

Science and policy characteristics of the Paris Agreement temperature goal

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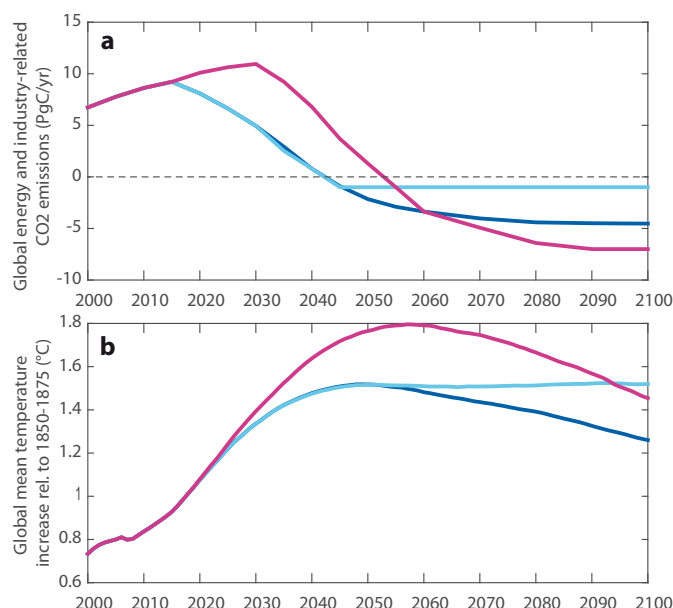
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Supplementary Figure 1 | Illustration of the trade-offs between near-term mitigation action and long-term dependency on negative emissions technologies. **a**, Global CO₂ emissions from energy and industry-related sources. **b**, The corresponding GMT response simulated with the MAGICC model^{1,2}. Peaking global CO₂ emissions from energy and industry in 2015, instead of 2030, combined with accelerated decarbonisation over the next three decades can avoid the requirement of achieving massive negative CO₂ emissions at the global scale to keep warming to below 1.5°C during this century (light blue vs fuchsia lines). Even extremely large global negative CO₂ emissions by the end of the century can only barely bring global temperatures back to below 1.5°C by 2100 following a delay of global full decarbonisation by about a decade (fuchsia lines). On the other hand, early action allows to take stock by mid-century and decide whether CO₂ mitigation is to be continued (light blue) or further accelerated (dark blue), in light of the then available scientific evidence.

Supplementary Table 1 | Cumulative CO₂ storage in 1.5°C and 2°C scenarios. Numbers are based on a like-with-like comparison of 1.5°C and 2°C scenarios from an ensemble of opportunity: all other assumptions remain equal (e.g. on energy demand, or portfolio of technological options). Median values are highlighted in bold and the values in parenthesis give the 15th-85th percentile range. Values rounded to nearest 5 GtCO₂. Based on ref. 3.

	Until 2050 GtCO ₂	Until 2100 GtCO ₂
Total cumulative CO₂ storage		
<i>Returning warming to below 1.5°C by 2100 with 50% chance</i>	135 (100-235)	790 (420-1070)
<i>Holding warming to below 2°C during the 21st century with 66% chance</i>	105 (75-170)	790 (555-990)
Cumulative CO₂ storage from biomass energy		
<i>Returning warming to below 1.5°C by 2100 with 50% chance</i>	45 (5-165)	520 (155-955)
<i>Holding warming to below 2°C during the 21st century with 66% chance</i>	22 (5-75)	440 (155-780)

Supplementary Table 2 | Overview of emissions scenarios underlying the Figures 2-4 of the main manuscript.

