Input B_H_REFv1.9b_demand_and_supply_tab.txt — The EnergyPLAN model 16.1

Electricity demand (TWh/year):		Flexible demand	0,00
Fixed demand	7,95	Fixed imp/exp.	1,50
Electric heating + HP	2,93	Transportation	0,06
Electric cooling	0,22	Total	12,66

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	4,17	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	0,00	
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:

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									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	80	58	100	1138	0	0	53	1758	100	43	1292	0	1292	1	56
February	307	0	0	213	94	0	0	0	0	0	822	7	3	0	550	76	55	84	421	0	0	42	1553	100	144	661	0	661	3	22
March	283	0	0	197	86	0	0	0	0	0	761	7	3	0	508	96	69	108	104	0	0	39	1147	100	383	214	0	214	7	7
April	190	0	0	132	58	0	0	0	0	0	806	7	2	0	341	106	76	61	34	0	0	26	945	100	353	116	0	116	6	3
May	114	0	0	79	35	0	0	0	0	0	874	7	1	0	204	112	77	50	23	0	0	16	927	100	292	112	0	112	5	3
June	70	0	0	49	21	0	0	0	0	0	1010	7	1	0	126	78	56	59	34	0	0	10	1141	100	220	246	0	246	4	7
July	48	0	0	33	15	0	0	0	0	0	1121	7	1	0	86	53	42	62	245	0	0	7	1426	100	157	532	0	532	3	18
August	41	0	0	28	12	0	0	0	0	0	1079	7	0	0	73	79	54	58	308	0	0	6	1410	100	192	584	0	584	4	21
September	62	0	0	43	19	0	0	0	0	0	1058	7	1	0	111	85	64	67	830	0	0	8	1544	100	82	1207	0	1207	2	47
October	147	0	0	102	45	0	0	0	0	0	984	7	2	0	263	97	71	81	524	0	0	20	1457	100	158	814	0	814	3	30
November	256	0	0	178	78	0	0	0	0	0	917	7	3	0	459	95	68	85	940	0	0	35	1671	100	92	1170	0	1170	2	47
December	315	0	0	219	96	0	0	0	0	0	924	7	4	0	565	101	73	109	1094	0	0	43	1710	100	69	1267	0	1267	1	62
Average	185	0	0	129	56	0	0	0	0	0	930	7	2	0	332	88	64	77	475	0	0	25	1391	100	182	685	0	685	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	100	1232	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	100	0	0	0	0	25	54
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	4,17	0,00	0,00	0,22	12,22		1,60	6,01	0,00	6,01	41	323

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	0,38	-	0,96	-	-	41,52	-	-	-	-	-	-	-	-	-	-	-	-	1,15	8,29	52,30	-15,10	37,20	21,65	15,40
Oil	0,38	-	0,01	-	-	2,25	-	-	-	-	-	-	-	-	-	-	-	13,43	0,41	3,18	19,67	0,00	19,67	5,14	5,14
N.Gas	0,28	-	0,01	-	-	2,18	-	-	-	-	-	-	-	-	-	-	-	0,82	0,71	2,00	6,01	0,00	6,01	1,39	1,57
Biomass	0,22	-	0,06	-	-	2,13	-	-	-	-	-	-	-	-	-	-	-	-	13,47	0,59	16,47	0,00	16,47	0,00	0,00
Renewable	-	-	-	-	-	-	-	4,17	-	-	-	-	0,16	0,08	-	4,61	-	-	-	-	4,85	0,00	4,85	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	-	-	48,08	-	4,17	-	-	-	-	0,16	0,08	-	4,61	-	14,25	15,74	14,07	99,30	-15,10	84,20	28,18	22,11

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 =	2391
Uranium =	0
Coal =	527
FuelOil =	223
Gasoil/Diesel=	891
Petrol/JP =	157
Gas handling =	65
Biomass =	528
Food income =	0
Waste =	0
Total Ngas Exchange costs =	105
Marginal operation costs =	331
Total Electricity exchange =	-352
Import =	41
Export =	-323
Bottleneck =	0
Fixed imp/ex=	-69
Total CO2 emission costs =	0
Total variable costs =	2475
Fixed operation costs =	1011
Annual Investment costs =	2589
TOTAL ANNUAL COSTS =	6074

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	67	3	266	171	1	241	750	0	0	0	0	0	0	750	750	0
February	53	3	256	134	1	261	709	0	0	0	0	0	0	709	709	0
March	49	2	243	124	1	244	664	0	0	0	0	0	0	664	664	0
April	33	2	235	83	1	195	549	0	0	0	0	0	0	549	549	0
May	20	1	234	50	1	174	480	0	0	0	0	0	0	480	480	0
June	12	1	242	31	1	141	428	0	0	0	0	0	0	428	428	0
July	8	0	250	21	1	160	441	0	0	0	0	0	0	441	441	0
August	7	0	246	18	1	113	386	0	0	0	0	0	0	386	386	0
September	11	1	237	27	1	158	434	0	0	0	0	0	0	434	434	0
October	25	1	246	64	1	386	725	0	0	0	0	0	0	725	725	0
November	44	2	261	112	1	269	690	0	0	0	0	0	0	690	690	0
December	54	3	263	138	1	394	854	0	0	0	0	0	0	854	854	0
Average	32	2	248	81	1	228	592	0	0	0	0	0	0	592	592	0
Maximum	105	5	273	268	1	744	1137	0	0	0	0	0	0	1137	1137	0
Minimum	2	0	52	4	1	0	150	0	0	0	0	0	0	150	150	0
Total for the whole year TWh/year	0,28	0,01	2,18	0,71	0,01	2,00	5,20	0,00	0,00	0,00	0,00	0,00	0,00	5,20	5,20	0,00

RES Share: 21,5 Percent of Primary Energy 46,5 Percent of Electricity 5,1 TWh electricity from RES