# Net-Zero America - tennessee state report

Larson et al. 2020

#### February 2021

These data underlie graphs and tables presented in the Princeton Net-Zero America study (E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, EJ Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, Net-Zero America: Potential Pathways, Infrastructure, and Impacts, interim report, Princeton University, Princeton, NJ, December 15, 2020. Report available at https://netzeroamerica.princeton.edu.)

#### **Notes**

- These data are a subset of all data from the study available at https://netzeroamerica.princeton.edu.
- The Net-Zero America study describes five pathways to reach net-zero emissions and one "no new policies" reference scenario. In this document, state-level results are grouped by scenario. For some scenarios, the study generated national, but not state-level results.
- Within results for a given scenario, data tables are organized into corresponding sections of the full net-zero study (e.g., Pillar 1, Pillar 2, etc.)
- Some results are not model outputs, but rather they are limits that apply across all scenarios (e.g., maximum carbon storage potential in agricultural soils).

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.23	5.68	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	83.2	86.7	97.7	99.9	100	100	100
Sales of cooking units - Gas (%)	16.8	13.3	2.27	0.114	0	0	0
Sales of space heating units - Electric Heat Pump	32.2	47.8	80.2	87.5	87.8	87.7	87.7
(%)							
Sales of space heating units - Electric Resistance	31.3	29.8	12.5	8.63	8.46	8.57	8.59
(%)							
Sales of space heating units - Fossil (%)	4.13	4.49	1.84	1.23	1.19	1.17	1.17
Sales of space heating units - Gas (%)	32.4	17.9	5.43	2.67	2.55	2.52	2.52
Sales of water heating units - Electric Heat Pump	0	9.08	48.1	56.8	57.1	57.2	57.2
(%)							
Sales of water heating units - Electric Resistance	68.9	73.7	46.7	40.6	40.3	40.3	40.3
(%)							
Sales of water heating units - Gas Furnace (%)	27.4	14.7	2.75	0.116	0	0	0
Sales of water heating units - Other (%)	3.71	2.57	2.53	2.53	2.54	2.54	2.54

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million \$2018)	0	1,105	2,839	4,591	6,958	7,569	7,219
Public EV charging plugs - DC Fast (1000 units)	0.165	0	2.15	0	9.36	0	15.1
Public EV charging plugs - L2 (1000 units)	0.888	0	51.7	0	225	0	363
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.55	1.81	1.26	0.402	0.074	0.013	0
Vehicle sales - Light-duty - EV (%)	3.92	15.2	46.5	81.8	96.3	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.9	78	48.8	16.5	3.29	0.59	0
Vehicle sales - Light-duty - hybrid (%)	4.42	4.54	3.21	1.19	0.291	0.064	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.34	0.203	0.063	0.013	0.002	0
Vehicle sales - Light-duty - other (%)	0.102	0.098	0.064	0.022	0.004	0.001	0
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

# Table 3: E+ scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	171	165	155	148	145	145
Final energy use - Industry (PJ)	755	838	888	904	913	905	904
Final energy use - Residential (PJ)	260	243	223	197	176	163	157
Final energy use - Transportation (PJ)	679	622	545	451	367	315	293

Table 4: E+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,412	22,037	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	55.3	83.4	88.9	89.2	89.2	89.1
Sales of cooking units - Gas (%)	56.5	44.7	16.6	11.1	10.8	10.8	10.9
Sales of space heating units - Electric Heat Pump	9.56	30.6	77.3	90.8	91.9	92	92
(%)							
Sales of space heating units - Electric Resistance	4.81	4.61	4.92	6.26	6.57	6.58	6.55
(%)							
Sales of space heating units - Fossil (%)	0	2.83	0.549	0.023	0	0	0

# Table 4: E+ scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Sales of space heating units - Gas Furnace (%)	85.6	62	17.3	2.94	1.48	1.43	1.43
Sales of water heating units - Electric Heat Pump (%)	0.155	10.6	55.7	65.7	66.1	66.2	66.1
Sales of water heating units - Electric Resistance (%)	5.74	9.97	28	32.1	32.3	32.3	32.3
Sales of water heating units - Gas Furnace (%)	92.5	77.8	14.7	0.62	0	0	0
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56

## Table 5: E+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.81	4.94	6.83	7.17	5.85	5.99
Cumulative 5-yr (billion \$2018)							

## Table 6: E+ scenario - PILLAR 2: Clean Electricity - Generating capacity

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion \$2018)	0	0	0	0	0	0	0
Capital invested - Biomass w/ccu allam power plant (billion \$2018)	0	0	0	0	0	0	0
Capital invested - Biomass w/ccu power plant (billion \$2018)	0	0	0	0	0	3.78	0
Capital invested - Solar PV - Base (billion \$2018)	0	0.364	0.667	1.41	2.88	6.84	11
Capital invested - Solar PV - Constrained (billion \$2018)	0	0.173	0	1.86	2.57	9.47	7
Capital invested - Wind - Base (billion \$2018)	0	0.069	0.052	0	0	0	0