Model and scenario name are given as well as the original reference. Categorisations in the column 'Figure 2b' correspond to the classifications in Figure 2b of the main manuscript. See Supplementary Table 3 below for an overview of the categories. Categories in the column 'Figure 4' follow the reports referenced: The 'UNEP Gap 1.5C' category includes scenarios used in the 2015 UNEP Gap Report⁴ that limit global-mean temperature increase to below 1.5°C by 2100 with >50% probability starting from 2020 emissions higher than 50 GtCO₂-eq/yr (SAR GWP-100). The 'UNFCCC 2C' category is taken from the UNFCCC Synthesis report⁵ and includes scenarios that limit global-mean temperature increase to below 2°C over the 21st century with >66% probability, starting emissions reductions from 2020 (so-called "P2" scenarios). References are given below. Based on ref. 3,6-9.

Model Name	Scenario Name	Figure 2b	Figure 3	Figure 4	Source
GCAM2.0	AMECO2price\$50(5%p.a.)		Yes		IPCC AR5 Scenario Database
GCAM3.0	EMF27-450-Conv		Yes		IPCC AR5 Scenario Database
GCAM3.0	EMF27-450-LimBio		Yes		IPCC AR5 Scenario Database
GCAM3.0	EMF27-450-NoCCS		Yes		IPCC AR5 Scenario Database
IMAGE2.4	AME2.6W/m2OS	Cat 2	Yes		IPCC AR5 Scenario Database
MESSAGE	JR_GEAL_BACCESSC_30	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_BACCESSC_31	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_BACCESSC_32	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_BC_30	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_BC_31	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_BC_32	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_31	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_32	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_33	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_34	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_35	Cat 1	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_noNuke_30	Cat 2	Yes		Rogelj et al. 2013b
MESSAGE	JR_GEAL_EnvCons_29	Cat 2			Rogelj et al. 2013b
MESSAGE	JR_GEAL_BACCESSC_30	Cat 2			Rogelj et al. 2013b
REMIND	REMIND.Scen115	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen134	Cat 2	Yes		Luderer et al. 2013
REMIND	REMIND.Scen135	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen145	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen155	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen215	Cat 2	Yes	UNEP Gap 1.5C	Luderer et al. 2013
REMIND	REMIND.Scen235	Cat 1	Yes	UNEP Gap 1.5C	Luderer et al. 2013
REMIND	REMIND.Scen245		Yes	UNEP Gap 1.5C	Luderer et al. 2013
REMIND	REMIND.Scen255	Cat 3	Yes	UNEP Gap 1.5C	Luderer et al. 2013
REMIND	REMIND.Scen515	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen535	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen545	Cat 1	Yes		Luderer et al. 2013
REMIND	REMIND.Scen555	Cat 1	Yes		Luderer et al. 2013
MESSAGE	myo_L15_BC_a	Cat 2	Yes	UNEP Gap 1.5C	Rogelj et al. 2013a
MESSAGE	myo_L15_BC_c	Cat 2	Yes	UNEP Gap 1.5C	Rogelj et al. 2013a
MESSAGE	myo_L15_BC_d	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_L15_BC_e	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_L15_BC_f	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_L15_BC_gtris	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_AdvTrans_d	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_AdvTrans_e	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_AdvTrans_etris	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_RSnonCO2_d	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_RSnonCO2_e	Cat 2	Yes		Rogelj et al. 2013a
MESSAGE	myo_M15_RSnonCO2_etris	Cat 1	Yes		Rogelj et al. 2013a
MESSAGE	JR_GEAL_BACCESSC_29	Cat 3			Rogelj et al. 2013b
MESSAGE	JR_GEAL_BC_29	Cat 3			Rogelj et al. 2013b
MESSAGE	JR_GEAL_noNuke_29	Cat 3			Rogelj et al. 2013b
MESSAGE	JR_GEAL_EnvCons_27	Cat 4			Rogelj et al. 2013b
MESSAGE	JR_GEAL_EnvCons_28	Cat 4			Rogelj et al. 2013b
MESSAGE	JR_GEAL_BC_28	Cat 4			Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_28	Cat 4			Rogelj et al. 2013b
MESSAGE	JR_GEAL_RSnoCO2_29	Cat 4			Rogelj et al. 2013b
MESSAGE	JR_GEAL_noNuke_28	Cat 4			Rogelj et al. 2013b
GCAM2.0	AMECO2price\$30(5%p.a.)		Yes		IPCC AR5 Scenario Database
GCAM3.0	EMF27-450-EERE		Yes		IPCC AR5 Scenario Database
GCAM3.0	EMF27-450-FullTech		Yes		IPCC AR5 Scenario Database
GCAM3.1	LIMITS-450		Yes		IPCC AR5 Scenario Database
GCAM3.1	LIMITS-500	Cat 4	Yes		IPCC AR5 Scenario Database
GCAM3.1	LIMITS-RefPol-450		Yes	UNFCCC 2C	IPCC AR5 Scenario Database
GCAM3.1	LIMITS-RefPol-450-EE		Yes		IPCC AR5 Scenario Database
GCAM3.1	LIMITS-RefPol-450-PC		Yes		IPCC AR5 Scenario Database
GCAM3.1	LIMITS-StrPol-450		Yes	UNFCCC 2C	IPCC AR5 Scenario Database
GCAM3.1	LIMITS-StrPol-500	Cat 4	Yes	UNFCCC 2C	IPCC AR5 Scenario Database
IMAGE2.4	AMECO2price\$50(5%p.a.)		Yes		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-FullTech-OPT	Cat 5	Yes		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-LimSW-OPT	Cat 5	Yes		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-NucOff-OPT		Yes		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE3-CF450	Cat 5	Yes		IPCC AR5 Scenario Database

