Net-Zero America - maine state report v2

Larson et al. 2020

February 2021

Reading guide

IN DRAFT

List of Tables

1 E- scenario - PILLAR 1: Efficiency/Electrification - Residential . . . 3
2 E- scenario - PILLAR 1: Efficiency/Electrification - Transportation . . . 3
3 E- scenario - PILLAR 2: Clean Electricity - Generating capacity . . . 3
4 E- scenario - PILLAR 2: Clean Electricity - Generation . . . 3
5 E- scenario - PILLAR 2: Clean Electricity - Transmission . . . 3
6 E- scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion . . . 3
7 E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture . . . 4
8 E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage . . . 4
9 E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation . . . 4
10 E- scenario - IMPACTS - Jobs . . . 4
11 E- scenario - PILLAR 6: Land carbon sinks - Agriculture . . . 4
12 E- scenario - PILLAR 6: Land carbon sinks - Forests . . . 5
13 E- scenario - IMPACTS - Fossil fuel industries . . . 5
14 E- scenario - PILLAR 1: Efficiency/Electrification - Overview . . . 5
15 E- scenario - PILLAR 1: Efficiency/Electrification - Commercial . . . 5
16 E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand . . . 5
17 RE- scenario - PILLAR 1: Efficiency/Electrification - Residential . . . 6
18 RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation . . . 6
19 RE- scenario - PILLAR 6: Land carbon sinks - Agriculture . . . 6
20 RE- scenario - PILLAR 6: Land carbon sinks - Forests . . . 6
21 RE- scenario - PILLAR 1: Efficiency/Electrification - Overview . . . 7
22 RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial . . . 7
23 RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand . . . 7

24 REF scenario - PILLAR 1: Efficiency/Electrification - Residential 7
25 REF scenario - PILLAR 1: Efficiency/Electrification - Transportation 7
26 REF scenario - PILLAR 6: Land carbon sinks - Agriculture 8
27 REF scenario - PILLAR 6: Land carbon sinks - Forests 8
28 REF scenario - PILLAR 1: Efficiency/Electrification - Overview 8
29 REF scenario - PILLAR 1: Efficiency/Electrification - Commercial 8
30 REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand 9
31 E+ scenario - PILLAR 2: Clean Electricity - Generating capacity 9
32 E+ scenario - PILLAR 2: Clean Electricity - Transmission 9
33 E+ scenario - PILLAR 6: Land carbon sinks - Agriculture 9
34 E+ scenario - PILLAR 6: Land carbon sinks - Forests 9
35 RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity 10
36 RE+ scenario - PILLAR 2: Clean Electricity - Generation 10
37 RE+ scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion 10
38 RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture 10
39 RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage 10
40 RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation 10
41 RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture 10
42 RE+ scenario - PILLAR 6: Land carbon sinks - Forests 11
43 B+ scenario - PILLAR 6: Land carbon sinks - Agriculture 11
44 B+ scenario - PILLAR 6: Land carbon sinks - Forests 12

Table 1: *E- scenario - PILLAR 1: Efficiency/Electrification - Residential*

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	1.248	1.276	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.03	0.125	0.619	0.808	0.832	0.835	0.834
Sale of space heating units by type - Electric Resistance	0.014	0.014	0.012	0.005	0.004	0.004	0.004
Sale of space heating units by type - Fossil	0.889	0.825	0.344	0.182	0.164	0.161	0.162
Sale of space heating units by type - Gas	0.067	0.035	0.026	0.005	0.001	0	0
Sales of cooking units - Electric Resistance	0.642	0.718	0.952	0.998	1	1	1
Sales of cooking units - Gas	0.358	0.282	0.048	0.002	0	0	0
Sales of water heating units by type - Electric Heat Pump	0	0.028	0.187	0.339	0.367	0.369	0.37
Sales of water heating units by type - Electric Resistance	0.255	0.441	0.556	0.618	0.629	0.63	0.629
Sales of water heating units by type - Gas Furnace	0.318	0.283	0.209	0.04	0.003	0	0
Sales of water heating units by type - Other	0.428	0.248	0.048	0.003	0.001	0.001	0.001

