Input B_H_REFv1.10_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	4,28	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:	420	3	0,80	
Discharge 2:	420		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								Balance	Consumption						Production							Balance					Payment	
	Distr. heating	Solar	Waste CSHP	DHP	CHP	HP	ELT	Boiler	EH		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	80	58	100	1153	0	0	53	1587	127	89	1454	0	1454	2	63
February	307	0	0	213	94	0	0	0	0	0	822	7	3	0	550	76	55	84	440	0	0	42	1266	144	224	653	0	653	5	22
March	283	0	0	197	86	0	0	0	0	0	761	7	3	0	508	96	69	108	106	0	0	39	952	151	299	199	0	199	6	7
April	190	0	0	132	58	0	0	0	0	0	806	7	2	0	341	106	76	61	35	0	0	26	866	161	279	81	0	81	4	2
May	114	0	0	79	35	0	0	0	0	0	874	7	1	0	204	112	77	50	27	0	0	16	867	163	244	83	0	83	4	3
June	70	0	0	49	21	0	0	0	0	0	1010	7	1	0	126	78	56	59	40	0	0	10	923	162	267	134	0	134	5	4
July	48	0	0	33	15	0	0	0	0	0	1121	7	1	0	86	53	42	62	258	0	0	7	1139	154	214	453	0	453	5	16
August	41	0	0	28	12	0	0	0	0	0	1079	7	0	0	73	79	54	58	319	0	0	6	1135	153	201	534	0	534	5	20
September	62	0	0	43	19	0	0	0	0	0	1058	7	1	0	111	85	64	67	844	0	0	8	1279	140	129	1130	0	1130	3	45
October	147	0	0	102	45	0	0	0	0	0	984	7	2	0	263	97	71	81	548	0	0	20	1226	145	194	787	0	787	4	29
November	256	0	0	178	78	0	0	0	0	0	917	7	3	0	459	95	68	85	957	0	0	35	1462	134	124	1250	0	1250	3	51
December	315	0	0	219	96	0	0	0	0	0	924	7	4	0	565	102	74	109	1109	0	0	43	1531	129	118	1384	0	1384	3	69
Average	185	0	0	129	56	0	0	0	0	0	930	7	2	0	332	88	64	77	487	0	0	25	1186	147	198	679	0	679	Average price	
Maximum	610	0	0	424	186	0	0	0	0	0	1577	13	7	0	1094	420	420	233	1685	0	0	83	1889	179	1009	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	112	0	0	0	0	28	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	0,78	0,56	0,68	4,28	0,00	0,00	0,22	10,42		1,74	5,96	0,00	5,96	49	331

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	0,54	-	0,96	-	-	36,74	-	-	-	-	-	-	-	-	-	-	-	-	1,15	8,29	47,67	-14,44	33,23	19,74	13,76
Oil	0,01	-	0,01	-	-	1,70	-	-	-	-	-	-	-	-	-	-	-	13,43	0,41	3,18	18,75	0,00	18,75	4,90	4,90
N.Gas	0,40	-	0,01	-	-	1,63	-	-	-	-	-	-	-	-	-	-	-	0,82	0,71	2,00	5,57	0,00	5,57	1,29	1,47
Biomass	0,31	-	0,06	-	-	1,58	-	-	-	-	-	-	-	-	-	-	-	-	13,47	0,59	16,01	0,00	16,01	0,00	0,00
Renewable	-	-	-	-	-	-	-	4,28	-	-	-	-	0,16	0,08	-	4,71	-	-	-	-	4,95	0,00	4,95	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	1,25	-	1,05	-	-	41,65	-	4,28	-	-	-	-	0,16	0,08	-	4,71	-	14,25	15,74	14,07	92,97	-14,44	78,53	25,93	20,13

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 =	2270
Uranium =	0
Coal =	457
FuelOil =	187
Gasoil/Diesel=	891
Petrol/JP =	157
Gas handling =	57
Biomass =	520
Food income =	0
Waste =	0
Total Ngas Exchange costs =	96
Marginal operation costs =	412
Total Electricity exchange =	-282
Import =	49
Export =	-331
Bottleneck =	0
Fixed imp/ex=	0
Total CO2 emission costs =	0
Total variable costs =	2496
Fixed operation costs =	33910
Annual Investment costs =	57902
TOTAL ANNUAL COSTS =	94307

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	95	3	186	171	1	240	698	0	0	0	0	0	0	698	698	0
February	75	3	187	134	1	261	662	0	0	0	0	0	0	662	662	0
March	69	2	193	124	1	243	634	0	0	0	0	0	0	634	634	0
April	46	2	197	83	1	194	524	0	0	0	0	0	0	524	524	0
May	28	1	198	50	1	173	451	0	0	0	0	0	0	451	451	0
June	17	1	196	31	1	140	387	0	0	0	0	0	0	387	387	0
July	12	0	188	21	1	160	383	0	0	0	0	0	0	383	383	0
August	10	0	181	18	1	113	323	0	0	0	0	0	0	323	323	0
September	15	1	157	27	1	157	359	0	0	0	0	0	0	359	359	0
October	36	1	177	64	1	386	666	0	0	0	0	0	0	666	666	0
November	62	2	181	112	1	268	628	0	0	0	0	0	0	628	628	0
December	77	3	184	138	1	394	797	0	0	0	0	0	0	797	797	0
Average	45	2	186	81	1	228	543	0	0	0	0	0	0	543	543	0
Maximum	149	5	200	268	1	743	1078	0	0	0	0	0	0	1078	1078	0
Minimum	2	0	0	4	1	0	58	0	0	0	0	0	0	58	58	0
Total for the whole year TWh/year	0,40	0,01	1,63	0,71	0,01	2,00	4,77	0,00	0,00	0,00	0,00	0,00	0,00	4,77	4,77	0,00

RES Share: 22,6 Percent of Primary Energy 46,7 Percent of Electricity 5,1 TWh electricity from RES