Input B_H_REFv1.12_Market_economic_simulation.txt — The EnergyPLAN model 16.1

Electricity demand (TWh/year):		Flexible demand	0,00
Fixed demand	7,95	Fixed imp/exp.	0,00
Electric heating + HP	2,93	Transportation	0,06
Electric cooling	0,22	Total	11,16

District heating (TWh/year)	Gr.1	Gr.2	Gr.3	Sum
District heating demand	1,13	0,00	0,50	1,63
Solar Thermal	0,00	0,00	0,00	0,00
Industrial CHP (CSHP)	0,00	0,00	0,00	0,00
Demand after solar and CSHP	1,13	0,00	0,50	1,63

Wind	87	MW	0,16	TWh/year	0,00	Grid
Photo Voltaic	35	MW	0,08	TWh/year	0,00	stabili-
River Hydro	172	MW	0,44	TWh/year	0,00	sation
River Hydro	0	MW	0	TWh/year	0,00	share
Hydro Power	1685	MW	3,79	TWh/year		
Geothermal/Nuclear	0	MW	0	TWh/year		

	Capacities MW-e	Capacities MJ/s	Efficiencies elec.	Efficiencies Ther	COP
Group 2:					
CHP	0	1500	0,40	0,50	
Heat Pump	0	0			3,00
Boiler		0		0,90	
Group 3:					
CHP	443	82	0,21	0,47	
Heat Pump	0	0			3,00
Boiler		0		0,90	
Condensing	1058		0,29		

Heatstorage:	gr.2: 0	GWh	gr.30	GWh
Fixed Boiler:	gr.2:0,0	Per cent	gr.0,0	Per cent

Electricity prod. from	CSHP	Waste	(TWh/year)
Gr.1:	0,00	0,00	
Gr.2:	0,00	0,00	
Gr.3:	0,00	0,00	

Regulation Strategy:	Market regulation NEW	
CEEP regulation	000000000	
Minimum Stabilisation share	0,98	
Stabilisation share of CHP	0,00	
Minimum CHP gr 3 load	0	MW
Minimum PP	0	MW
Heat Pump maximum share	1,00	
Maximum import/export	2100	MW

Distr. lavex_market_price_2020.txt		
Addition factor	0,00	EUR/MWh
Multiplication factor	1,00	
Dependency factor	0,00	EUR/MWh pr. MW
Average Market Price	39	EUR/MWh
Gas Storage	0	GWh
Syngas capacity	0	MW
Biogas max to grid	0	MW

Fuel Price level: Basic

Elec. Storage	Capacities MW-e	Storage GWh	Efficiencies Elec.	Ther.
Charge 1:	0	0	0,80	
Discharge 1:	0		0,90	
Charge 2:	175	3	0,90	
Discharge 2:	440		0,90	
Electrolysers:	0	0	0,80	0,00
Rockbed Storage:	0	0	1,00	
CAES fuel ratio:		0,000		

(TWh/year)	Coal	Oil	Ngas	Biomass
Transport	0,00	13,43	0,01	0,00
Household	1,15	0,41	0,71	13,47
Industry	2,47	1,32	0,89	0,20
Various	5,83	1,87	1,07	0,39

