

SUPPLEMENTARY MATERIAL

Table S1. Combinations of global (GCM) and regional (RCM) climate models (M1-M29) as well as analyzed model run under the climate change scenarios RCP4.5 and RCP8.5.

Model	GCM	RCM	Run	RCP4.5	RCP8.5
M1	CM5A-MR	RACMO22E	r1i1p1		X
M2	CM5A-MR	WRF381P	r1i1p1	X	X
M3	CNRM-CM5	CCLM4-8-17	r1i1p1	X	X
M4	CNRM-CM5	RACMO22E	r1i1p1	X	X
M5	CNRM-CM5	RCA4	r1i1p1	X	X
M6	CNRM-CM5	WRF381P	r1i1p1		X
M7	EC-EARTH	CCLM4-8-17	r12i1p1	X	X
M8	EC-EARTH	RACMO22E	r12i1p1	X	X
M9	EC-EARTH	RACMO22E	r1i1p1	X	X
M10	EC-EARTH	RACMO22E	r3i1p1		X
M11	EC-EARTH	RCA4	r12i1p1	X	X
M12	EC-EARTH	RCA4	r1i1p1		X
M13	EC-EARTH	RCA4	r3i1p1		X
M14	IPSL-CM5A-MR	RCA4	r1i1p1	X	X
M15	MPI-ESM-LR	CCLM4-8-17	r1i1p1	X	X
M16	MPI-ESM-LR	COSMO-crCLIM-v1-1	r1i1p1		X
M17	MPI-ESM-LR	COSMO-crCLIM-v1-1	r2i1p1		X
M18	MPI-ESM-LR	RCA4	r1i1p1	X	X
M19	MPI-ESM-LR	RCA4	r2i1p1		X
M20	MPI-ESM-LR	RCA4	r3i1p1		X
M21	MPI-ESM-LR	REMO2009	r1i1p1	X	X
M22	MPI-ESM-LR	REMO2009	r2i1p1	X	X
M23	MPI-ESM-LR	RACMO22E	r1i1p1		X
M24	MPI-ESM-LR	REMO2015	r3i1p1		X
M25	NorESM1-M	COSMO-crCLIM-v1-1	r1i1p1		X
M26	NorESM1-M	RACMO22E	r1i1p1		X
M27	NorESM1-M	RCA4	r1i1p1		X
M28	NorESM1-M	REMO2015	r1i1p1		X
M29	NorESM1-M	WRF381P	r1i1p1		X

Table S2. Characteristics of the 96 evaluated repowering scenarios (S1-S96), including climate change scenarios (RCP), wind turbine type (WTT), geographical restriction criterion (GRC), and emission scenario (ES).

Scenario	RCP	WTT	GRC	ES	Scenario	RCP	WTT	GRC	ES
S1	4.5	1	W	1	S2	8.5	1	W	1
S3	4.5	1	W	2	S4	8.5	1	W	2
S5	4.5	1	W	3	S6	8.5	1	W	3
S7	4.5	1	W	4	S8	8.5	1	W	4
S9	4.5	1	M	1	S10	8.5	1	M	1
S11	4.5	1	M	2	S12	8.5	1	M	2
S13	4.5	1	M	3	S14	8.5	1	M	3
S15	4.5	1	M	4	S16	8.5	1	M	4
S17	4.5	1	S	1	S18	8.5	1	S	1
S19	4.5	1	S	2	S20	8.5	1	S	2
S21	4.5	1	S	3	S22	8.5	1	S	3
S23	4.5	1	S	4	S24	8.5	1	S	4
S25	4.5	2	W	1	S26	8.5	2	W	1
S27	4.5	2	W	2	S28	8.5	2	W	2
S29	4.5	2	W	3	S30	8.5	2	W	3
S31	4.5	2	W	4	S32	8.5	2	W	4
S33	4.5	2	M	1	S34	8.5	2	M	1
S35	4.5	2	M	2	S36	8.5	2	M	2
S37	4.5	2	M	3	S38	8.5	2	M	3
S39	4.5	2	M	4	S40	8.5	2	M	4
S41	4.5	2	S	1	S42	8.5	2	S	1
S43	4.5	2	S	2	S44	8.5	2	S	2
S45	4.5	2	S	3	S46	8.5	2	S	3
S47	4.5	2	S	4	S48	8.5	2	S	4
S49	4.5	3	W	1	S50	8.5	3	W	1
S51	4.5	3	W	2	S52	8.5	3	W	2
S53	4.5	3	W	3	S54	8.5	3	W	3
S55	4.5	3	W	4	S56	8.5	3	W	4
S57	4.5	3	M	1	S58	8.5	3	M	1
S59	4.5	3	M	2	S60	8.5	3	M	2
S61	4.5	3	M	3	S62	8.5	3	M	3
S63	4.5	3	M	4	S64	8.5	3	M	4
S65	4.5	3	S	1	S66	8.5	3	S	1
S67	4.5	3	S	2	S68	8.5	3	S	2
S69	4.5	3	S	3	S70	8.5	3	S	3
S71	4.5	3	S	4	S72	8.5	3	S	4
S73	4.5	4	W	1	S74	8.5	4	W	1
S75	4.5	4	W	2	S76	8.5	4	W	2
S77	4.5	4	W	3	S78	8.5	4	W	3
S79	4.5	4	W	4	S80	8.5	4	W	4
S81	4.5	4	M	1	S82	8.5	4	M	1
S83	4.5	4	M	2	S84	8.5	4	M	2
S85	4.5	4	M	3	S86	8.5	4	M	3
S87	4.5	4	M	4	S88	8.5	4	M	4
S89	4.5	4	S	1	S90	8.5	4	S	1
S91	4.5	4	S	2	S92	8.5	4	S	2
S93	4.5	4	S	3	S94	8.5	4	S	3
S95	4.5	4	S	4	S96	8.5	4	S	4