Table 2: *E- scenario - PILLAR 1: Efficiency/Electrification - Transportation*

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.972	0.921	0.67	0.233	0.042	0.006	0
End-use technology sales by technology - HDV - EV	0.006	0.038	0.19	0.456	0.574	0.596	0.6
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.002	0.001	0	0	0
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0	0	0	0
End-use technology sales by technology - HDV - hydrogen FC	0.004	0.025	0.127	0.304	0.382	0.397	0.4
End-use technology sales by technology - HDV - other	0.015	0.012	0.011	0.006	0.002	0	0
End-use technology sales by technology - LDV - diesel	0.017	0.019	0.013	0.004	0.001	0	0
End-use technology sales by technology - LDV - EV	0.035	0.14	0.446	0.811	0.962	0.993	1
End-use technology sales by technology - LDV - gasoline	0.906	0.794	0.507	0.173	0.034	0.006	0
End-use technology sales by technology - LDV - hybrid	0.04	0.043	0.031	0.012	0.003	0.001	0
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.003	0.002	0.001	0	0	0
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0	0	0	0
End-use technology sales by technology - MDV - diesel	0.647	0.597	0.423	0.144	0.026	0.004	0
End-use technology sales by technology - MDV - EV	0.008	0.051	0.253	0.608	0.765	0.795	0.8
End-use technology sales by technology - MDV - gasoline	0.337	0.333	0.255	0.093	0.018	0.003	0
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.003	0.001	0	0	0
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.013	0.063	0.152	0.191	0.199	0.2
End-use technology sales by technology - MDV - other	0.003	0.003	0.002	0.001	0	0	0
Light-duty vehicle capital costs - Cumulative 5-yr	0	215845124	553632431	896494211	1358272045	1478017000	1409358080
Number of public EV charging plugs - DC Fast Charging	118	0	512.511	0	2243.4	0	3626.5
Number of public EV charging plugs - L2 Charging	300	0	12305.4	0	53862.9	0	87071.9

Table 3: *E- scenario - PILLAR 2: Clean Electricity - Generating capacity*

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation capital investment - biomass power plant	0	0	0.184	0	0	0	0
Power generation capital investment - biomass w/ccu allam power plant	0	0	0	0	0	0	0
Power generation capital investment - biomass w/ccu power plant	0	0	0	0	0	0	0
Power generation capital investment - Offshore Wind - Base	0	0	0	0	0	5.075	33.678
Power generation capital investment - Solar PV - Base	0	0	0	0	0	0	4.166
Power generation capital investment - Solar PV - Constrained	0	0.114	0	0	0	0.302	5.359
Power generation capital investment - Wind - Base	0	0	0	0	0	0	0.077
Power generation capital investment - Wind - Constrained	0	0	0	0	0	0	0

Table 4: *E- scenario - PILLAR 2: Clean Electricity - Generation*

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation by technology - biomass power plant	0	0	360.796	360.796	360.796	360.796	360.796
Power generation by technology - biomass w/ccu allam power plant	0	0	0	0	0	0	0
Power generation by technology - biomass w/ccu power plant	0	0	0	0	0	0	0

Table 5: *E- scenario - PILLAR 2: Clean Electricity - Transmission*

variable_name	2020	2025	2030	2035	2040	2045	2050
HV transmission for wind and solar - base all	0	136.795	136.795	136.795	136.795	4617.1	46947.1
HV transmission for wind and solar - base other intra-state	0	0	0	0	0	0	0
HV transmission for wind and solar - base spur intra-state	0	59.114	59.114	59.114	59.114	2278	24917.4
HV transmission for wind and solar - constrained all	0	136.795	139.56	171.052	209.037	209.037	55614.9
HV transmission for wind and solar - constrained other intra-state	0	0	0	0	0	0	0
HV transmission for wind and solar - constrained spur intra-state	0	59.114	59.114	81.4	115.045	115.045	30350.3

Table 6: *E- scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion*

variable_name	2020	2025	2030	2035	2040	2045	2050
Biomass purchases	0	0	0.013	0.013	0.013	0.013	0.118
Capital investment	0	0	0.193	0	0	0	2.235
Number of facilities - allam power w ccu	0	0	0	0	0	0	0
Number of facilities - beccs hydrogen	0	0	0	0	0	0	2

Table 6: *E- scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion (continued)*

variable_name	2020	2025	2030	2035	2040	2045	2050
Number of facilities - diesel	0	0	0	0	0	0	0
Number of facilities - diesel ccu	0	0	0	0	0	0	0
Number of facilities - power	0	0	1	1	1	1	1
Number of facilities - power ccu	0	0	0	0	0	0	0
Number of facilities - pyrolysis	0	0	0	0	0	0	0
Number of facilities - pyrolysis ccu	0	0	0	0	0	0	0
Number of facilities - sng	0	1	1	1	1	1	1
Number of facilities - sng ccu	0	0	0	0	0	0	0

Table 7: *E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture*

variable_name	2025	2030	2035	2040	2045	2050
Annual - All	0	0	0	3.32	3.42	6.58
Annual - BECCS	0	0	0	0	0	3.05
Annual - Cement	0	0	0	3.32	3.42	3.53
Annual - NGCC	0	0	0	0	0	0
Cumulative - All	0	0	0	3.32	6.74	13.32
Cumulative - BECCS	0	0	0	0	0	3.05
Cumulative - Cement	0	0	0	3.32	6.74	10.27
Cumulative - NGCC	0	0	0	0	0	0

Table 8: *E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage*

variable_name	2025	2030	2035	2040	2045	2050
Annual	0	0	0	0	0	0
Injection wells	0	0	0	0	0	0
Resource characterization, appraisal and permitting costs cumulative	0	0	0	0	0	0
Wells and facilities construction costs cumulative	0	0	0	0	0	0

Table 9: *E- scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation*

variable_name	2025	2030	2035	2040	2045	2050
CO2 pipelines - All	0	273198.486	273198.486	387820.355	389801.755	623872.404
CO2 pipelines - Spur	0	0	0	114621.769	116603.269	350673.918
CO2 pipelines - Trunk	0	273198.486	273198.486	273198.486	273198.486	273198.486