IMAGE2.4	EMF27-450-FullTech		Yes		IPCC AR5 Scenario Database
IMAGE2.4	EMF27-450-LimSW		Yes		IPCC AR5 Scenario Database
IMAGE2.4	EMF27-450-LowEI		Yes		IPCC AR5 Scenario Database
IMAGE2.4	EMF27-450-NucOff		Yes		IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-450	Cat 5	Yes		IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol-450		Yes	UNFCCC 2C	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol-450-EE		Yes		IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol-450-PC		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-Conv-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-EERE-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-FullTech-HST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-FullTech-LST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-FullTech-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LimBio-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LimSW-HST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LimSW-LST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LimSW-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LowEI-HST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LowEI-LST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-LowEI-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-NoCCS-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-NucOff-LST		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-450-NucOff-OPT		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-450		Yes		IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-CF450		Yes		IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-450-Conv		Yes		IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-450-LimBio		Yes		IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-450-LimSW		Yes		IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-450-LowEI		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	AMECO2price\$50(5%p.a.)	Cat 5	Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_adv.transp_limbe_limir		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_adv.transp_nbecs_nsink_limbe		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_adv.transp_nbecs_nonuc		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_conv.transp_limbe_limir		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_conv.transp_nbecs		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_conv.transp_nbecs_nsink_limbe		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_conv.transp_nbecs		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAEfficiency_450_conv.transp_nbecs_nonuc		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAMix_450_adv.transp_nbecs		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEAMix_450_conv.transp_nbecs		Yes		IPCC AR5 Scenario Database
MESSAGEV.3	GEASupply_450_adv.transp_nbecs		Yes		IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-450-EERE		Yes		IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-450-LimBio		Yes		IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-EERE-OPT		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-Conv		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-EERE		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-FullTech		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-LimBio		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-LimSW		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-LowEI		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-NoCCS		Yes		IPCC AR5 Scenario Database
REMIND1.5	EMF27-450-NucOff		Yes		IPCC AR5 Scenario Database
REMIND1.5	LIMITS-450	Cat 4	Yes		IPCC AR5 Scenario Database
REMIND1.5	LIMITS-RefPol-450	Cat 4	Yes	UNFCCC 2C	IPCC AR5 Scenario Database
REMIND1.5	LIMITS-RefPol-450-EE	Cat 4	Yes		IPCC AR5 Scenario Database
REMIND1.5	LIMITS-RefPol-450-PC	Cat 4	Yes		IPCC AR5 Scenario Database
REMIND1.5	LIMITS-StrPol-450	Cat 4	Yes	UNFCCC 2C	IPCC AR5 Scenario Database
GCAM2.0	AME3_7W/m2NTE		Yes		IPCC AR5 Scenario Database
GCAM2.0	AMECO2price\$10(5%p.a.)		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-Conv-HST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-Conv-LST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-Conv-OPT		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-EERE-HST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-EERE-LST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-EERE-OPT		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-FullTech-HST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-FullTech-LST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-FullTech-OPT	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimBio-HST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimBio-LST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimBio-OPT		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimSW-HST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimSW-LST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LimSW-OPT	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LowEI-HST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LowEI-LST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-LowEI-OPT	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NoCCS-HST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NoCCS-LST		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NoCCS-OPT		Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NucOff-HST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NucOff-LST	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-450-NucOff-OPT	Cat 6	Yes		IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-Conv-OPT		Yes		IPCC AR5 Scenario Database