#### Table 7: E+ scenario - PILLAR 2: Clean Electricity - Generation

Item	2020	2025	2030	2035	2040	2045	2050
Biomass power plant (GWh)	0	0	0	0	0	0	0
Biomass w/ccu allam power plant (GWh)	0	0	0	0	0	0	0
Biomass w/ccu power plant (GWh)	0	0	0	0	0	4,245	4,245
Solar - Base land use assumptions (GWh)	538	517	1,060	2,417	5,226	12,990	22,023
Solar - Constrained land use assumptions (GWh)	282	0	293	4,856	5,444	10,756	13,520
Wind - Base land use assumptions (GWh)	106	139	116	0	0	0	0
Wind - Constrained land use assumptions (GWh)	106	0	0	0	0	0	255

## Table 8: E+ scenario - PILLAR 3: Clean fuels - Bioenergy

Item	2020	2025	2030	2035	2040	2045	2050
Biomass purchases (million \$2018/year)	0	0	0	170	170	506	506
Conversion capital investment - Cumulative 5-yr	0	0	0	3,213	0	6,799	0
(million \$2018)							
Number of facilities - Allam power w ccu	0	0	0	0	0	0	0
(quantity)							
Number of facilities - Beccs hydrogen (quantity)	0	0	0	3	3	7	7
Number of facilities - Diesel (quantity)	0	0	0	0	0	0	0
Number of facilities - Diesel ccu (quantity)	0	0	0	0	0	0	0
Number of facilities - Power (quantity)	0	0	0	0	0	0	0
Number of facilities - Power ccu (quantity)	0	0	0	0	0	2	2
Number of facilities - Pyrolysis (quantity)	0	0	0	0	0	0	0
Number of facilities - Pyrolysis ccu (quantity)	0	0	0	0	0	0	0
Number of facilities - Sng (quantity)	0	0	0	0	0	0	0
Number of facilities - Sng ccu (quantity)	0	0	0	0	0	0	0

#### Table 9: E+ scenario - PILLAR 4: CCUS - CO2 capture

Item	2020	2025	2030	2035	2040	2045	2050
Annual - All (MMT)	0	0	0	5.99	5.7	17.2	16.5
Annual - BECCS (MMT)	0	0	0	4.13	4.13	12.5	12.5

Table 9: E+ scenario - PILLAR 4: CCUS - CO2 capture (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Annual - Cement and lime (MMT)	0	0	0	0	0	0	0
Annual - NGCC (MMT)	0	0	0	1.86	1.57	4.69	4.06
Cumulative - All (MMT)	0	0	0	5.99	11.7	28.9	45.4
Cumulative - BECCS (MMT)	0	0	0	4.13	8.26	20.7	33.2
Cumulative - Cement and lime (MMT)	0	0	0	0	0	0	0
Cumulative - NGCC (MMT)	0	0	0	1.86	3.43	8.12	12.2

Table 10: E+ scenario - PILLAR 4: CCUS - CO2 storage

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	0	0	0.88	1.81	2.58	3.73
Injection wells (wells)	0	0	1	2	4	7	8
Resource characterization, appraisal, permitting costs (million \$2020)	0	25.4	71.2	91.5	91.5	91.5	91.5
Wells and facilities construction costs (million \$2020)	0	0	16.9	66	118	197	244

Table 11: E+ scenario - PILLAR 4: CCUS - CO2 pipelines

Item	2020	2025	2030	2035	2040	2045	2050
All (km)	0	0	181	832	1,089	1,872	1,662
Cumulative investment - All (million \$2018)	0	0	1,110	2,685	2,984	3,656	3,492
Cumulative investment - Spur (million \$2018)	0	0	0	464	763	1,435	1,271
Cumulative investment - Trunk (million \$2018)	0	0	1,110	2,221	2,221	2,221	2,221
Spur (km)	0	0	0	470	727	1,511	1,301
Trunk (km)	0	0	181	362	362	362	362

# Table 12: E+ scenario - PILLAR 6: Land sinks - Agriculture

Item	2020	2025	2050
Carbon sink potential - Aggressive deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tC02e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,357
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-108
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,739
Total (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-1,769
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-54
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-2,097
Total (1000 tC02e/y)			
Land impacted for carbon sink - Aggressive	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	1,832
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Aggressive	0	0	197
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	2,141
deployment - Total (1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	965
deployment - Cropland measures (1000			
hectares)			

Table 12: E+ scenario - PILLAR 6: Land sinks - Agriculture (continued)

Item	2020	2025	2050
Land impacted for carbon sink - Moderate	0	0	98.3
deployment - Permanent conservation cover (1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	1,176
deployment - Total (1000 hectares)			

