

NECP1 - Summary Tables

Renewable Trajectories (2.1.2.i., 2.1.2.ii, 4.2.2)

Renewable Trajectories	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
RES-H&C (%)	6.8%	8.8%	9.5%	10.4%	11.3%	12.4%	13.5%	14.6%	15.8%	16.9%	18.0%	19.2%	23.3%
RES-E (%)	30.1%	38.5%	39.7%	37.4%	37.0%	36.7%	36.7%	36.9%	37.1%	38.3%	39.9%	41.2%	40.7%
RES-T (%)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.0%	4.0%	3.7%
Overall RES share (%)	10.6%	13.3%	13.9%	14.1%	14.6%	15.1%	15.6%	16.1%	16.7%	17.4%	18.3%	19.2%	21.7%
Article 4(a)(2) target for RES increase				18.0%			43.0%		65.0%			100.0%	
RES min trajectory (%)		16.0%		16.6%			17.4%		18.1%			19.2%	
RES projected trajectory (%)		13.3%		14.1%			15.6%		16.7%			19.2%	
Shortfall (%)		2.7%		2.4%			1.8%		1.4%			0.0%	

Renewable Energy Technologies (2.1.2.iii)

Renewable Electricity - installed capacities (MW)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	234	234	234	234	234	234	234	234	234	234	234	234
Biodegradable Municipal Sold Waste	24	40	40	40	40	40	40	40	40	40	40	40
Biogas	54	54	54	54	54	54	54	54	54	54	54	54
Biomass CHP	0	60	60	60	60	60	60	60	60	60	60	60
Biomass co-firing	29	110	110	110	110	110	110	110	110	110	110	0
Onshore wind	3259	4225	4364	4503	4643	4782	4921	5060	5201	5342	5474	6058
Offshore wind	0	25	25	25	25	25	25	25	198	396	592	1513
Solar PV	20	80	90	100	100	100	100	118	125	131	137	200
Ocean	0	0	0	0	0	0	0	0	0	0	0	0

Renewable Electricity - generation by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	61.6	62.8	63.5	63.2	63.8	63.3	62.8	63.0	63.2	63.0	63.0	63.1
Biodegradable Municipal Sold Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.7	22.8	22.8
Biogas	17.0	11.3	11.4	11.4	11.6	10.3	10.5	10.4	10.3	10.2	9.6	9.0
Biomass	32.8	113.9	113.9	113.9	114.1	113.9	113.9	113.9	114.0	113.9	113.9	30.7
Onshore wind	644.7	899.0	934.2	964.5	989.9	1015.3	1045.5	1074.5	1103.6	1131.1	1157.2	1267.8
Offshore wind	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	38.3	100.1	156.5	387.4
Solar PV	0.9	6.6	7.5	8.3	8.3	8.3	8.3	9.8	10.3	10.9	11.4	16.6
Ocean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Renewable Transport - consumption by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Ethanol - Total	29.6	29.5	29.9	30.0	30.1	30.0	30.7	31.4	31.9	32.2	32.2	28.6
Part A, Annex IX Ethanol	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Part B, Annex IX Ethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food or Feed Ethanol	29.6	29.2	29.6	29.7	29.8	29.7	30.4	31.1	31.6	31.9	31.9	28.3
Biodiesel - Total	131.0	151.0	151.8	151.9	150.6	149.2	149.7	150.9	151.8	152.4	152.7	147.6
Part A, Annex IX Biodiesel	0.0	5.6	11.2	16.9	22.3	27.6	34.7	42.1	49.5	56.9	64.1	70.8
Part B, Annex IX Biodiesel	131.0	145.4	140.5	135.0	128.3	121.6	115.0	108.8	102.3	95.6	88.6	76.7
Food or Feed Biodiesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biofuels - Total	160.6	180.5	181.6	181.9	180.6	179.2	180.5	182.3	183.8	184.7	184.9	176.2

Renewable Heat - generation by source and sector (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Industry												
Biogas	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Biomass	198.6	222.9	233.7	249.1	268.9	289.2	310.6	332.4	352.1	370.9	391.4	403.0
Renewable portion of heat pumps	0.0	2.9	4.1	5.2	6.3	7.3	8.2	9.3	10.4	11.6	13.2	17.8
Solar thermal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Industry	200.8	228.1	240.2	256.7	277.6	298.9	321.2	344.1	364.9	384.9	406.9	423.2
Residential												
Biogas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biomass	26.9	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8
Renewable portion of heat pumps	24.0	74.0	87.6	102.0	117.1	132.9	148.9	164.7	180.6	196.6	213.0	371.3
Solar thermal	12.5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Total Residential	63.3	120.6	134.2	148.5	163.6	179.5	195.4	211.3	227.1	243.2	259.6	417.8
Tertiary												
Biogas	7.6	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Biomass	21.1	27.5	27.4	27.6	27.8	28.2	28.8	29.6	30.1	30.6	31.2	31.2
Renewable portion of heat pumps	17.3	35.0	48.4	59.1	70.1	81.0	91.7	103.1	114.6	127.5	143.5	170.5
Solar thermal	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Tertiary	46.1	69.7	83.1	94.0	105.2	116.5	127.8	139.9	151.9	165.3	182.0	208.9