Table 10: *E- scenario - IMPACTS - Jobs*

variable_name	2020	2025	2030	2035	2040	2045	2050
Jobs by economic sector - agriculture	207.688	239.437	498.537	218.587	172.616	129.308	248.812
Jobs by economic sector - construction	1460.4	1355.2	1129.3	1059.9	1250.4	3284.4	25058.4
Jobs by economic sector - manufacturing	827.335	1080.6	1609.2	1419.1	1553.8	2377.1	6655.2
Jobs by economic sector - mining	793.505	647.791	484.763	333.29	220.376	144.613	94.296
Jobs by economic sector - other	133.442	120.492	82.766	92.912	112.311	295.293	2892.2
Jobs by economic sector - pipeline	99.922	98.92	121.111	72.125	70.266	56.425	70.556
Jobs by economic sector - professional	1145.7	1235.5	1125.9	762.575	789.748	1962.9	14696.2
Jobs by economic sector - trade	789.104	770.563	607.711	502.201	490.997	1099.9	8346.5
Jobs by economic sector - utilities	859.464	896.156	767.051	785.96	1279.2	3800	28080.4
Jobs by resource sector - Biomass	860.922	1027.6	1374.6	622.565	519.632	471.599	1062.5
Jobs by resource sector - CO2	0	0	272.168	0	111.67	111.371	313.387
Jobs by resource sector - Grid	1227.7	1095.1	852.762	1349	1965.1	7333.4	56654
Jobs by resource sector - Natural Gas	524.451	700.84	421.289	241.678	522.873	295.924	262.478
Jobs by resource sector - Nuclear	0	0	0	0	0	0	0
Jobs by resource sector - Oil	2096.2	1867	1545.6	1179.4	872.096	650.249	480.772
Jobs by resource sector - Solar	966.344	984.911	948.343	665.614	877.649	1417.6	6881.9
Jobs by resource sector - Wind	641.005	769.24	1011.6	1188.4	1070.7	2869.7	20487.5
Median wages - All	57130.5	57717.2	57407.1	57891.6	58492.7	59594.3	60830.4
Required Level of Education - Associates degree or some college	1834.9	1877.7	1834.8	1560.8	1834.4	4211.1	28050.6
Required Level of Education - Bachelors degree	1441.6	1470.9	1398	1109.6	1217.9	2649.3	17210.1
Required Level of Education - Doctoral degree	57.923	59.824	54.262	38.813	39.994	90.903	644.266
Required Level of Education - High school diploma or less	2623.9	2670.2	2798.4	2274.8	2559.7	5543.9	35775.2
Required Level of Education - Masters or professional degree	358.311	366.08	340.875	262.65	287.716	654.769	4462.5
Wage income - All	360898958	371997322	368937457	303757461	347451097	783716467	5240615002

Table 11: *E- scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	187.697
Carbon sink enhancement potential - All (not counting overlap)	45092.4
Carbon sink enhancement potential - Avoid deforestation	852.114
Carbon sink enhancement potential - corn-ethanol to energy grasses	0
Carbon sink enhancement potential - cropland measures	-475.37
Carbon sink enhancement potential - Extend rotation length	17918.3
Carbon sink enhancement potential - Improve plantations	539.545
Carbon sink enhancement potential - Increase retention of HWP	18181.8
Carbon sink enhancement potential - Increase trees outside forests	221.953
Carbon sink enhancement potential - permanent conservation cover	-15.115
Carbon sink enhancement potential - Reforest cropland	702.114

Table 11: *E- scenario - PILLAR 6: Land carbon sinks - Agriculture (continued)*

variable_name	2050
Carbon sink enhancement potential - Reforest pasture	573.127
Carbon sink enhancement potential - Restore productivity	5915.6
Carbon sink enhancement potential - total	-490.485
Land impacted for carbon sink enhancement - Accelerate regeneration	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	228.738
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	0
Land impacted for carbon sink enhancement - cropland measures	264.139
Land impacted for carbon sink enhancement - Extend rotation length	9871
Land impacted for carbon sink enhancement - Improve plantations	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	62.61
Land impacted for carbon sink enhancement - permanent conservation cover	27.492
Land impacted for carbon sink enhancement - Reforest cropland	233.762
Land impacted for carbon sink enhancement - Reforest pasture	43.337
Land impacted for carbon sink enhancement - Restore productivity	3338.272
Land impacted for carbon sink enhancement - total	291.631
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	8314.6

Table 12: *E- scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526

Table 13: *E- scenario - IMPACTS - Fossil fuel industries*

variable_name	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption	35439	35965.3	30316.7	24315.3	18304.2	11516.4	7987.5
Oil consumption	43002.4	41995.4	37886.5	31313.5	24931.1	19899.2	15662.2

Table 14: *E- scenario - PILLAR 1: Efficiency/Electrification - Overview*

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.035	0.033	0.031	0.029	0.027	0.025	0.024
Final energy demand by sector - industry	0.091	0.089	0.086	0.082	0.08	0.103	0.102
Final energy demand by sector - residential	0.077	0.068	0.06	0.05	0.041	0.035	0.031
Final energy demand by sector - transportation	0.115	0.106	0.093	0.076	0.061	0.052	0.048