Item	2020	2025	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)	0	0	116
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)	0	0	31,364
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)	0	0	2,178
Carbon sink potential - High - Extend rotation length (1000 tC02e/y)	0	0	5,783
Carbon sink potential - High - Improve plantations (1000 tC02e/y)	0	0	591
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)	0	0	6,834
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)	0	0	928
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)	0	0	1,525
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)	0	0	9,586
Carbon sink potential - High - Restore productivity (1000 tC02e/y)	0	0	3,823
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)	0	0	57.9
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)	0	0	8,323
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)	0	0	363
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)	0	0	2,221
Carbon sink potential - Low - Improve plantations (1000 tC02e/y)	0	0	301
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)	0	0	2,278
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)	0	0	325
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)	0	0	763
Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)	0	0	726
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)	0	0	1,289
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)	0	0	86.8
Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/y)	0	0	19,839
Carbon sink potential - Mid - Avoid deforestation	0	0	1,271
(1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation	0	0	4,002
length (1000 tCO2e/y) Carbon sink potential - Mid - Improve plantations	0	0	441
(1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWD (1000 tC02e/y)	0	0	4,556
of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)	0	0	626

Table 13: E+ scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2050
Carbon sink potential - Mid - Reforest cropland	0	0	1,144
(1000 tC02e/y)		0	E 1 E 1
Carbon sink potential - Mid - Reforest pasture	0	0	5,156
(1000 tC02e/y)	0	0	0.557
Carbon sink potential - Mid - Restore	0	0	2,556
productivity (1000 tC02e/y)	0	0	10.0
Land impacted for carbon sink potential - High -	0	0	18.9
Accelerate regeneration (1000 hectares)	0		005
Land impacted for carbon sink potential - High -	0	0	295
Avoid deforestation (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	2,949
	U	0	2,949
Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High -	0	0	218
Improve plantations (1000 hectares)	U	0	210
Land impacted for carbon sink potential - High -	0	0	
Increase retention of HWP (1000 hectares)	U	0	·
Land impacted for carbon sink potential - High -	0	0	88.2
Increase trees outside forests (1000 hectares)	0	0	00.2
	0	0	101
Land impacted for carbon sink potential - High - Reforest cropland (1000 hectares)	0	0	101
Land impacted for carbon sink potential - High -	0	0	272
	U	0	212
Reforest pasture (1000 hectares) Land impacted for carbon sink potential - High -	0	0	1,267
	U	0	1,201
Restore productivity (1000 hectares)	0	0	F 000
Land impacted for carbon sink potential - High -	0	0	5,209
Total impacted (over 30 years) (1000 hectares) Land impacted for carbon sink potential - Low -	0	0	9.46
	U	0	9.40
Accelerate regeneration (1000 hectares)	0	0	077
Land impacted for carbon sink potential - Low -	0	0	277
Avoid deforestation (over 30 years) (1000			
hectares)	0	0	1100
Land impacted for carbon sink potential - Low -	0	0	1,130
Extend rotation length (1000 hectares)	0		100
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)	0	0	109
Land impacted for carbon sink potential - Low -	0	0	
	U	0	· ·
Increase retention of HWP (1000 hectares)	0	0	1.7.1
Land impacted for carbon sink potential - Low -	0	0	46.4
Increase trees outside forests (1000 hectares)	0		FO /
Land impacted for carbon sink potential - Low -	0	0	50.4
Reforest cropland (1000 hectares)	0	0	170
Land impacted for carbon sink potential - Low -	0	0	47.2
Reforest pasture (1000 hectares)	0		7/-
Land impacted for carbon sink potential - Low -	0	0	767
Restore productivity (1000 hectares)			0.404
Land impacted for carbon sink potential - Low -	0	0	2,436
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	14.2
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	286
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Mid -	0	0	2,039
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	164
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	C
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	67.3
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	75.6
Reforest cropland (1000 hectares)			

Table 13: E+ scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2050
Land impacted for carbon sink potential - Mid -	0	0	341
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	1,544
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	4,532
Total impacted (over 30 years) (1000 hectares)			

Table 14: E+ scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal	0	682	0.896	0.87	0.639	0.432	0.035
(million 2019\$)							
Monetary damages from air pollution - Natural	0	231	165	93.7	75.3	30.8	12.1
Gas (million 2019\$)							
Monetary damages from air pollution -	0	1,540	1,435	1,091	632	291	118
Transportation (million 2019\$)							
Premature deaths from air pollution - Coal	0	76.6	0.101	0.098	0.072	0.049	0.004
(deaths)							
Premature deaths from air pollution - Natural	0	26.1	18.6	10.6	8.51	3.48	1.37
Gas (deaths)							
Premature deaths from air pollution -	0	173	161	123	71.1	32.7	13.3
Transportation (deaths)							