Bioenergy Trajectories (2.1.2.iv)

Bioenergy Demand, Total Final Consumption (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity											
Solid Biomass	32.8	113.9	113.9	113.9	114.1	113.9	113.9	113.9	114.0	113.9	113.9
Biogas	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Landfill Gas	13.3	7.6	7.7	7.7	8.0	6.7	6.8	6.8	6.6	6.6	5.9
Biodegradable Municipal Solid Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.7	22.8
Sewage Sludge Gas	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Heat											
Solid Biomass	246.5	283.1	293.9	309.4	329.5	350.2	372.2	394.8	414.9	434.2	455.4
Biogas	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Transport											
Ethanol	29.6	29.5	29.9	30.0	30.1	30.0	30.7	31.4	31.9	32.2	32.2
Biodiesel	131.0	151.0	151.8	151.9	150.6	149.2	149.7	150.9	151.8	152.4	152.7

Biomass Supply by Feedstock (ktoe)	2017	2020	2030
Biomass from Forestry	230	283	579
Domestic	182	220	469
Imported	48	63	110
Biomass from agricultural crops	68	70	123
Domestic	3	8	54
Imported	64	62	69
Biomass from agricultural residues	0.5	0.9	150
Domestic	0.5	0.4	150
Imported	0.0	0.5	0.6
Biomass from waste	402	454	359
Domestic	165	184	207
Imported	237	270	152

Energy Efficiency (2.2.i)

Energy Efficiency Policies (GWh)	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Primary Energy Savings	17,448	21,674	22,808	23,602	24,301	24,973	25,663	26,378	27,132	27,944	28,831	29,832
Final Energy Savings	15,927	19,664	20,661	21,364	21,974	22,590	23,231	23,852	24,541	25,320	26,158	27,111
Energy Efficiency Target Achievement	10.9%	13.6%	14.3%	14.8%	15.2%	15.6%	16.1%	16.5%	17.0%	17.5%	18.1%	18.7%
Total Primary Energy Consumption	168,787	179,223	180,761	185,326	186,925	191,994	193,837	195,961	197,422	200,650	201,660	202,665
Total Final Energy Consumption	136,579	143,726	145,697	149,026	150,266	150,923	151,181	151,986	152,949	153,880	154,919	156,008

Energy Efficiency (4.3.i., 4.3.iii.)

Primary Energy Savings (GWh)	2017	2020	2030	2040
Household	6,467	8,032	9,900	10,017
Services	5,460	7,681	13,266	13,266
Industry	2,713	3,015	3,115	3,115
Transport	1,515	1,514	2,252	4,298
Cross-Sectoral	1,293	1,433	1,298	1,199
Total	17,448	21,674	29,832	31,895
Total Primary Energy Consumption (GWh)				
Household	39,414	45,115	47,558	48,069
Services	24,213	27,147	37,414	37,599
Industry	40,961	38,558	44,089	45,441
Transport	60,819	65,475	70,268	70,819
Other	3,380	2,928	3,336	3,655
Total	168,787	179,223	202,665	205,582

Final Energy Savings (GWh)	2017	2020	2030	2040
Household	6,213	7,700	9,373	9,557
Services	4,663	6,533	11,583	11,861
Industry	2,244	2,485	2,603	2,688
Transport	1,515	1,514	2,252	4,298
Cross-Sectoral	1,293	1,433	1,298	1,199
Total	15,927	19,664	27,111	29,603
Total Final Energy Consumption (GWh)				
Household	30,327	35,443	35,761	36,939
Services	16,190	16,517	21,415	23,730
Industry	29,254	26,726	29,727	32,716
Transport	58,066	62,777	66,569	66,045
Other	2,743	2,263	2,536	2,918
Total	136,579	143,726	156,008	162,348

Energy Efficiency (5.1.ii)

Energy Efficiency Contribution	2017	2020	2030	2040
Primary Energy Savings (GWh)	17,448	21,674	29,832	31,895
Total Primary Energy Consumption (GWh)	168,787	179,223	202,665	205,582
Savings as share of total consumption (%)	10.3%	12.1%	14.7%	15.5%

NECP2 - Summary Tables

Renewable Trajectories (2.1.2.i., 2.1.2.ii, 4.2.2)