Output

	District Heating										Electricity																Exchange	
	Demand	Production									Consumption						Production								Balance					Payment	
	Distr. heating	Solar	Waste CSHP	DHP	CHP	HP	ELT	Boiler	EH	Balance	Elec. demand	Flex.& Transp	HP	Elec-trolyser	EH	Hydro Pump	Tur-bine	RES	Hy-dro	Geo-thermal	Waste CSHP	CHP	PP	Stab-Load	Imp	Exp	CEEP	EEP	Imp	Exp
	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	%	MW	MW	MW	MW	Million EUR	
January	391	0	0	271	119	0	0	0	0	0	795	7	4	0	701	56	45	100	1084	0	0	53	1599	127	69	1388	0	1388	2	61
February	307	0	0	213	94	0	0	0	0	0	822	7	3	0	550	47	38	84	344	0	0	42	1290	145	193	561	0	561	5	19
March	283	0	0	197	86	0	0	0	0	0	761	7	3	0	508	63	51	108	86	0	0	39	965	152	272	180	0	180	6	7
April	190	0	0	132	58	0	0	0	0	0	806	7	2	0	341	66	54	61	26	0	0	26	873	162	251	68	0	68	4	2
May	114	0	0	79	35	0	0	0	0	0	874	7	1	0	204	70	56	50	17	0	0	16	871	164	214	67	0	67	3	2
June	70	0	0	49	21	0	0	0	0	0	1010	7	1	0	126	59	48	59	18	0	0	10	932	162	247	112	0	112	5	3
July	48	0	0	33	15	0	0	0	0	0	1121	7	1	0	86	49	41	62	194	0	0	7	1155	154	209	405	0	405	5	14
August	41	0	0	28	12	0	0	0	0	0	1079	7	0	0	73	55	44	58	273	0	0	6	1151	153	173	490	0	490	4	18
September	62	0	0	43	19	0	0	0	0	0	1058	7	1	0	111	59	48	67	777	0	0	8	1311	141	99	1076	0	1076	2	43
October	147	0	0	102	45	0	0	0	0	0	984	7	2	0	263	57	47	81	437	0	0	20	1261	146	152	685	0	685	4	26
November	256	0	0	178	78	0	0	0	0	0	917	7	3	0	459	60	48	85	874	0	0	35	1485	135	93	1175	0	1175	2	48
December	315	0	0	219	96	0	0	0	0	0	924	7	4	0	565	62	51	109	1047	0	0	43	1551	129	87	1328	0	1328	2	67
Average	185	0	0	129	56	0	0	0	0	0	930	7	2	0	332	59	48	77	432	0	0	25	1204	147	172	628	0	628	Average price	
Maximum	610	0	0	424	186	0	0	0	0	0	1577	13	7	0	1094	175	440	233	1685	0	0	83	1889	179	893	2100	0	2100	(EUR/MWh)	
Minimum	9	0	0	6	3	0	0	0	0	0	65	0	0	0	17	0	0	0	0	0	0	1	832	113	0	0	0	0	29	56
TWh/year	1,63	0,00	0,00	1,13	0,50	0,00	0,00	0,00	0,00	0,00	8,17	0,06	0,02	0,00	2,91	0,52	0,42	0,68	3,79	0,00	0,00	0,22	10,57		1,51	5,52	0,00	5,52	44	311

FUEL BALANCE (TWh/year):	DHP	CHP2	CHP3	Boiler2	Boiler3	PP	Geo/Nu.	Hydro	Waste/ HTL	CAES Elc.ly.	BioCon-version	Electro-Fuel	Wind	PV and Wind off CSP	Wave	Hydro	Solar.Th	Transp.	household	Industry Various	Total	Imp/Exp Corrected Imp/Exp	Net	CO2 emission (Mt): Total	Net
Coal	0,64	-	1,00	-	-	35,89	-	-	-	-	-	-	-	-	-	-	-	-	1,15	8,29	46,98	-13,73	33,25	19,45	13,77
Oil	0,02	-	-	-	-	0,18	-	-	-	-	-	-	-	-	-	-	-	13,43	0,41	3,18	17,22	0,00	17,22	4,50	4,50
N.Gas	0,48	-	-	-	-	0,08	-	-	-	-	-	-	-	-	-	-	-	0,82	0,71	1,99	4,08	0,00	4,08	0,95	1,14
Biomass	0,37	-	0,05	-	-	0,02	-	-	-	-	-	-	-	-	-	-	-	-	13,47	0,59	14,51	0,00	14,51	0,00	0,00
Renewable	-	-	-	-	-	-	-	3,79	-	-	-	-	0,16	0,08	-	4,23	-	-	-	-	4,47	0,00	4,47	0,00	0,00
H2 etc.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,00	0,00	0,00	0,00	0,00
Biofuel	-	-	0,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,00	0,00	0,00	0,00	0,00
Nuclear/CCS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,00	0,00	0,00	0,00	0,00
Total	1,51	-	1,05	-	-	36,18	-	3,79	-	-	-	-	0,16	0,08	-	4,23	-	14,25	15,74	14,06	87,25	-13,73	73,52	24,90	19,40