Table 15: E+ scenario - IMPACTS - Jobs

		2030	2035	2040	2045	2050
438	446	511	765	539	791	630
4,712	4,928	5,282	6,728	7,188	9,183	13,635
4,146	8,493	10,165	13,466	12,832	10,500	13,560
3,073	2,237	1,603	1,043	637	388	238
319	336	393	622	971	1,757	3,311
466	452	517	487	296	258	237
2,854	2,680	2,460	3,173	3,387	4,784	6,907
2,800	2,315	2,009	2,093	2,174	2,915	4,617
7,557	7,809	7,736	9,463	8,714	7,834	9,365
7,925	9,090	9,483	11,834	11,609	12,123	16,800
5,841	6,373	6,380	7,650	7,345	7,571	10,227
189	185	175	206	205	247	344
11,019	12,589	13,206	16,436	15,922	16,684	22,696
1,391	1,460	1,431	1,713	1,658	1,786	2,433
1,150						2,752
0					1,111	1,373
	I				14.1	12.5
6,947					12,058	15,882
4,057					1,666	1,554
2,555						349
						650
2,459		5,307		10,534		25,062
660		4,519		5,488		4,864
56,367	55,958	55,914	55,961	56,362	56,704	56,970
4,161	4,704	4,882	6,048	5,908	6,169	8,492
1,657	1,750	1,779	2,182	2,152	2,370	3,310
4,243	4,817	4,982	6,159	6,000	6,318	8,666
207	237	247	311	305	323	448
	4,712 4,146 3,073 319 466 2,854 2,800 7,557 7,925 5,841 189 11,019 1,391 1,150 0 1,987 6,947 4,057 2,555 6,549 2,459 660 56,367 4,161	4,712     4,928       4,146     8,493       3,073     2,237       319     336       466     452       2,854     2,680       2,800     2,315       7,557     7,809       7,925     9,090       5,841     6,373       189     185       11,019     12,589       1,391     1,460       1,150     1,166       0     13.5       1,987     519       6,947     8,096       4,057     4,373       2,555     2,514       6,549     5,546       2,459     4,257       660     3,212       56,367     55,958       4,161     4,704       1,657     1,750       4,243     4,817	4,712         4,928         5,282           4,146         8,493         10,165           3,073         2,237         1,603           319         336         393           466         452         517           2,854         2,680         2,460           2,800         2,315         2,009           7,557         7,809         7,736           7,925         9,090         9,483           5,841         6,373         6,380           189         185         175           11,019         12,589         13,206           1,391         1,460         1,431           1,150         1,166         1,223           0         13.5         1,134           1,987         519         20.5           6,947         8,096         8,072           4,057         4,373         3,586           2,555         2,514         2,474           6,549         5,546         4,342           2,459         4,257         5,307           660         3,212         4,519           56,367         55,958         55,914           4,161         <	4,712         4,928         5,282         6,728           4,146         8,493         10,165         13,466           3,073         2,237         1,603         1,043           319         336         393         622           466         452         517         487           2,854         2,680         2,460         3,173           2,800         2,315         2,009         2,093           7,557         7,809         7,736         9,463           7,925         9,090         9,483         11,834           5,841         6,373         6,380         7,650           189         185         175         206           11,019         12,589         13,206         16,436           1,391         1,460         1,431         1,713           1,150         1,166         1,223         1,948           0         13.5         1,134         1,618           1,987         519         20.5         17.8           6,947         8,096         8,072         11,427           4,057         4,373         3,586         3,247           2,555         2,514         2,47	4,712         4,928         5,282         6,728         7,188           4,146         8,493         10,165         13,466         12,832           3,073         2,237         1,603         1,043         637           319         336         393         622         971           466         452         517         487         296           2,854         2,680         2,460         3,173         3,387           2,800         2,315         2,009         2,093         2,174           7,557         7,809         7,736         9,463         8,714           7,925         9,090         9,483         11,834         11,609           5,841         6,373         6,380         7,650         7,345           189         185         175         206         205           11,019         12,589         13,206         16,436         15,922           1,391         1,460         1,431         1,713         1,658           1,150         1,166         1,223         1,948         1,486           0         13.5         1,134         1,618         735           1,987         519 <t< td=""><td>4,712         4,928         5,282         6,728         7,188         9,183           4,146         8,493         10,165         13,466         12,832         10,500           3,073         2,237         1,603         1,043         637         388           319         336         393         622         971         1,757           466         452         517         487         296         258           2,854         2,680         2,460         3,173         3,387         4,784           2,800         2,315         2,009         2,093         2,174         2,915           7,557         7,809         7,736         9,463         8,714         7,834           7,925         9,090         9,483         11,834         11,609         12,123           5,841         6,373         6,380         7,650         7,345         7,571           189         185         175         206         205         247           11,019         12,589         13,206         16,436         15,922         16,684           1,391         1,460         1,431         1,713         1,658         1,786           1,694<!--</td--></td></t<>	4,712         4,928         5,282         6,728         7,188         9,183           4,146         8,493         10,165         13,466         12,832         10,500           3,073         2,237         1,603         1,043         637         388           319         336         393         622         971         1,757           466         452         517         487         296         258           2,854         2,680         2,460         3,173         3,387         4,784           2,800         2,315         2,009         2,093         2,174         2,915           7,557         7,809         7,736         9,463         8,714         7,834           7,925         9,090         9,483         11,834         11,609         12,123           5,841         6,373         6,380         7,650         7,345         7,571           189         185         175         206         205         247           11,019         12,589         13,206         16,436         15,922         16,684           1,391         1,460         1,431         1,713         1,658         1,786           1,694 </td