Renewable Trajectories	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
RES-H&C (%)	6.8%	9.8%	10.6%	11.8%	13.1%	14.2%	16.0%	17.9%	20.0%	22.1%	24.1%	26.3%	34.5%
RES-E (%)	30.1%	38.9%	40.2%	37.9%	38.9%	42.7%	44.6%	46.8%	48.6%	50.1%	51.3%	53.8%	54.2%
RES-T (%)	4.1%	5.6%	5.6%	5.6%	5.9%	6.5%	7.1%	7.7%	8.2%	8.6%	9.0%	9.3%	7.7%
Overall RES share (%)	10.6%	14.3%	15.0%	15.3%	16.4%	18.2%	19.7%	21.2%	22.8%	24.3%	25.8%	27.7%	33.0%
Article 4(a)(2) target for RES increase				18.0%			43.0%		65.0%			100.0%	
RES min trajectory (%)		16.0%		18.1%			21.0%		23.6%			27.7%	
RES projected trajectory (%)		14.3%		15.3%			19.7%		22.8%			27.7%	
Shortfall (%)		1.7%		2.8%			1.3%		0.8%			0.0%	

Renewable Energy Technologies (2.1.2.iii)

Renewable Electricity - installed capacities (MW)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	234	234	234	234	234	234	234	234	234	234	234	234
Biodegradable Municipal Sold Waste	24	40	40	40	40	40	40	40	40	40	40	40
Biogas	54	54	54	54	54	54	54	54	54	54	54	54
Biomass CHP	0	60	60	60	60	60	60	60	60	60	60	60
Biomass co-firing	29	110	110	110	181	181	181	181	181	181	181	0
Onshore wind	3259	4215	4355	4495	4636	4776	4916	5056	5196	5336	6435	6393
Offshore wind	0	25	25	247	469	691	913	1134	1356	1578	1800	3600
Solar PV	20	187	229	271	447	622	798	973	1149	1324	1500	1918
Ocean	0	0	0	5	5	5	5	5	5	5	5	5

Renewable Electricity - generation by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	61.6	63.1	63.7	63.2	63.7	63.5	63.2	63.6	63.7	63.4	63.1	63.5
Biodegradable Municipal Sold Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Biogas	17.0	11.4	11.4	11.4	11.6	10.6	10.5	10.6	10.6	10.6	9.6	9.0
Biomass	32.8	113.9	113.9	113.9	167.3	167.3	167.3	167.4	167.4	166.9	167.3	31.0
Onshore wind	644.7	901.7	936.5	966.2	990.4	1015.8	1045.7	1075.3	1105.6	1134.3	1285.7	1357.3
Offshore wind	6.0	6.0	6.0	48.2	119.9	181.1	238.3	293.9	341.7	392.0	443.4	870.2
Solar PV	0.9	15.5	19.0	22.5	37.1	51.7	66.2	80.7	95.5	109.8	124.3	159.3
Ocean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Renewable Transport - consumption by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Ethanol - Total	29.6	30.3	30.6	33.8	36.9	40.3	44.9	49.2	53.1	56.2	60.2	40.0
Part A, Annex IX Ethanol	0.0	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.4
Part B, Annex IX Ethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food or Feed Ethanol	29.6	30.0	30.3	33.5	36.5	39.9	44.4	48.7	52.6	55.6	59.6	39.6
Biodiesel - Total	131.0	218.3	219.4	229.8	251.0	270.5	293.7	317.3	339.6	360.2	376.1	339.1
Part A, Annex IX Biodiesel	0.0	8.1	16.2	25.5	37.2	50.0	68.1	88.5	110.7	134.4	157.9	162.8
Part B, Annex IX Biodiesel	131.0	210.2	203.1	204.3	213.9	220.4	225.6	228.8	228.9	225.9	218.1	176.3
Food or Feed Biodiesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biofuels - Total	160.6	248.6	250.0	263.6	287.9	310.8	338.6	366.5	392.7	416.4	436.3	379.1

Renewable Heat - generation by source and sector (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Industry												
Biogas	2.2	2.4	2.4	2.4	2.4	9.8	17.2	24.6	32.0	39.4	46.8	46.8
Biomass	198.6	244.6	257.7	274.4	286.5	297.1	308.0	327.5	345.3	362.4	382.2	389.3
Renewable portion of heat pumps	0.0	4.9	6.5	7.6	8.8	9.8	10.8	11.9	13.0	14.2	15.8	21.0
Solar thermal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Industry	200.8	251.9	266.6	284.4	297.7	316.7	335.9	363.9	390.2	416.0	444.7	457.0
Residential												
Biogas	0.0	0.0	0.0	0.0	0.0	11.2	22.5	33.7	44.9	56.2	67.4	67.4
Biomass	26.9	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8
Renewable portion of heat pumps	24.0	76.8	92.4	110.4	131.9	158.9	187.3	215.6	244.0	272.5	301.4	553.2
Solar thermal	12.5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Total Residential	63.3	123.3	139.0	157.0	178.4	216.7	256.3	295.9	335.5	375.2	415.3	667.1
Tertiary												
Biogas	7.6	7.3	7.3	7.3	7.3	11.6	15.9	20.2	24.5	28.7	33.0	33.0
Biomass	21.1	31.7	33.1	38.2	38.0	37.9	37.8	38.4	38.6	38.9	39.4	38.5
Renewable portion of heat pumps	17.3	48.5	69.5	84.1	97.4	110.1	121.4	134.0	146.7	160.8	178.1	204.5
Solar thermal	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Tertiary	46.1	87.4	109.8	129.6	142.8	159.6	175.1	192.5	209.8	228.4	250.5	276.0