Table 15: *E- scenario - PILLAR 1: Efficiency/Electrification - Commercial*

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	2622032454	2862264105	0	0	0	0
Sales of cooking units - Electric Resistance	0.369	0.499	0.812	0.874	0.877	0.877	0.877
Sales of cooking units - Gas	0.631	0.501	0.188	0.126	0.123	0.123	0.123
Sales of space heating units - Electric Heat Pump	0.023	0.11	0.395	0.713	0.774	0.778	0.78
Sales of space heating units - Electric Resistance	0.013	0.043	0.167	0.213	0.22	0.222	0.22
Sales of space heating units - Fossil	0.841	0.334	0.064	0.003	0	0	0
Sales of space heating units - Gas Furnace	0.122	0.513	0.375	0.071	0.006	0	0
Sales of water heating units - Electric Heat Pump	0.04	0.036	0.158	0.4	0.453	0.458	0.459
Sales of water heating units - Electric Resistance	0.194	0.125	0.237	0.472	0.522	0.525	0.525
Sales of water heating units - Gas Furnace	0.582	0.787	0.584	0.112	0.009	0	0
Sales of water heating units - Other	0.184	0.052	0.021	0.016	0.016	0.016	0.016

Table 16: *E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	0.631	0.64	1.217	1.293	1.26	1.324

Table 17: *RE- scenario - PILLAR 1: Efficiency/Electrification - Residential*

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	1.235	1.26	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.029	0.046	0.049	0.053	0.054	0.054	0.055
Sale of space heating units by type - Electric Resistance	0.014	0.014	0.014	0.014	0.014	0.014	0.013
Sale of space heating units by type - Fossil	0.89	0.813	0.499	0.281	0.265	0.262	0.264
Sale of space heating units by type - Gas	0.067	0.127	0.438	0.651	0.667	0.67	0.668
Sales of cooking units - Electric Resistance	0.638	0.638	0.638	0.638	0.638	0.638	0.638
Sales of cooking units - Gas	0.362	0.362	0.362	0.362	0.362	0.362	0.362
Sales of water heating units by type - Electric Heat Pump	0	0	0	0	0	0	0
Sales of water heating units by type - Electric Resistance	0.255	0.416	0.415	0.417	0.416	0.416	0.415
Sales of water heating units by type - Gas Furnace	0.318	0.289	0.29	0.29	0.291	0.292	0.292
Sales of water heating units by type - Other	0.428	0.295	0.295	0.293	0.293	0.292	0.292

Table 18: *RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation*

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.981	0.982	0.979	0.97	0.956	0.935	0.916
End-use technology sales by technology - HDV - EV	0	0	0	0	0	0	0
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.003	0.003	0.003	0.003	0.003
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0.001	0.002	0.002	0.002
End-use technology sales by technology - HDV - hydrogen FC	0.001	0.001	0.002	0.002	0.002	0.002	0.003
End-use technology sales by technology - HDV - other	0.015	0.013	0.016	0.024	0.037	0.057	0.076
End-use technology sales by technology - LDV - diesel	0.017	0.021	0.022	0.02	0.019	0.017	0.016
End-use technology sales by technology - LDV - EV	0.032	0.051	0.058	0.071	0.087	0.102	0.113
End-use technology sales by technology - LDV - gasoline	0.909	0.874	0.855	0.838	0.818	0.798	0.782
End-use technology sales by technology - LDV - hybrid	0.041	0.049	0.06	0.066	0.072	0.078	0.084
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.004	0.004	0.003	0.003	0.003	0.003
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0.001	0.001	0.001	0.001
End-use technology sales by technology - MDV - diesel	0.652	0.635	0.616	0.596	0.58	0.565	0.552
End-use technology sales by technology - MDV - EV	0	0.001	0.003	0.007	0.009	0.01	0.01
End-use technology sales by technology - MDV - gasoline	0.34	0.355	0.37	0.385	0.397	0.408	0.417
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.005	0.006	0.007	0.008	0.009
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.002	0.002	0.003	0.003	0.004	0.005
End-use technology sales by technology - MDV - other	0.003	0.003	0.003	0.003	0.004	0.005	0.007

Table 19: *RE- scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2020	2030	2050
Carbon sink enhancement potential - Accelerate regeneration	0	0	187.697
Carbon sink enhancement potential - All (not counting overlap)	0	0	45092.4
Carbon sink enhancement potential - Avoid deforestation	0	0	852.114
Carbon sink enhancement potential - Extend rotation length	0	0	17918.3
Carbon sink enhancement potential - Improve plantations	0	0	539.545
Carbon sink enhancement potential - Increase retention of HWP	0	0	18181.8
Carbon sink enhancement potential - Increase trees outside forests	0	0	221.953
Carbon sink enhancement potential - Reforest cropland	0	0	702.114
Carbon sink enhancement potential - Reforest pasture	0	0	573.127
Carbon sink enhancement potential - Restore productivity	0	0	5915.6
Land impacted for carbon sink enhancement - Accelerate regeneration	0	0	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	0	0	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	0	0	228.738
Land impacted for carbon sink enhancement - Extend rotation length	0	0	9871
Land impacted for carbon sink enhancement - Improve plantations	0	0	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	0	0	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	0	0	62.61
Land impacted for carbon sink enhancement - Natural uptake	-6.38	-15.298	-13.679
Land impacted for carbon sink enhancement - Reforest cropland	0	0	233.762
Land impacted for carbon sink enhancement - Reforest pasture	0	0	43.337
Land impacted for carbon sink enhancement - Restore productivity	0	0	3338.272
Land impacted for carbon sink enhancement - Retained in Hardwood Products	-2.968	-5.34	-5.55
Land impacted for carbon sink enhancement - Total	-9.348	-20.638	-19.229
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	0	0	8314.6