GCAM3.0	AMPERE2-550-EERE-OPT		Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-FullTech-HST	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-FullTech-LST	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-FullTech-OPT	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-LimBio-OPT		Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-LimSW-OPT	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-LowEI-OPT	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-NoCCS-OPT		Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE2-550-NucOff-OPT	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-450	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-450P-CE	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-450P-EU	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-550	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-CF450	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-CF450P-EU	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	AMPERE3-CF550	Cat 6	Yes	IPCC AR5 Scenario Database
GCAM3.0	EMF27-FP-FullTech		Yes	IPCC AR5 Scenario Database
GCAM3.0	EMF27-G8-FullTech		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450DEF		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450FSGr		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450HICoal		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450HIFos		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450HIGas		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450LOFos		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450LOOil		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE450SLGr		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550DEF		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550FSGr		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550HICoal		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550HIFos		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550HIGas		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550HPop		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550LOFos		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550LOOil		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSE550SLGr		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSEWEAK-2020DEF		Yes	IPCC AR5 Scenario Database
GCAM3.0	ROSEWEAK-2030DEF		Yes	IPCC AR5 Scenario Database
GCAM3.1	LIMITS-StrPol		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AME3.7W/m2NTE		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMECO2price\$10(5%p.a.)		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMEReference		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol2030-500	Cat 6		IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol-500	Cat 6		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-LowEI-HST	Cat 6		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-LowEI-LST	Cat 6		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-450-LowEI-OPT	Cat 6		IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-550-FullTech-HST		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-550-FullTech-LST		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMPERE2-550-FullTech-OPT		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMPERE3-450P-EU		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMPERE3-550		Yes	IPCC AR5 Scenario Database
IMAGE2.4	AMPERE3-CF550		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-Conv		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-EERE		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-FullTech		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-LimBio		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-LimSW		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-LowEI		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-NoCCS		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-550-NucOff		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-FP-EERE		Yes	IPCC AR5 Scenario Database
IMAGE2.4	EMF27-FP-FullTech		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-500		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol-500		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-RefPol2030-500		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-StrPol		Yes	IPCC AR5 Scenario Database
IMAGE2.4	LIMITS-StrPol-500		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-Conv-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-EERE-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-FullTech-HST		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-FullTech-LST		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-FullTech-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-LimBio-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-LimSW-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-LowEI-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-NoCCS-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE2-550-NucOff-OPT		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-550		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-550P-EU		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-CF450P-EU		Yes	IPCC AR5 Scenario Database
MERGE-ETL_2011	AMPERE3-CF550		Yes	IPCC AR5 Scenario Database
MERGE_AME	AME3.7W/m2NTE		Yes	IPCC AR5 Scenario Database
MERGE_AME	AMECO2price\$10(5%p.a.)		Yes	IPCC AR5 Scenario Database
MERGE_AME	AMECO2price\$30(5%p.a.)		Yes	IPCC AR5 Scenario Database