Bioenergy Trajectories (2.1.2.iv)

Bioenergy Demand, Total Final Consumption (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity											
Solid Biomass	32.8	113.9	113.9	113.9	167.3	167.3	167.3	167.4	167.4	166.9	167.3
Biogas	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Landfill Gas	13.3	7.7	7.8	7.7	7.9	6.9	6.9	6.9	7.0	6.9	6.0
Biodegradable Municipal Solid Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Sewage Sludge Gas	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Heat											
Solid Biomass	246.5	309.0	323.5	345.4	357.3	367.8	378.5	398.6	416.7	434.1	454.3
Biogas	9.7	9.7	9.7	9.7	9.7	32.6	55.5	78.4	101.4	124.3	147.2
Transport											
Ethanol	29.6	30.3	30.6	33.8	36.9	40.3	44.9	49.2	53.1	56.2	60.2
Biodiesel	131.0	218.3	219.4	229.8	251.0	270.5	293.7	317.3	339.6	360.2	376.1

Biomass Supply by Feedstock (ktoe)	2017	2020	2030
Biomass from Forestry	230	311	713
Domestic	182	220	505
Imported	48	91	209
Biomass from agricultural crops	68	72	206
Domestic	3	8	77
Imported	64	64	130
Biomass from agricultural residues	0.5	1.0	430
Domestic	0.5	0.4	429
Imported	0.0	0.5	1.1
Biomass from waste	402	510	715
Domestic	165	184	279
Imported	237	327	436

Energy Efficiency (2.2.i)

Energy Efficiency Policies (GWh)	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Primary Energy Savings	17,448	22,643	24,113	25,917	27,497	28,791	30,182	32,079	33,636	35,298	37,201	39,377
Final Energy Savings	15,927	20,455	21,711	23,172	24,505	25,714	27,046	29,238	30,725	32,320	34,166	36,290
Energy Efficiency Target Achievement	10.9%	14.2%	15.1%	16.2%	17.2%	18.0%	18.9%	20.1%	21.1%	22.1%	23.3%	24.7%
Total Primary Energy Consumption	168,787	176,909	178,596	182,942	184,927	189,841	192,221	179,668	180,692	183,636	183,984	185,232
Total Final Energy Consumption	136,579	143,051	144,909	148,048	149,094	149,499	149,464	149,865	150,437	150,923	151,351	151,652

Energy Efficiency (4.3.i., 4.3.iii.)

Primary Energy Savings (GWh)	2017	2020	2030	2040
Household	6,467	8,227	14,445	18,260
Services	5,460	8,086	15,477	17,915
Industry	2,713	3,015	4,020	5,025
Transport	1,515	1,533	3,379	7,332
Cross-Sectoral	1,293	1,783	2,056	2,791
Total	17,448	22,643	39,377	51,323
Total Primary Energy Consumption (GWh)				
Household	39,414	44,331	42,679	44,922
Services	24,213	26,289	31,380	34,065
Industry	40,961	37,939	39,287	43,731
Transport	60,819	65,453	68,798	67,649
Other	3,380	2,897	3,088	3,598
Total	168,787	176,909	185,232	193,965

Final Energy Savings (GWh)	2017	2020	2030	2040
Household	6,213	7,891	13,985	17,773
Services	4,663	6,763	13,412	15,751
Industry	2,244	2,485	3,459	4,392
Transport	1,515	1,533	3,379	7,332
Cross-Sectoral	1,293	1,783	2,056	2,791
Total	15,927	20,455	36,290	48,039
Total Final Energy Consumption (GWh)				
Household	30,327	35,093	34,075	33,669
Services	16,190	16,280	20,814	22,168
Industry	29,254	26,675	29,478	32,230
Transport	58,066	62,740	64,749	61,111
Other	2,743	2,263	2,536	2,918
Total	136,579	143,051	151,652	152,096

Energy Efficiency (5.1.ii)

Energy Efficiency Contribution	2017	2020	2030	2040
Primary Energy Savings (GWh)	17,448	22,643	39,377	51,323
Total Primary Energy Consumption (GWh)	168,787	176,909	185,232	193,965
Savings as share of total consumption (%)	10.3%	12.8%	21.3%	26.5%

