

Online Resource 1

Supplementary tables to “Climate change: Impacts on electricity markets in Western Europe”,
Climatic Change, by Rolf Golombek • Sverre A.C. Kittelsen • Ingjerd Haddeland.

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Table 1: Climate assumptions

	Cooling degree		Heating degree		Temperature		Runoff change in pct	
	days (CDD)		days (HDD)		change in C			
	Level	Change	Level	Change	Summer	Winter	Summer	Winter
	2000	2000-2085	2000	2000-2085				
Austria	113	101	3032	-851	2.4	2.4	-45 %	7 %
Belg. & Lux.	37	52	2849	-817	2.7	3.1	-24 %	-27 %
Switzerland	138	121	2570	-712	2.4	2.4	-41 %	12 %
Germany	56	77	3022	-872	2.7	3.1	-30 %	-27 %
Denmark	9	14	3234	-691	2.7	3.1	-18 %	2 %
Spain	346	247	1372	-543	3.7	2.6	-37 %	-38 %
Finland	1	0	4601	-947	3.0	4.9	1 %	70 %
France	66	97	2300	-718	2.7	2.5	-40 %	-28 %
Great Britain	2	2	2734	-724	2.3	2.6	-45 %	5 %
Greece	605	311	1224	-372	2.9	2.4	-25 %	-68 %
Ireland	0	0	2883	-639	2.2	2.3	-31 %	-2 %
Italy	199	198	1801	-508	2.9	2.4	-42 %	-23 %
Netherlands	12	22	2978	-786	2.7	3.1	-25 %	-23 %
Norway	6	9	4262	-743	2.7	3.7	-2 %	36 %
Portugal	98	113	1113	-547	3.7	2.6	-31 %	-48 %
Sweden	8	10	3904	-823	3.2	4.8	-9 %	54 %
Model countries	138	121	2570	-712	2.8	3.0	-22 %	-1 %

Sources: Eskeland and Mideksa (2009) and Benestad (2009). Temperature changes for Belgium, Denmark and the Netherlands is set as Germany, for Switzerland as Austria, Greece as Italy and Portugal as Spain.

Table 2: Market equilibrium results for 2030. Quantities in TWh and prices in USD/MWh.

	Base year climate			Demand effect			Inflow effect			Thermal effect			All changes		
	Demand	Production	price	Demand	Production	price	Demand	Production	price	Demand	Production	price	Demand	Production	price
Austria	87	106	78.3	83	103	77.7	87	102	78.5	87	113	79.5	83	109	79.8
Belg. & Lux.	127	133	79.3	118	125	78.4	127	133	79.4	126	134	80.7	117	125	80.4
Switzerland	93	98	80.2	92	96	79.9	93	98	80.5	93	97	81.4	91	96	82.0
Germany	749	717	80.6	701	631	80.2	749	714	80.7	743	703	82.0	695	591	81.6
Denmark	65	69	76.9	61	64	76.0	65	64	76.9	65	69	78.2	61	63	77.1
Spain	329	371	77.9	348	412	77.5	329	370	78.0	326	367	79.3	345	399	79.0
Finland	120	154	64.4	108	154	64.0	120	158	64.4	119	151	65.7	107	154	65.3
France	605	657	78.9	582	610	78.9	604	657	79.0	600	652	80.1	577	630	80.2
Great Britain	610	670	77.9	568	625	76.9	609	669	78.2	605	665	79.1	562	617	78.7
Greece	64	70	78.0	70	78	77.5	63	70	78.2	63	70	79.0	69	77	79.6
Ireland	38	43	75.9	36	40	76.0	38	43	76.1	38	43	76.9	36	39	77.0
Italy	490	520	79.9	507	539	79.8	490	519	80.1	486	516	81.2	503	534	81.1
Netherlands	178	198	79.5	165	180	78.4	178	195	79.7	177	197	80.9	163	178	80.4
Norway	123	149	69.3	115	148	68.8	123	159	69.4	123	149	70.6	114	159	70.1
Portugal	70	77	77.7	70	76	77.3	70	77	78.0	70	76	79.1	69	75	79.1
Sweden	150	171	71.6	137	171	71.1	150	173	71.7	149	169	72.9	136	170	72.4
Model countries	3901	4202	78.0	3761	4051	77.6	3898	4200	78.2	3869	4169	79.3	3727	4016	79.1

Table 3: Power system in 2000

	Production				
	Electricity demand in TWh	Electricity production in TWh		Nuclear share	Fossil share
			Hydro share		
Austria	60	62	60 %	0 %	32 %
Belg. & Lux.	91	80	0 %	53 %	43 %
Switzerland	56	67	57 %	35 %	2 %
Germany	545	552	4 %	28 %	64 %
Denmark	44	49	0 %	0 %	80 %
Spain	200	212	14 %	26 %	55 %
Finland	90	79	16 %	26 %	44 %
France	421	501	13 %	75 %	9 %
Great Britain	342	353	1 %	21 %	76 %
Greece	46	48	8 %	0 %	90 %
Ireland	21	23	3 %	0 %	94 %
Italy	289	261	16 %	0 %	79 %
Netherlands	114	99	0 %	3 %	92 %
Norway	112	119	98 %	0 %	0 %
Portugal	40	41	26 %	0 %	68 %
Sweden	146	141	45 %	36 %	6 %
Model countries	2617	2687	17 %	30 %	49 %

Actual reservoir hydroelectric production is replaced by inflow in a normal year.

Production does not equal demand because of losses and trade.