Table 15:	E+ scenario -	IMPACTS	Johs	(continued)
Table 10.	L' SCCHUITO	11'11 7010		i Continuaca.

Item	2020	2025	2030	2035	2040	2045	2050
On-Site or In-Plant Training - Total jobs - Up to 1 year (jobs)	16,096	18,189	18,786	23,139	22,373	23,231	31,585
On-the-Job Training - All sectors - 1 to 4 years (jobs)	5,322	6,004	6,226	7,715	7,545	7,885	10,868
On-the-Job Training - All sectors - 4 to 10 years (jobs)	1,567	1,653	1,689	2,093	2,083	2,328	3,281
On-the-Job Training - All sectors - None (jobs)	1,471	1,614	1,643	1,994	1,944	2,077	2,876
On-the-Job Training - All sectors - Over 10 years (jobs)	246	301	321	399	389	394	542
On-the-Job Training - All sectors - Up to 1 year (jobs)	17,757	20,125	20,797	25,639	24,778	25,726	34,932
Related work experience - All sectors - 1 to 4 years (jobs)	9,580	10,664	10,940	13,433	13,036	13,630	18,607
Related work experience - All sectors - 4 to 10 years (jobs)	6,106	6,833	7,017	8,616	8,377	8,719	11,940
Related work experience - All sectors - None (jobs)	3,775	4,244	4,394	5,438	5,279	5,574	7,638
Related work experience - All sectors - Over 10 years (jobs)	1,667	1,936	2,007	2,467	2,384	2,396	3,245
Related work experience - All sectors - Up to 1 year (jobs)	5,236	6,019	6,318	7,885	7,662	8,093	11,071
Wage income - All (million \$2019)	1,486	1,662	1,715	2,118	2,071	2,178	2,991

## Table 16: E+ scenario - IMPACTS - Fossil fuel industries

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)	299	303	256	205	154	97.1	67.4
Natural gas consumption - Cumulative (tcf)	0	0	0	0	0	0	6,175
Natural gas production - Annual (tcf)	3.65	4.04	3.82	3.33	2.81	2.23	1.73
Oil consumption - Annual (million bbls)	133	123	105	78.9	54.7	35.5	20.6
Oil consumption - Cumulative (million bbls)	0	0	0	0	0	0	2,449
Oil production - Annual (million bbls)	0.252	0.272	0.273	0.273	0.216	0.176	0.117

# Table 17: E- scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.17	5.41	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	83.1	83.5	85.1	89.2	94.8	98.3	99.6
Sales of cooking units - Gas (%)	16.9	16.5	14.9	10.8	5.17	1.67	0.449
Sales of space heating units - Electric Heat Pump	32.2	41.6	45.3	56	72.3	82.8	86.5
(%)							
Sales of space heating units - Electric Resistance	31.3	33.1	31	25.2	16.6	11.1	9.21
(%)							
Sales of space heating units - Fossil (%)	4.13	5	4.74	3.81	2.44	1.57	1.28
Sales of space heating units - Gas (%)	32.4	20.3	18.9	14.9	8.67	4.49	3.04
Sales of water heating units - Electric Heat Pump	0	1.56	6	18.8	38.4	51.1	55.6
(%)							
Sales of water heating units - Electric Resistance	68.9	78.9	75.9	67	53.3	44.5	41.4
(%)							
Sales of water heating units - Gas Furnace (%)	27.4	17	15.5	11.7	5.76	1.83	0.477
Sales of water heating units - Other (%)	3.71	2.57	2.54	2.55	2.56	2.54	2.54