NECP3 - Summary Tables

Renewable Trajectories (2.1.2.i., 2.1.2.ii, 4.2.2)

Renewable Trajectories	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
RES-H&C (%)	6.8%	8.0%	8.3%	8.7%	9.2%	9.7%	10.2%	10.7%	11.2%	11.7%	12.3%	12.9%	15.2%
RES-E (%)	30.1%	38.2%	39.2%	36.8%	36.3%	35.8%	35.6%	35.8%	35.9%	36.9%	38.4%	39.6%	39.1%
RES-T (%)	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.0%	4.0%	4.0%	3.7%
Overall RES share (%)	10.6%	12.3%	12.7%	12.8%	13.0%	13.2%	13.5%	13.7%	14.0%	14.5%	15.2%	15.8%	17.7%
Article 4(a)(2) target for RES increase				18.0%			43.0%		65.0%			100.0%	
RES min trajectory (%)		16.0%		16.0%			15.9%		15.9%			15.8%	
RES projected trajectory (%)		12.3%		12.8%			13.5%		14.0%			15.8%	
Shortfall (%)		3.7%		3.2%			2.4%		1.9%			0.0%	

Renewable Energy Technologies (2.1.2.iii)

Renewable Electricity - installed capacities (MW)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	234	234	234	234	234	234	234	234	234	234	234	234
Biodegradable Municipal Sold Waste	24	40	40	40	40	40	40	40	40	40	40	40
Biogas	54	54	54	54	54	54	54	54	54	54	54	54
Biomass CHP	0	60	60	60	60	60	60	60	60	60	60	60
Biomass co-firing	29	110	110	110	110	110	110	110	110	110	110	0
Onshore wind	3259	4225	4372	4519	4667	4814	4961	5108	5256	5403	5547	6405
Offshore wind	0	25	25	25	25	25	25	25	200	400	600	1600
Solar PV	20	80	90	100	100	100	100	118	125	131	137	200
Ocean	0	0	0	5	5	5	5	5	5	5	5	5

Renewable Electricity - generation by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	61.6	62.9	63.5	63.3	63.7	63.2	63.1	63.2	63.4	63.0	63.1	63.5
Biodegradable Municipal Sold Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Biogas	17.0	11.3	11.3	11.4	11.6	10.3	10.4	10.4	10.4	10.4	9.6	9.0
Biomass	32.8	113.9	113.9	113.9	114.1	113.9	114.1	114.2	114.1	113.7	114.1	31.0
Onshore wind	644.7	898.4	934.2	966.5	993.5	1021.1	1053.0	1084.3	1115.1	1145.0	1174.1	1361.9
Offshore wind	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	38.3	100.1	156.5	387.4
Solar PV	0.9	6.6	7.5	8.3	8.3	8.3	8.3	9.8	10.3	10.9	11.4	16.6
Ocean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Renewable Transport - consumption by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Ethanol - Total	29.6	37.4	38.3	39.1	39.6	40.0	41.1	42.0	42.8	43.2	43.3	40.4
Part A, Annex IX Ethanol	0.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Part B, Annex IX Ethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food or Feed Ethanol	29.6	37.0	38.0	38.7	39.2	39.6	40.7	41.6	42.3	42.8	42.9	40.0
Biodiesel - Total	131.0	166.2	169.4	172.1	172.8	173.1	175.0	177.3	179.0	180.0	180.7	180.9
Part A, Annex IX Biodiesel	0.0	6.2	12.5	19.1	25.6	32.0	40.6	49.5	58.3	67.2	75.9	86.8
Part B, Annex IX Biodiesel	131.0	160.1	156.9	153.0	147.2	141.1	134.4	127.8	120.6	112.9	104.8	94.1
Food or Feed Biodiesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biofuels - Total	160.6	203.6	207.8	211.2	212.4	213.1	216.1	219.3	221.7	223.2	224.0	221.3

Renewable Heat - generation by source and sector (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Industry												
Biogas	2.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Biomass	198.6	214.6	215.3	219.0	225.4	231.8	238.9	246.8	254.5	264.0	274.5	289.7
Renewable portion of heat pumps	0.0	2.6	3.5	4.1	4.7	5.1	5.6	6.1	6.7	7.3	8.1	11.2
Solar thermal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Industry	200.8	219.5	221.1	225.5	232.6	239.4	246.8	255.2	263.6	273.6	284.9	303.2
Residential												
Biogas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biomass	26.9	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8
Renewable portion of heat pumps	24.0	73.8	87.2	101.3	115.7	130.9	146.0	161.0	175.9	190.8	205.8	359.3
Solar thermal	12.5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Total Residential	63.3	120.4	133.7	147.8	162.3	177.4	192.6	207.5	222.4	237.3	252.3	405.8
Tertiary												
Biogas	7.6	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Biomass	21.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.1	27.2
Renewable portion of heat pumps	17.3	34.2	45.7	53.8	61.3	67.9	74.0	80.3	86.6	93.4	101.5	126.6
Solar thermal	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Tertiary	46.1	68.6	80.1	88.2	95.7	102.3	108.4	114.7	121.0	127.8	135.9	161.0