Table 20: *RE- scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874

Table 20: *RE- scenario - PILLAR 6: Land carbon sinks - Forests (continued)*

variable_name	2050
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526

Table 21: *RE- scenario - PILLAR 1: Efficiency/Electrification - Overview*

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.035	0.034	0.033	0.032	0.031	0.031	0.031
Final energy demand by sector - industry	0.091	0.093	0.093	0.094	0.097	0.1	0.102
Final energy demand by sector - residential	0.077	0.069	0.063	0.059	0.055	0.052	0.05
Final energy demand by sector - transportation	0.115	0.107	0.098	0.092	0.092	0.095	0.098

Table 22: *RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial*

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	2589513737	2663588292	0	0	0	0
Sales of cooking units - Electric Resistance	0.369	0.39	0.386	0.385	0.383	0.385	0.384
Sales of cooking units - Gas	0.631	0.61	0.614	0.615	0.617	0.615	0.616
Sales of space heating units - Electric Heat Pump	0.023	0.127	0.404	0.636	0.675	0.678	0.68
Sales of space heating units - Electric Resistance	0.013	0.025	0.075	0.199	0.302	0.32	0.32
Sales of space heating units - Fossil	0.841	0.373	0.261	0.102	0.015	0.001	0
Sales of space heating units - Gas Furnace	0.122	0.475	0.261	0.063	0.008	0.001	0
Sales of water heating units - Electric Heat Pump	0.04	0.024	0.024	0.024	0.024	0.024	0.024
Sales of water heating units - Electric Resistance	0.194	0.114	0.11	0.114	0.113	0.112	0.112
Sales of water heating units - Gas Furnace	0.582	0.804	0.811	0.809	0.809	0.813	0.815
Sales of water heating units - Other	0.184	0.058	0.056	0.054	0.055	0.051	0.049

Table 23: *RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	0.574	0.576	0.751	0.773	0.756	0.774

Table 24: *REF scenario - PILLAR 1: Efficiency/Electrification - Residential*

variable_name	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr	0	1.253	1.384	0	0	0	0
Sale of space heating units by type - Electric Heat Pump	0.03	0.026	0.054	0.136	0.269	0.368	0.408
Sale of space heating units by type - Electric Resistance	0.014	0.014	0.014	0.014	0.013	0.011	0.01
Sale of space heating units by type - Fossil	0.889	0.923	0.896	0.815	0.689	0.596	0.561
Sale of space heating units by type - Gas	0.067	0.036	0.036	0.034	0.03	0.024	0.021
Sales of cooking units - Electric Resistance	0.641	0.65	0.683	0.77	0.89	0.965	0.99
Sales of cooking units - Gas	0.359	0.35	0.317	0.23	0.11	0.035	0.01
Sales of water heating units by type - Electric Heat Pump	0	0.003	0.012	0.04	0.093	0.145	0.172
Sales of water heating units by type - Electric Resistance	0.255	0.419	0.424	0.446	0.478	0.505	0.518
Sales of water heating units by type - Gas Furnace	0.318	0.287	0.284	0.269	0.234	0.188	0.16
Sales of water heating units by type - Other	0.428	0.291	0.28	0.245	0.195	0.162	0.15