District Heating Production

	Gr.1				Gr.2										Gr.3										RES specification				
	District heating MW	Solar MW	CSHP MW	DHP MW	District heating MW	Solar MW	CSHP MW	CHP MW	HP MW	ELT MW	Boiler MW	EH MW	Stor-age MW	Ba-lance MW	District heating MW	Solar MW	CSHP MW	CHP MW	HP MW	ELT MW	Boiler MW	EH MW	Stor-age MW	Ba-lance MW	RES1 Wind MW	RES2 Photo MW	RES3 River MW	RES 4-7 MW	Total MW
January	271	0	0	271	0	0	0	0	0	0	0	0	0	0	119	0	0	119	0	0	0	0	0	0	18	7	75	0	100
February	213	0	0	213	0	0	0	0	0	0	0	0	0	0	94	0	0	94	0	0	0	0	0	0	23	8	54	0	84
March	197	0	0	197	0	0	0	0	0	0	0	0	0	0	86	0	0	86	0	0	0	0	0	0	29	8	71	0	108
April	132	0	0	132	0	0	0	0	0	0	0	0	0	0	58	0	0	58	0	0	0	0	0	0	19	11	31	0	61
May	79	0	0	79	0	0	0	0	0	0	0	0	0	0	35	0	0	35	0	0	0	0	0	0	21	10	20	0	50
June	49	0	0	49	0	0	0	0	0	0	0	0	0	0	21	0	0	21	0	0	0	0	0	0	12	12	35	0	59
July	33	0	0	33	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	10	13	38	0	62
August	28	0	0	28	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	0	12	12	34	0	58
September	43	0	0	43	0	0	0	0	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	15	10	42	0	67
October	102	0	0	102	0	0	0	0	0	0	0	0	0	0	45	0	0	45	0	0	0	0	0	0	16	8	57	0	81
November	178	0	0	178	0	0	0	0	0	0	0	0	0	0	78	0	0	78	0	0	0	0	0	0	17	7	61	0	85
December	219	0	0	219	0	0	0	0	0	0	0	0	0	0	96	0	0	96	0	0	0	0	0	0	27	3	79	0	109
Average	129	0	0	129	0	0	0	0	0	0	0	0	0	0	56	0	0	56	0	0	0	0	0	0	18	9	50	0	77
Maximum	424	0	0	424	0	0	0	0	0	0	0	0	0	0	186	0	0	186	0	0	0	0	0	0	87	35	172	0	233
Minimum	6	0	0	6	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Total for the whole year TWh/year	1,13	0,00	0,00	1,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00		0,00	0,50	0,00	0,00	0,50	0,00	0,00	0,00	0,00		0,00	0,16	0,08	0,44	0,00	0,68

Own use of heat from industrial CH0,00 TWh/year

ANNUAL COSTS (Million EUR)

Total Fuel ex Ngas exchange =	2155
Uranium =	0
Coal =	452
FuelOil =	128
Gasoil/Diesel=	891
Petrol/JP =	157
Gas handling =	32
Biomass =	496
Food income =	0
Waste =	0
Total Ngas Exchange costs =	66
Marginal operation costs =	409
Total Electricity exchange =	-267
Import =	44
Export =	-311
Bottleneck =	0
Fixed imp/ex=	0
Total CO2 emission costs =	0
Total variable costs =	2364
Fixed operation costs =	1082
Annual Investment costs =	1142
TOTAL ANNUAL COSTS =	4588

NATURAL GAS EXCHANGE

	DHP & Boilers MW	CHP2 CHP3 MW	PP CAES MW	Indi-vidual MW	Trans port MW	Indu. Var. MW	Demand Sum MW	Bio-gas MW	Syn-gas MW	CO2Hy gas MW	SynHy gas MW	SynHy gas MW	Stor-age MW	Sum MW	Im-port MW	Ex-port MW
January	114	0	10	171	1	239	536	0	0	0	0	0	0	536	536	0
February	90	0	10	134	1	259	495	0	0	0	0	0	0	495	495	0
March	83	0	10	124	1	242	461	0	0	0	0	0	0	461	461	0
April	56	0	10	83	1	193	344	0	0	0	0	0	0	344	344	0
May	33	0	10	50	1	172	267	0	0	0	0	0	0	267	267	0
June	21	0	10	31	1	140	203	0	0	0	0	0	0	203	203	0
July	14	0	10	21	1	159	205	0	0	0	0	0	0	205	205	0
August	12	0	9	18	1	112	153	0	0	0	0	0	0	153	153	0
September	18	0	8	27	1	157	211	0	0	0	0	0	0	211	211	0
October	43	0	9	64	1	384	502	0	0	0	0	0	0	502	502	0
November	75	0	9	112	1	267	465	0	0	0	0	0	0	465	465	0
December	92	0	10	138	1	391	633	0	0	0	0	0	0	633	633	0
Average	54	0	10	81	1	227	373	0	0	0	0	0	0	373	373	0
Maximum	179	0	10	268	1	739	892	0	0	0	0	0	0	892	892	0
Minimum	3	0	0	4	1	0	18	0	0	0	0	0	0	18	18	0
Total for the whole year TWh/year	0,48	0,00	0,08	0,71	0,01	1,99	3,28	0,00	0,00	0,00	0,00	0,00	0,00	3,28	3,28	0,00

RES Share: 21,8 Percent of Primary Energy 41,0 Percent of Electricity 4,5 TWh electricity from RES