Bioenergy Trajectories (2.1.2.iv)

Bioenergy Demand, Total Final Consumption (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity											
Solid Biomass	32.8	113.9	113.9	113.9	114.1	113.9	114.1	114.2	114.1	113.7	114.1
Biogas	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Landfill Gas	13.3	7.6	7.7	7.8	7.9	6.7	6.7	6.7	6.8	6.7	6.0
Biodegradable Municipal Solid Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Sewage Sludge Gas	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Heat											
Solid Biomass	246.5	274.4	275.1	278.8	285.3	291.7	298.7	306.6	314.4	323.9	334.3
Biogas	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Transport											
Ethanol	29.6	37.4	38.3	39.1	39.6	40.0	41.1	42.0	42.8	43.2	43.3
Biodiesel	131.0	166.2	169.4	172.1	172.8	173.1	175.0	177.3	179.0	180.0	180.7

Biomass Supply by Feedstock (ktoe)	2017	2020	2030
Biomass from Forestry	230	274	444
Domestic	182	220	390
Imported	48	53	53
Biomass from agricultural crops	68	70	80
Domestic	3	8	11
Imported	64	62	69
Biomass from agricultural residues	0.5	0.9	150
Domestic	0.5	0.4	150
Imported	0.0	0.5	0.6
Biomass from waste	402	454	346
Domestic	165	184	194
Imported	237	270	152

Energy Efficiency (2.2.i)

Energy Efficiency Policies (GWh)	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Primary Energy Savings	17,448	21,885	23,043	23,862	24,588	25,283	25,994	26,725	27,494	28,315	29,211	30,219
Final Energy Savings	15,927	19,885	20,917	21,653	22,329	22,979	23,726	24,385	25,112	25,904	26,763	27,713
Energy Efficiency Target Achievement	10.9%	13.7%	14.4%	14.9%	15.4%	15.8%	16.3%	16.7%	17.2%	17.7%	18.3%	18.9%
Total Primary Energy Consumption	168,787	189,060	192,261	197,798	198,794	203,903	203,729	206,183	207,805	211,606	213,212	214,779
Total Final Energy Consumption	136,579	154,379	157,801	162,617	165,564	167,574	169,243	171,078	173,134	174,766	176,589	178,182

Energy Efficiency (4.3.i., 4.3.iii.)

Primary Energy Savings (GWh)	2017	2020	2030	2040
Household	6,467	8,032	9,911	10,030
Services	5,460	7,681	13,266	13,266
Industry	2,713	3,015	3,115	3,115
Transport	1,515	1,514	2,252	4,298
Cross-Sectoral	1,293	1,643	1,674	1,546
Total	17,448	21,885	30,219	32,256
Total Primary Energy Consumption (GWh)				
Household	39,414	44,822	46,734	51,954
Services	24,213	28,691	37,983	42,940
Industry	40,961	41,826	46,363	53,019
Transport	60,819	70,430	80,110	82,683
Other	3,380	3,291	3,589	3,979
Total	168,787	189,060	214,779	234,576

Final Energy Savings (GWh)	2017	2020	2030	2040
Household	6,213	7,702	9,423	9,567
Services	4,663	6,539	11,719	11,864
Industry	2,244	2,488	2,645	2,689
Transport	1,515	1,514	2,252	4,298
Cross-Sectoral	1,293	1,643	1,674	1,546
Total	15,927	19,885	27,713	29,963
Total Final Energy Consumption (GWh)				
Household	30,327	35,446	37,848	41,651
Services	16,190	18,255	25,020	28,944
Industry	29,254	30,289	35,577	41,520
Transport	58,066	67,735	76,715	78,230
Other	2,743	2,655	3,022	3,365
Total	136,579	154,379	178,182	193,709

Energy Efficiency (5.1.ii)

Energy Efficiency Contribution	2017	2020	2030	2040
Primary Energy Savings (GWh)	17,448	21,885	30,219	32,256
Total Primary Energy Consumption (GWh)	168,787	189,060	214,779	234,576
Savings as share of total consumption (%)	10.3%	11.6%	14.1%	13.8%

NECP4 - Summary Tables

Renewable Trajectories (2.1.2.i., 2.1.2.ii, 4.2.2)