UNFCCC 2C

MERGE_AME	AMECO2price\$50(5%p.a.)	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-Conv	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-EERE	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-FullTech	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-LimBio	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-LimSW	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-LimTech	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-LowEI	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-NoCCS	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-550-NucOff	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-FP-EERE	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-FP-FullTech	Yes	IPCC AR5 Scenario Database
MERGE_EMF27	EMF27-G8-FullTech	Yes	IPCC AR5 Scenario Database
MESSAGEV.2	RCP8.5_MIT_4.5W	Yes	IPCC AR5 Scenario Database
MESSAGEV.3	AME3.7W/m2NTE	Yes	IPCC AR5 Scenario Database
MESSAGEV.3	AMECO2price\$10(5%p.a.)	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-RefPol2030-500	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-RefPol-450-PC	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-RefPol-450-EE	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-450	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-500	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-RefPol-450	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-StrPol-450	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-RefPol-500	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	LIMITS-StrPol-500	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-FullTech-HST	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-LowEI-HST	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-NucOff-HST	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-LimSW-HST	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-LowEI-LST	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-LowEI-OPT	Cat 6	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-FullTech-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-450-NucOff-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-Conv-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-EERE-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-FullTech-HST	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-FullTech-LST	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-FullTech-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-LimBio-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-LimSW-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-LowEI-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-NoCCS-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE2-550-NucOff-OPT	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE3-450P-EU	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE3-550	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	AMPERE3-CF550	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-Conv	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-EERE	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-FullTech	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-LimBio	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-LimSW	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-LowEI	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-NoCCS	Yes	IPCC AR5 Scenario Database
MESSAGEV.4	EMF27-550-NucOff	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550DEF	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550FSGr	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550FSGrSLCon	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550HICoal	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550HIFos	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550HIGas	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550HIPop	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550LOFos	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550LOOil	Yes	IPCC AR5 Scenario Database
REMIND1.4	ROSE550SLGr	Yes	IPCC AR5 Scenario Database
REMIND1.5	LIMITS-RefPol2030-500	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	LIMITS-500	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	LIMITS-RefPol-500	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	LIMITS-StrPol-500	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-FullTech-HST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-LowEI-HST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-NucOff-HST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-FullTech-LST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-LowEI-LST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-NucOff-LST	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-450-LowEI-OPT	Cat 6	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-Conv-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-EERE-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-FullTech-HST	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-FullTech-LST	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-FullTech-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-LimBio-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-LimSW-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-LowEI-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-LowEI-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE2-550-NoCCS-OPT	Yes	IPCC AR5 Scenario Database

REMIND1.5	AMPERE2-550-NucOff-OPT	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE3-450P-EU	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE3-550	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE3-550P-EU	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE3-CF450P-EU	Yes	IPCC AR5 Scenario Database
REMIND1.5	AMPERE3-CF550	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-EERE	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-FullTech	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-LimBio	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-LimSW	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-LimTech	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-LowEI	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-NoCCS	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-550-NucOff	Yes	IPCC AR5 Scenario Database
REMIND1.5	EMF27-G8-FullTech	Yes	IPCC AR5 Scenario Database

Supplementary Table 3 | Scenario categories used in Figure 2b and Supplementary Table 2.

Label	Figure 2b Category
Cat 1	Warming likely below 2°C, with period above 1.5°C 0-50 years
Cat 2	Warming likely below 2°C, with period above 1.5°C 50-75 years, below before 2100
Cat 3	Warming likely below 2°C, with period above 1.5°C 50-75 years, below after 2100
Cat 4	Warming likely below 2°C, with period above 1.5°C 75-100 years
Cat 5	Warming likely below 2°C, with period above 1.5°C >100 years
Cat 6	Warming not likely below 2°C

Supplementary References

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