Table 25: *REF scenario - PILLAR 1: Efficiency/Electrification - Transportation*

variable_name	2020	2025	2030	2035	2040	2045	2050
End-use technology sales by technology - HDV - diesel	0.974	0.96	0.913	0.798	0.582	0.321	0.137
End-use technology sales by technology - HDV - EV	0.005	0.015	0.041	0.108	0.236	0.394	0.51
End-use technology sales by technology - HDV - gasoline	0.002	0.002	0.002	0.002	0.002	0.001	0.001
End-use technology sales by technology - HDV - hybrid	0.001	0.001	0.001	0.001	0.001	0.001	0
End-use technology sales by technology - HDV - hydrogen FC	0.003	0.01	0.027	0.072	0.157	0.263	0.34
End-use technology sales by technology - HDV - other	0.015	0.013	0.015	0.019	0.022	0.02	0.011
End-use technology sales by technology - LDV - diesel	0.017	0.021	0.021	0.017	0.011	0.006	0.002
End-use technology sales by technology - LDV - EV	0.017	0.044	0.112	0.248	0.472	0.713	0.873
End-use technology sales by technology - LDV - gasoline	0.922	0.881	0.806	0.679	0.475	0.256	0.113
End-use technology sales by technology - LDV - hybrid	0.042	0.05	0.057	0.052	0.04	0.024	0.012
End-use technology sales by technology - LDV - hydrogen FC	0.001	0.004	0.003	0.003	0.002	0.001	0
End-use technology sales by technology - LDV - other	0.001	0.001	0.001	0.001	0.001	0	0
End-use technology sales by technology - MDV - diesel	0.648	0.622	0.577	0.494	0.356	0.196	0.084
End-use technology sales by technology - MDV - EV	0.007	0.019	0.055	0.143	0.314	0.526	0.68
End-use technology sales by technology - MDV - gasoline	0.338	0.347	0.347	0.319	0.244	0.142	0.063
End-use technology sales by technology - MDV - hybrid	0.004	0.004	0.005	0.005	0.004	0.003	0.001
End-use technology sales by technology - MDV - hydrogen FC	0.002	0.005	0.014	0.036	0.079	0.132	0.17
End-use technology sales by technology - MDV - other	0.003	0.003	0.003	0.003	0.003	0.002	0.001
Light-duty vehicle capital costs - Cumulative 5-yr	0	0	34984777	73361205	247884506	779590024	1135934506
Number of public EV charging plugs - DC Fast Charging	118	0	159.269	0	832.59	0	2322.8
Number of public EV charging plugs - L2 Charging	300	0	3824	0	19990.4	0	55769.5

Table 26: *REF scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	187.697
Carbon sink enhancement potential - All (not counting overlap)	45092.4
Carbon sink enhancement potential - Avoid deforestation	852.114
Carbon sink enhancement potential - corn-ethanol to energy grasses	0
Carbon sink enhancement potential - cropland measures	-475.37
Carbon sink enhancement potential - Extend rotation length	17918.3
Carbon sink enhancement potential - Improve plantations	539.545
Carbon sink enhancement potential - Increase retention of HWP	18181.8
Carbon sink enhancement potential - Increase trees outside forests	221.953
Carbon sink enhancement potential - permanent conservation cover	-15.115
Carbon sink enhancement potential - Reforest cropland	702.114
Carbon sink enhancement potential - Reforest pasture	573.127
Carbon sink enhancement potential - Restore productivity	5915.6
Carbon sink enhancement potential - total	-490.485
Land impacted for carbon sink enhancement - Accelerate regeneration	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	228.738
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	0
Land impacted for carbon sink enhancement - cropland measures	264.139
Land impacted for carbon sink enhancement - Extend rotation length	9871
Land impacted for carbon sink enhancement - Improve plantations	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	62.61
Land impacted for carbon sink enhancement - permanent conservation cover	27.492
Land impacted for carbon sink enhancement - Reforest cropland	233.762
Land impacted for carbon sink enhancement - Reforest pasture	43.337
Land impacted for carbon sink enhancement - Restore productivity	3338.272
Land impacted for carbon sink enhancement - total	291.631
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	8314.6

Table 27: *REF scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526

Table 28: *REF scenario - PILLAR 1: Efficiency/Electrification - Overview*

variable_name	2020	2025	2030	2035	2040	2045	2050
Final energy demand by sector - commercial	0.035	0.033	0.032	0.031	0.03	0.029	0.028
Final energy demand by sector - industry	0.091	0.089	0.086	0.083	0.081	0.104	0.103
Final energy demand by sector - residential	0.077	0.069	0.063	0.057	0.052	0.047	0.043
Final energy demand by sector - transportation	0.115	0.107	0.097	0.089	0.083	0.076	0.067

Table 29: *REF scenario - PILLAR 1: Efficiency/Electrification - Commercial*

variable_name	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr	0	2621621475	2866031879	0	0	0	0
Sales of cooking units - Electric Resistance	0.369	0.407	0.447	0.565	0.727	0.829	0.864
Sales of cooking units - Gas	0.631	0.593	0.553	0.435	0.273	0.171	0.136
Sales of space heating units - Electric Heat Pump	0.023	0.069	0.085	0.133	0.228	0.327	0.381
Sales of space heating units - Electric Resistance	0.013	0.018	0.024	0.045	0.079	0.105	0.113
Sales of space heating units - Fossil	0.841	0.392	0.381	0.339	0.268	0.223	0.21
Sales of space heating units - Gas Furnace	0.122	0.521	0.51	0.484	0.425	0.346	0.295
Sales of water heating units - Electric Heat Pump	0.04	0.027	0.034	0.056	0.111	0.179	0.22
Sales of water heating units - Electric Resistance	0.194	0.116	0.119	0.145	0.196	0.26	0.299
Sales of water heating units - Gas Furnace	0.582	0.799	0.794	0.751	0.652	0.526	0.448
Sales of water heating units - Other	0.184	0.058	0.053	0.047	0.042	0.035	0.033

Table 30: *REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand*

variable_name	2025	2030	2035	2040	2045	2050
Electricity distribution peak load (capital invested) - Cumulative 5-yr	0.484	0.475	0.654	0.668	1.107	1.172

