil fuels and industry (net)	Below-1.5°C	5	16 (13 18)	1 (0 7)	-3 (-10 0)	-0.8 (-1.0 -0.7)	-1.8 (-2.2 -1.2)	-0.6 (-0.9 -0.5)	-
	1.5°C-low-OS	37	21 (18 22)	3 (-1 6)	-9 (-12 -4)	-0.6 (-0.7 -0.5)	-1.4 (-1.8 -1.1)	-0.8 (-1.1 -0.7)	-
	1.5°C-high-OS	36	27 (25 35)	4 (1 10)	-11 (-13 -7)	-0.3 (-0.3 0.1)	-0.9 (-1.2 -0.3)	-1.2 (-1.5 -0.9)	-
	Lower-2°C	67	26 (21 30)	11 (8 14)	-2 (-5 2)	-0.3 (-0.6 -0.1)	-1 (-1.4 -0.6)	-0.7 (-1 -0.4)	-
	Higher-2°C	54	31 (29 33)	17 (13 19)	-3 (-8 3)	-0.1 (-0.2 0.1)	-0.5 (-0.7 -0.2)	-0.7 (-1 -0.5)	-
CO_2 from AFOLU	Below-1.5°C	5	-2 (-5 0)	-4 (-11 -1)	-4 (-5 -3)	-0.3 (-0.4 -0.2)	-0.5 (-0.8 -0.4)	-0.1 (-0.4 0)	-
	1.5°C-low-OS	37	0 (-1 1)	-2 (-4 -1)	-2 (-4 -1)	-0.2 (-0.3 -0.2)	-0.4 (-0.5 -0.3)	-0.1 (-0.2 -0.1)	-
	1.5°C-high-OS	36	1 (0 3)	-2 (-5 0)	-2 (-5 -1)	-0.1 (-0.3 -0.1)	-0.2 (-0.5 -0.1)	-0.2 (-0.3 0)	-
	Lower-2°C	67	1 (0 2)	-2 (-3 -1)	-2 (-4 -1)	-0.2 (-0.3 -0.1)	-0.3 (-0.4 -0.2)	-0.2 (-0.2 -0.1)	-
	Higher-2°C	54	2 (1 3)	0 (-2 2)	-1 (-4 0)	-0.2 (-0.2 -0.1)	-0.2 (-0.4 -0.1)	-0.1 (-0.1 0)	-
Bioenergy combined with carbon capture and storage (BECCS)	Below-1.5°C	5	0 (-1 0)	-3 (-8 0)	-6 (-13 0)	0 (-0.1 0)	0 (-0.1 0)	-0.2 (-0.4 0)	-
	1.5°C-low-OS	37	0 (-1 0)	-5 (-6 -4)	-12 (-16 -7)	0 (-0.1 0)	0 (-0.1 0)	-0.2 (-0.3 -0.2)	-
	1.5°C-high-OS	36	0 (0 0)	-7 (-9 -4)	-15 (-16 -12)	0 (0 0)	0 (0 0)	-0.3 (-0.4 -0.2)	-
	Lower-2°C	54	0 (0 0)	-4 (-5 -2)	-10 (-12 -7)	0 (0 0)	0 (0 0)	-0.2 (-0.2 -0.1)	-
	Higher-2°C	47	0 (0 0)	-3 (-5 -2)	-11 (-15 -8)	0 (0 0)	0 (0 0)	-0.1 (-0.2 -0.1)	-
Kyoto GHG (AR4) [$GtCO_2e$]	Below-1.5°C	5	22 (21 23)	3 (-3 8)	-3 (-11 3)	-1.4 (-1.5 -1.3)	-2.9 (-3.3 -2.1)	-0.9 (-1.3 -0.7)	(2044 post-2100)
	1.5°C-low-OS	31	28 (26 31)	7 (5 10)	-4 (-8 -2)	-1.1 (-1.2 -0.9)	-2.3 (-2.8 -1.8)	-1.1 (-1.2 -0.9)	(2061 2080)
	1.5°C-high-OS	32	40 (36 49)	8 (6 12)	-9 (-11 -6)	-0.5 (-0.7 0)	-1.3 (-1.8 -0.6)	-1.5 (-2.1 -1.3)	(2058 2067)
	Lower-2°C	59	38 (31 43)	17 (14 20)	3 (0 7)	-0.6 (-1 -0.3)	-1.8 (-2.4 -1.1)	-1 (-1.1 -0.6)	(2099 post-2100)
	Higher-2°C	42	45 (39 49)	26 (23 28)	5 (-5 11)	-0.2 (-0.6 0)	-1 (-1.2 -0.6)	-1 (-1.2 -0.7)	(2085 post-2100)

IPCC (3)

	type		
name	category	count	2030
Total CO_2 (net)	Below-1.5°C	5	13 (11 15)
	1.5°C-low-OS	37	21 (18 22)
	1.5°C-high-OS	36	29 (26 36)
	Lower-2°C	67	27 (22 30)
	Higher-2°C	54	33 (31 35)
CO_2 from fossil fuels and industry (gross)	Below-1.5°C	5	18 (14 21)
	1.5°C-low-OS	37	22 (19 24)
	1.5°C-high-OS	36	28 (26 37)
	Lower-2°C	67	26 (21 31)
	Higher-2°C	54	31 (29 33)
CO_2 from fossil fuels and industry (net)	Below-1.5°C	5	16 (13 18)
	1.5°C-low-OS	37	21 (18 22)
	1.5°C-high-OS	36	27 (25 35)
	Lower-2°C	67	26 (21 30)
	Higher-2°C	54	31 (29 33)

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IPCC (2)

CO_2 from AFOLU	Below-1.5°C	5	-2 (-5 0)
	1.5°C-low-OS	37	0 (-1 1)
	1.5°C-high-OS	36	1 (0 3)
	Lower-2°C	67	1 (0 2)
	Higher-2°C	54	2 (1 3)
Bioenergy combined with carbon capture and storage (BECCS)	Below-1.5°C	5	0 (-1 0)
	1.5°C-low-OS	37	0 (-1 0)
	1.5°C-high-OS	36	0 (0 0)
	Lower-2°C	54	0 (0 0)
	Higher-2°C	47	0 (0 0)
Kyoto GHG (AR4) [$GtCO_2e$]	Below-1.5°C	5	22 (21 23)
	1.5°C-low-OS	31	28 (26 31)
	1.5°C-high-OS	32	40 (36 49)
	Lower-2°C	59	38 (31 43)
	Higher-2°C	42	45 (39 49)

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