# Table 18: E- scenario - PILLAR 1: Efficiency/Electrification - Transportation

2020	2025	2030	2035	2040	2045	2050
0	0	180	376	1,271	3,991	5,817
0.165	0	0.677	0	3.48	0	9.69
0.888	0	16.3	0	83.7	0	233
97.4	96	91.3	79.8	58.2	32.1	13.7
0.498	1.45	4.11	10.8	23.6	39.5	51
0.228	0.236	0.239	0.225	0.179	0.109	0.051
	0.165 0.888 97.4 0.498	0 0 0.165 0 0.888 0 97.4 96 0.498 1.45	0         0         180           0.165         0         0.677           0.888         0         16.3           97.4         96         91.3           0.498         1.45         4.11	0     0     180     376       0.165     0     0.677     0       0.888     0     16.3     0       97.4     96     91.3     79.8       0.498     1.45     4.11     10.8	0     0     180     376     1,271       0.165     0     0.677     0     3.48       0.888     0     16.3     0     83.7       97.4     96     91.3     79.8     58.2       0.498     1.45     4.11     10.8     23.6	0     0     180     376     1,271     3,991       0.165     0     0.677     0     3.48     0       0.888     0     16.3     0     83.7     0       97.4     96     91.3     79.8     58.2     32.1       0.498     1.45     4.11     10.8     23.6     39.5

Table 18: E- scenario - PILLAR 1: Efficiency/Electrification - Transportation (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.094	0.104	0.107	0.092	0.06	0.03
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.332	0.969	2.74	7.17	15.7	26.3	34
Vehicle sales - Heavy-duty - other (%)	1.5	1.28	1.46	1.95	2.25	1.96	1.14
Vehicle sales - Light-duty - diesel (%)	1.56	1.97	2.06	1.64	1.05	0.537	0.23
Vehicle sales - Light-duty - EV (%)	1.89	4.68	11.9	25.9	48.4	72	87.6
Vehicle sales - Light-duty - gasoline (%)	91.7	87.5	79.6	66.7	46.2	24.9	11
Vehicle sales - Light-duty - hybrid (%)	4.59	5.39	6.05	5.51	4.13	2.44	1.18
Vehicle sales - Light-duty - hydrogen FC (%)	0.113	0.38	0.326	0.249	0.177	0.098	0.046
Vehicle sales - Light-duty - other (%)	0.103	0.106	0.097	0.084	0.061	0.033	0.015
Vehicle sales - Medium-duty - diesel (%)	64.8	62.2	57.7	49.4	35.6	19.6	8.37
Vehicle sales - Medium-duty - EV (%)	0.664	1.94	5.49	14.3	31.4	52.6	68
Vehicle sales - Medium-duty - gasoline (%)	33.8	34.7	34.7	31.9	24.4	14.2	6.33
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.418	0.464	0.478	0.414	0.275	0.141
Vehicle sales - Medium-duty - hydrogen FC (%)	0.166	0.485	1.37	3.58	7.86	13.2	17
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

# Table 19: E- scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	171	169	166	161	156	153
Final energy use - Industry (PJ)	755	838	889	910	921	912	909
Final energy use - Residential (PJ)	260	244	232	219	204	187	173
Final energy use - Transportation (PJ)	680	628	570	525	490	449	400

Table 20: E- scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,401	22,003	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	47.1	51.3	61.6	76.1	85	88
Sales of cooking units - Gas (%)	56.5	52.9	48.7	38.4	23.9	15	12
Sales of space heating units - Electric Heat Pump	9.56	21.7	26.9	42.4	66.6	83.3	89.7
(%)							
Sales of space heating units - Electric Resistance	4.81	4.61	4.65	4.78	5.23	5.91	6.33
(%)							
Sales of space heating units - Fossil (%)	0	3.27	3.09	2.34	1.17	0.379	0.099
Sales of space heating units - Gas Furnace (%)	85.6	70.4	65.3	50.5	27	10.4	3.89
Sales of water heating units - Electric Heat Pump	0.155	1.96	7.08	21.8	44.4	59.2	64.3
(%)							
Sales of water heating units - Electric Resistance	5.74	6.48	8.39	14.4	23.5	29.5	31.6
(%)							
Sales of water heating units - Gas Furnace (%)	92.5	90	83	62.2	30.4	9.74	2.53
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56

Table 21: E- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.14	4.18	4.77	4.88	5.83	6.04
Cumulative 5-yr (billion \$2018)							

# Table 22: E- scenario - PILLAR 6: Land sinks - Agriculture

Item	2020	2025	2050
Carbon sink potential - Aggressive deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,357
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-108
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,739
Total (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			

Table 22: E- scenario - PILLAR 6: Land sinks - Agriculture (continued)

Table 22: E decitatio 1 IEE/IN 6: Earla dilliko 71	•		
Item	2020	2025	2050
Carbon sink potential - Moderate deployment -	0	0	-1,769
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-54
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-2,097
Total (1000 tC02e/y)			
Land impacted for carbon sink - Aggressive	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	1,832
deployment - Cropland measures (1000			,
hectares)			
Land impacted for carbon sink - Aggressive	0	0	197
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	2,141
deployment - Total (1000 hectares)			,
Land impacted for carbon sink - Moderate	0	0	112
deployment - Corn-ethanol to energy grasses		_	
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	965
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Moderate	0	0	98.3
deployment - Permanent conservation cover		_	
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	1,176
deployment - Total (1000 hectares)		_	,
. , , , , , , , , , , , , , , , , , , ,			