Table 31: *E+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

variable_name	2025	2030	2035	2040	2045	2050
Power generation capital investment - Offshore Wind - Base	0	0	0	0.583	20.634	44.66
Power generation capital investment - Solar PV - Base	0	0	0.434	0.33	3.488	8.83
Power generation capital investment - Wind - Base	0	0	0	0	0	0.077

Table 32: *E+ scenario - PILLAR 2: Clean Electricity - Transmission*

variable_name	2020	2025	2030	2035	2040	2045	2050
HV transmission for wind and solar - base all	0	136.795	136.795	177.32	747.61	19946.2	88196.6
HV transmission for wind and solar - base other intra-state	0	0	0	0	0	0	0
HV transmission for wind and solar - base spur intra-state	0	59.114	59.114	94.406	427.164	9787.8	50866.5

Table 33: *E+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	187.697
Carbon sink enhancement potential - All (not counting overlap)	45092.4
Carbon sink enhancement potential - Avoid deforestation	852.114
Carbon sink enhancement potential - corn-ethanol to energy grasses	0
Carbon sink enhancement potential - cropland measures	-475.37
Carbon sink enhancement potential - Extend rotation length	17918.3
Carbon sink enhancement potential - Improve plantations	539.545
Carbon sink enhancement potential - Increase retention of HWP	18181.8
Carbon sink enhancement potential - Increase trees outside forests	221.953
Carbon sink enhancement potential - permanent conservation cover	-15.115
Carbon sink enhancement potential - Reforest cropland	702.114
Carbon sink enhancement potential - Reforest pasture	573.127
Carbon sink enhancement potential - Restore productivity	5915.6
Carbon sink enhancement potential - total	-490.485
Land impacted for carbon sink enhancement - Accelerate regeneration	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	228.738
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	0
Land impacted for carbon sink enhancement - cropland measures	264.139
Land impacted for carbon sink enhancement - Extend rotation length	9871
Land impacted for carbon sink enhancement - Improve plantations	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	62.61
Land impacted for carbon sink enhancement - permanent conservation cover	27.492
Land impacted for carbon sink enhancement - Reforest cropland	233.762
Land impacted for carbon sink enhancement - Reforest pasture	43.337
Land impacted for carbon sink enhancement - Restore productivity	3338.272
Land impacted for carbon sink enhancement - total	291.631
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	8314.6

Table 34: *E+ scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526

Table 35: *RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity*

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation capital investment - biomass power plant	0	0	0.917	0	0	0	0
Power generation capital investment - biomass w/ccu allam power plant	0	0	0	0	0	0	0.019
Power generation capital investment - biomass w/ccu power plant	0	0	0	0	0	0	0.022

Table 36: *RE+ scenario - PILLAR 2: Clean Electricity - Generation*

variable_name	2020	2025	2030	2035	2040	2045	2050
Power generation by technology - biomass power plant	0	0	1800.9	1800.9	1800.9	1800.9	1800.9
Power generation by technology - biomass w/ccu allam power plant	0	0	0	0	0	0	18.667
Power generation by technology - biomass w/ccu power plant	0	0	0	0	0	0	24.718

Table 37: *RE+ scenario - PILLAR 3: Bioenergy and Hydrogen - Bioconversion*

variable_name	2020	2025	2030	2035	2040	2045	2050
Biomass purchases	0	0	0.129	0.129	0.129	0.129	0.431
Capital investment	0	0	0.964	0	0	0	3.452
Number of facilities - allam power w ccu	0	0	0	0	0	0	1
Number of facilities - beccs hydrogen	0	0	0	0	0	0	4
Number of facilities - diesel	0	0	0	0	0	0	0
Number of facilities - diesel ccu	0	0	0	0	0	0	1
Number of facilities - power	0	0	2	2	2	2	2
Number of facilities - power ccu	0	0	0	0	0	0	1
Number of facilities - pyrolysis	0	0	0	0	0	0	0
Number of facilities - pyrolysis ccu	0	0	0	0	0	0	1
Number of facilities - sng	0	1	1	1	1	1	1
Number of facilities - sng ccu	0	0	0	0	0	0	1

Table 38: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 capture*

variable_name	2025	2030	2035	2040	2045	2050
Annual - All	0	0	0	3.32	3.42	8.05
Annual - BECCS	0	0	0	0	0	4.52
Annual - Cement	0	0	0	3.32	3.42	3.53
Annual - NGCC	0	0	0	0	0	0
Cumulative - All	0	0	0	3.32	6.74	14.79
Cumulative - BECCS	0	0	0	0	0	4.52
Cumulative - Cement	0	0	0	3.32	6.74	10.27
Cumulative - NGCC	0	0	0	0	0	0

Table 39: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 storage*

variable_name	2025	2030	2035	2040	2045	2050
Annual	0	0	0	0	0	0
Injection wells	0	0	0	0	0	0
Resource characterization, appraisal and permitting costs cumulative	0	0	0	0	0	0
Wells and facilities construction costs cumulative	0	0	0	0	0	0

Table 40: *RE+ scenario - PILLAR 4: CO2 capture, use, storage - CO2 transportation*

variable_name	2025	2030	2035	2040	2045	2050
CO2 pipelines - All	0	273198.486	273198.486	387820.355	389801.755	760692.822
CO2 pipelines - Spur	0	0	0	114621.769	116603.269	487494.336
CO2 pipelines - Trunk	0	273198.486	273198.486	273198.486	273198.486	273198.486