Renewable Trajectories	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
RES-H&C (%)	6.8%	8.4%	8.9%	9.6%	10.3%	10.9%	12.0%	13.2%	14.4%	15.7%	16.9%	18.3%	22.9%
RES-E (%)	30.1%	38.6%	40.3%	39.0%	40.7%	45.0%	47.5%	50.1%	52.3%	53.8%	54.4%	55.0%	54.0%
RES-T (%)	4.1%	5.6%	5.6%	5.6%	5.9%	6.5%	7.0%	7.6%	8.1%	8.6%	9.0%	9.3%	8.1%
Overall RES share (%)	10.6%	13.2%	13.8%	14.2%	15.1%	16.8%	18.1%	19.5%	20.8%	21.9%	22.7%	23.7%	27.8%
Article 4(a)(2) target for RES increase				18.0%			43.0%		65.0%			100.0%	
RES min trajectory (%)		16.0%		17.4%			19.3%		21.0%			23.7%	
RES projected trajectory (%)		13.2%		14.2%			18.1%		20.8%			23.7%	
Shortfall (%)		2.8%		3.2%			1.2%		0.2%			0.0%	

Renewable Energy Technologies (2.1.2.iii)

Renewable Electricity - installed capacities (MW)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	234	234	234	234	234	234	234	234	234	234	234	234
Biodegradable Municipal Sold Waste	24	40	40	40	40	40	40	40	40	40	40	40
Biogas	54	54	54	54	54	54	54	54	54	54	54	54
Biomass CHP	0	60	60	60	60	60	60	60	60	60	60	60
Biomass co-firing	29	110	110	110	181	181	181	181	181	181	355	355
Onshore wind	3259	4363	4650	4938	5226	5514	5801	6089	6377	6665	6952	7452
Offshore wind	0	25	25	247	469	691	913	1134	1356	1578	1800	3600
Solar PV	20	187	229	271	447	622	798	973	1149	1324	1500	1918
Ocean	0	0	0	5	5	5	5	5	5	5	5	5

Renewable Electricity - generation by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Hydro	61.6	63.2	63.5	63.0	63.3	63.4	63.3	63.2	63.5	62.9	62.5	63.3
Biodegradable Municipal Sold Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Biogas	17.0	11.4	11.4	11.3	11.4	10.4	10.5	10.4	10.5	10.4	9.7	8.9
Biomass	32.8	113.9	113.9	113.9	167.3	167.2	167.3	167.4	167.4	166.9	167.2	31.0
Onshore wind	644.6	920.8	990.4	1043.2	1116.7	1182.6	1246.0	1306.0	1353.3	1372.8	1415.4	1585.1
Offshore wind	6.1	6.0	6.0	59.5	114.7	168.6	223.0	277.9	294.1	315.6	337.1	866.8
Solar PV	0.9	15.6	19.0	22.5	37.0	51.7	66.2	80.1	95.1	109.3	123.9	159.1
Ocean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Renewable Transport - consumption by source (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Ethanol - Total	29.6	38.4	39.4	44.1	48.8	54.0	60.4	66.5	72.1	76.8	83.4	64.7
Part A, Annex IX Ethanol	0.0	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.6
Part B, Annex IX Ethanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Food or Feed Ethanol	29.6	38.0	39.0	43.7	48.3	53.5	59.8	65.8	71.4	76.0	82.6	64.1
Biodiesel - Total	131.0	240.4	244.9	260.4	288.3	314.1	343.7	373.4	401.3	427.1	447.6	424.3
Part A, Annex IX Biodiesel	0.0	8.9	18.1	28.9	42.7	58.1	79.7	104.2	130.8	159.3	188.0	203.7
Part B, Annex IX Biodiesel	131.0	231.5	226.8	231.5	245.6	256.0	264.0	269.2	270.5	267.8	259.6	220.6
Food or Feed Biodiesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biofuels - Total	160.6	278.8	284.3	304.6	337.0	368.1	404.1	439.9	473.4	503.9	531.0	489.0

Renewable Heat - generation by source and sector (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Industry												
Biogas	2.2	2.4	2.4	2.4	2.4	10.0	17.6	25.2	32.8	40.5	48.1	48.1
Biomass	198.6	217.3	220.1	226.9	227.1	227.9	228.2	230.6	237.0	244.6	252.6	265.5
Renewable portion of heat pumps	0.0	5.0	6.5	7.6	8.3	8.8	9.3	9.9	10.6	11.2	12.1	16.6
Solar thermal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Industry	200.8	224.7	229.0	236.8	237.8	246.7	255.1	265.7	280.4	296.3	312.7	330.2
Residential												
Biogas	0.0	0.0	0.0	0.0	0.0	11.2	22.5	33.7	45.0	56.2	67.5	67.5
Biomass	26.9	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8
Renewable portion of heat pumps	24.0	76.6	92.0	109.7	130.5	156.9	184.5	211.9	239.3	266.6	294.1	541.2
Solar thermal	12.5	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
Total Residential	63.3	123.1	138.5	156.2	177.1	214.7	253.5	292.2	330.8	369.4	408.2	655.2
Tertiary												
Biogas	7.6	7.3	7.3	7.3	7.3	11.3	15.4	19.5	23.5	27.6	31.7	31.7
Biomass	21.1	29.4	29.5	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.8	29.7
Renewable portion of heat pumps	17.3	48.1	67.7	80.6	90.8	99.4	106.4	114.0	121.4	129.4	138.7	169.5
Solar thermal	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Tertiary	46.1	84.8	104.5	117.9	128.0	140.7	151.7	163.4	174.9	186.9	200.2	230.8