Table 23: E- scenario - PILLAR 6: Land sinks - Forests

Table 25. L- Scenario - Fillan G. Lana Sinks - 10		0005	
Item	2020	2025	2050
Carbon sink potential - High - Accelerate	0	0	116
regeneration (1000 tCO2e/y)			
Carbon sink potential - High - All (not counting	0	0	31,364
overlap) (1000 tCO2e/y)			
Carbon sink potential - High - Avoid deforestation	0	0	2,178
(1000 tC02e/y)			
Carbon sink potential - High - Extend rotation	0	0	5,783
length (1000 tCO2e/y)			
Carbon sink potential - High - Improve	0	0	591
plantations (1000 tCO2e/y)			
Carbon sink potential - High - Increase retention	0	0	6,834
of HWP (1000 tC02e/y)			
Carbon sink potential - High - Increase trees	0	0	928
outside forests (1000 tCO2e/y)			
Carbon sink potential - High - Reforest cropland	0	0	1,525
(1000 tC02e/y)			
Carbon sink potential - High - Reforest pasture	0	0	9,586
(1000 tC02e/y)			
Carbon sink potential - High - Restore	0	0	3,823
productivity (1000 tCO2e/y)			
Carbon sink potential - Low - Accelerate	0	0	57.9
regeneration (1000 tCO2e/y)			
Carbon sink potential - Low - All (not counting	0	0	8,323
overlap) (1000 tC02e/y)			•
Carbon sink potential - Low - Avoid deforestation	0	0	363
(1000 tCO2e/y)		-	
Carbon sink potential - Low - Extend rotation	0	0	2,221
length (1000 tCO2e/y)		-	,
Carbon sink potential - Low - Improve	0	0	301
plantations (1000 tCO2e/y)			
Carbon sink potential - Low - Increase retention	0	0	2,278
of HWP (1000 tCO2e/y)	·		_,
(.230 (0020) ))			

Table 23: E- scenario - PILLAR 6: Land sinks - Forests (continued)

Table 23: E- scenario - PILLAR 6: Land sinks - Fo	rests (contin	иеај	
Item	2020	2025	2050
Carbon sink potential - Low - Increase trees	0	0	325
outside forests (1000 tCO2e/y)			
Carbon sink potential - Low - Reforest cropland	0	0	763
(1000 tC02e/y)			
Carbon sink potential - Low - Reforest pasture	0	0	726
(1000 tCO2e/y)			
Carbon sink potential - Low - Restore	0	0	1,289
productivity (1000 tCO2e/y)			
Carbon sink potential - Mid - Accelerate	0	0	86.8
regeneration (1000 tCO2e/y)			
Carbon sink potential - Mid - All (not counting	0	0	19,839
overlap) (1000 tCO2e/y)			
Carbon sink potential - Mid - Avoid deforestation	0	0	1,271
(1000 tC02e/y)			
Carbon sink potential - Mid - Extend rotation	0	0	4,002
length (1000 tC02e/y)			•
Carbon sink potential - Mid - Improve plantations	0	0	441
(1000 tC02e/y)			
Carbon sink potential - Mid - Increase retention	0	0	4,556
of HWP (1000 tCO2e/y)			.,000
Carbon sink potential - Mid - Increase trees	0	0	626
outside forests (1000 tCO2e/y)	0	•	020
Carbon sink potential - Mid - Reforest cropland	0	0	1,144
(1000 tCO2e/y)	0	0	1,144
Carbon sink potential - Mid - Reforest pasture	0	0	5,156
(1000 tCO2e/y)	o	0	5,150
Carbon sink potential - Mid - Restore	0	0	2,556
productivity (1000 tCO2e/y)	o	0	2,550
Land impacted for carbon sink potential - High -	0	0	18.9
Accelerate regeneration (1000 hectares)	U	U	10.9
Land impacted for carbon sink potential - High -	0	0	295
	0	0	295
Avoid deforestation (over 30 years) (1000			
hectares) Land impacted for carbon sink potential - High -	0	0	20/0
	U	0	2,949
Extend rotation length (1000 hectares)	0	0	010
Land impacted for carbon sink potential - High -	U	U	218
Improve plantations (1000 hectares)	0		
Land impacted for carbon sink potential - High -	0	0	0
Increase retention of HWP (1000 hectares)			00.0
Land impacted for carbon sink potential - High -	0	0	88.2
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	101
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	272
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	1,267
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	5,209
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	9.46
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	277
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Low -	0	0	1,130
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	109
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	0
Increase retention of HWP (1000 hectares)	Ŭ		J
	n	n	46.4
	Ŭ	·	
Land impacted for carbon sink potential - Low - Increase trees outside forests (1000 hectares)	0	0	46.4