Table 41: *RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	187.697
Carbon sink enhancement potential - All (not counting overlap)	45092.4
Carbon sink enhancement potential - Avoid deforestation	852.114
Carbon sink enhancement potential - corn-ethanol to energy grasses	0
Carbon sink enhancement potential - cropland measures	-475.37
Carbon sink enhancement potential - Cropland to woody energy crops	0
Carbon sink enhancement potential - Extend rotation length	17918.3
Carbon sink enhancement potential - Improve plantations	539.545
Carbon sink enhancement potential - Increase retention of HWP	18181.8
Carbon sink enhancement potential - Increase trees outside forests	221.953
Carbon sink enhancement potential - pasture to energy crops	0
Carbon sink enhancement potential - permanent conservation cover	-15.115
Carbon sink enhancement potential - Reforest cropland	702.114
Carbon sink enhancement potential - Reforest pasture	573.127
Carbon sink enhancement potential - Restore productivity	5915.6

Table 41: *RE+ scenario - PILLAR 6: Land carbon sinks - Agriculture (continued)*

variable_name	2050
Carbon sink enhancement potential - total	-490.485
Land impacted for carbon sink enhancement - Accelerate regeneration	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	228.738
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	0
Land impacted for carbon sink enhancement - cropland measures	518.355
Land impacted for carbon sink enhancement - Cropland to woody energy crops	0
Land impacted for carbon sink enhancement - Extend rotation length	9871
Land impacted for carbon sink enhancement - Improve plantations	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	62.61
Land impacted for carbon sink enhancement - pasture to energy crops	1.483
Land impacted for carbon sink enhancement - permanent conservation cover	27.492
Land impacted for carbon sink enhancement - Reforest cropland	233.762
Land impacted for carbon sink enhancement - Reforest pasture	43.337
Land impacted for carbon sink enhancement - Restore productivity	3338.272
Land impacted for carbon sink enhancement - total	547.33
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	8314.6

Table 42: *RE+ scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526

Table 43: *B+ scenario - PILLAR 6: Land carbon sinks - Agriculture*

variable_name	2050
Carbon sink enhancement potential - Accelerate regeneration	187.697
Carbon sink enhancement potential - All (not counting overlap)	45092.4
Carbon sink enhancement potential - Avoid deforestation	852.114
Carbon sink enhancement potential - corn-ethanol to energy grasses	0
Carbon sink enhancement potential - cropland measures	-475.37
Carbon sink enhancement potential - Extend rotation length	17918.3
Carbon sink enhancement potential - Improve plantations	539.545
Carbon sink enhancement potential - Increase retention of HWP	18181.8
Carbon sink enhancement potential - Increase trees outside forests	221.953
Carbon sink enhancement potential - permanent conservation cover	-15.115
Carbon sink enhancement potential - Reforest cropland	702.114
Carbon sink enhancement potential - Reforest pasture	573.127
Carbon sink enhancement potential - Restore productivity	5915.6
Carbon sink enhancement potential - total	-490.485
Land impacted for carbon sink enhancement - Accelerate regeneration	75.649
Land impacted for carbon sink enhancement - All (not counting overlap)	9474.9
Land impacted for carbon sink enhancement - Avoid deforestation	228.738
Land impacted for carbon sink enhancement - corn-ethanol to energy grasses	0
Land impacted for carbon sink enhancement - cropland measures	264.139
Land impacted for carbon sink enhancement - Extend rotation length	9871
Land impacted for carbon sink enhancement - Improve plantations	299.868
Land impacted for carbon sink enhancement - Increase retention of HWP	3636.4
Land impacted for carbon sink enhancement - Increase trees outside forests	62.61
Land impacted for carbon sink enhancement - permanent conservation cover	27.492

Table 43: *B+ scenario - PILLAR 6: Land carbon sinks - Agriculture (continued)*

variable_name	2050
Land impacted for carbon sink enhancement - Reforest cropland	233.762
Land impacted for carbon sink enhancement - Reforest pasture	43.337
Land impacted for carbon sink enhancement - Restore productivity	3338.272
Land impacted for carbon sink enhancement - total	291.631
Land impacted for carbon sink enhancement - Total impacted (over 30 years)	8314.6

Table 44: *B+ scenario - PILLAR 6: Land carbon sinks - Forests*

variable_name	2050
Business-as-usual carbon sink - Accelerate regeneration	17.542
Business-as-usual carbon sink - Avoid deforestation	72.865
Business-as-usual carbon sink - Extend rotation length	5400.1
Business-as-usual carbon sink - Improve plantations	113.874
Business-as-usual carbon sink - Increase retention of HWP	0
Business-as-usual carbon sink - Increase trees outside forests	12.588
Business-as-usual carbon sink - Reforest cropland	26.526
Business-as-usual carbon sink - Reforest pasture	10.587
Business-as-usual carbon sink - Restore productivity	1175.2
Business-as-usual carbon sink - Total impacted (over 30 years)	26.526