Bioenergy Trajectories (2.1.2.iv)

Bioenergy Demand, Total Final Consumption (ktoe)	2017	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity											
Solid Biomass	32.8	113.9	113.9	113.9	167.3	167.2	167.3	167.4	167.4	166.9	167.2
Biogas	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Landfill Gas	13.3	7.7	7.7	7.6	7.8	6.7	6.8	6.8	6.8	6.7	6.0
Biodegradable Municipal Solid Waste	13.0	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Sewage Sludge Gas	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Heat											
Solid Biomass	246.5	279.5	282.4	289.6	289.8	290.6	290.9	293.3	299.7	307.2	315.1
Biogas	9.7	9.7	9.7	9.7	9.7	32.6	55.5	78.4	101.4	124.3	147.2
Transport											
Ethanol	29.6	38.4	39.4	44.1	48.8	54.0	60.4	66.5	72.1	76.8	83.4
Biodiesel	131.0	240.4	244.9	260.4	288.3	314.1	343.7	373.4	401.3	427.1	447.6

Biomass Supply by Feedstock (ktoe)	2017	2020	2030
Biomass from Forestry	230	276	546
Domestic	182	220	489
Imported	48	56	57
Biomass from agricultural crops	68	88	220
Domestic	3	8	41
Imported	64	80	180
Biomass from agricultural residues	0.5	1.1	501
Domestic	0.5	0.4	499
Imported	0.0	0.7	1.5
Biomass from waste	402	626	760
Domestic	165	184	266
Imported	237	443	494

Energy Efficiency (2.2.i)

Energy Efficiency Policies (GWh)	2017	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Primary Energy Savings	17,448	22,912	24,414	26,249	27,865	29,186	30,603	32,610	34,190	35,866	37,808	40,038
Final Energy Savings	15,927	20,730	22,046	23,562	25,017	26,305	27,839	29,866	31,388	33,024	34,920	37,128
Energy Efficiency Target Achievement	10.9%	14.4%	15.3%	16.4%	17.5%	18.3%	19.2%	20.4%	21.4%	22.5%	23.7%	25.1%
Total Primary Energy Consumption	168,787	187,332	190,659	196,779	197,433	201,739	200,461	197,309	199,608	201,816	203,229	202,009
Total Final Energy Consumption	136,579	153,705	157,014	161,640	164,386	166,152	167,537	168,980	170,666	171,853	173,065	173,871

Energy Efficiency (4.3.i., 4.3.iii.)

Primary Energy Savings (GWh)	2017	2020	2030	2040
Household	6,467	8,227	14,457	18,274
Services	5,460	8,086	15,477	17,915
Industry	2,713	3,015	4,020	5,025
Transport	1,515	1,533	3,379	7,332
Cross-Sectoral	1,293	2,051	2,706	3,672
Total	17,448	22,912	40,038	52,218
Total Primary Energy Consumption (GWh)				
Household	39,414	44,211	43,083	48,799
Services	24,213	28,023	33,604	39,541
Industry	40,961	41,416	43,238	51,531
Transport	60,819	70,409	78,643	79,305
Other	3,380	3,272	3,441	3,936
Total	168,787	187,332	202,009	223,113

Final Energy Savings (GWh)	2017	2020	2030	2040
Household	6,213	7,892	14,019	17,798
Services	4,663	6,767	13,533	15,818
Industry	2,244	2,487	3,492	4,412
Transport	1,515	1,533	3,379	7,332
Cross-Sectoral	1,293	2,051	2,706	3,672
Total	15,927	20,730	37,128	49,032
Total Final Energy Consumption (GWh)				
Household	30,327	35,095	36,162	38,381
Services	16,190	18,018	24,414	27,377
Industry	29,254	30,239	35,361	41,070
Transport	58,066	67,698	74,912	73,312
Other	2,743	2,655	3,022	3,365
Total	136,579	153,705	173,871	183,506

Energy Efficiency (5.1.ii)

Energy Efficiency Contribution	2017	2020	2030	2040
Primary Energy Savings (GWh)	17,448	22,912	40,038	52,218
Total Primary Energy Consumption (GWh)	168,787	187,332	202,009	223,113
Savings as share of total consumption (%)	10.3%	12.2%	19.8%	23.4%