Table 23: E- scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2050
Land impacted for carbon sink potential - Low -	0	0	50.4
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	47.2
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	767
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	2,436
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	14.2
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	286
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Mid -	0	0	2,039
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	164
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	67.3
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	75.6
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	341
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	1,544
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	4,532
Total impacted (over 30 years) (1000 hectares)			

Table 24: E- scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal	0	682	0.896	0.87	0.639	0.432	0.035
(million 2019\$)							
Monetary damages from air pollution - Natural	0	175	109	44.9	18.5	6.58	4.2
Gas (million 2019\$)							
Monetary damages from air pollution -	0	1,565	1,579	1,538	1,387	1,106	761
Transportation (million 2019\$)							
Premature deaths from air pollution - Coal	0	76.6	0.101	0.098	0.072	0.049	0.004
(deaths)							
Premature deaths from air pollution - Natural	0	19.8	12.3	5.08	2.09	0.743	0.475
Gas (deaths)							
Premature deaths from air pollution -	0	176	178	173	156	124	85.5
Transportation (deaths)							

# Table 25: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.23	5.68	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	83.2	86.7	97.7	99.9	100	100	100
Sales of cooking units - Gas (%)	16.8	13.3	2.27	0.114	0	0	0
Sales of space heating units - Electric Heat Pump	32.2	47.8	80.2	87.5	87.8	87.7	87.7
(%)							
Sales of space heating units - Electric Resistance	31.3	29.8	12.5	8.63	8.46	8.57	8.59
(%)							
Sales of space heating units - Fossil (%)	4.13	4.49	1.84	1.23	1.19	1.17	1.17
Sales of space heating units - Gas (%)	32.4	17.9	5.43	2.67	2.55	2.52	2.52
Sales of water heating units - Electric Heat Pump	0	9.08	48.1	56.8	57.1	57.2	57.2
(%)							
Sales of water heating units - Electric Resistance	68.9	73.7	46.7	40.6	40.3	40.3	40.3
(%)							

# Table 25: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Residential (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Gas Furnace (%)	27.4	14.7	2.75	0.116	0	0	0
Sales of water heating units - Other (%)	3.71	2.57	2.53	2.53	2.54	2.54	2.54

#### Table 26: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr	0	1,105	2,839	4,591	6,958	7,569	7,219
(million \$2018)							
Public EV charging plugs - DC Fast (1000 units)	0.165	0	2.15	0	9.36	0	15.1
Public EV charging plugs - L2 (1000 units)	0.888	0	51.7	0	225	0	363
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.55	1.81	1.26	0.402	0.074	0.013	0
Vehicle sales - Light-duty - EV (%)	3.92	15.2	46.5	81.8	96.3	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.9	78	48.8	16.5	3.29	0.59	0
Vehicle sales - Light-duty - hybrid (%)	4.42	4.54	3.21	1.19	0.291	0.064	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.34	0.203	0.063	0.013	0.002	0
Vehicle sales - Light-duty - other (%)	0.102	0.098	0.064	0.022	0.004	0.001	0
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

# Table 27: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	171	165	155	148	145	145
Final energy use - Industry (PJ)	755	838	888	904	913	905	904
Final energy use - Residential (PJ)	260	243	223	197	176	163	157
Final energy use - Transportation (PJ)	679	622	545	451	367	315	293

# Table 28: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,412	22,037	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	55.3	83.4	88.9	89.2	89.2	89.1
Sales of cooking units - Gas (%)	56.5	44.7	16.6	11.1	10.8	10.8	10.9
Sales of space heating units - Electric Heat Pump	9.56	30.6	77.3	90.8	91.9	92	92
(%)							
Sales of space heating units - Electric Resistance	4.81	4.61	4.92	6.26	6.57	6.58	6.55
(%)							
Sales of space heating units - Fossil (%)	0	2.83	0.549	0.023	0	0	0
Sales of space heating units - Gas Furnace (%)	85.6	62	17.3	2.94	1.48	1.43	1.43
Sales of water heating units - Electric Heat Pump	0.155	10.6	55.7	65.7	66.1	66.2	66.1
(%)							
Sales of water heating units - Electric Resistance	5.74	9.97	28	32.1	32.3	32.3	32.3
(%)							
Sales of water heating units - Gas Furnace (%)	92.5	77.8	14.7	0.62	0	0	0
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56
						1	

## Table 29: E+RE+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

	•		•				
Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.81	4.94	6.83	7.17	5.85	5.99
Cumulative 5-yr (billion \$2018)							

Table 30: E+RE+ scenario - PILLAR 2: Clean Electricity - Generating capacity

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Solar PV - Base (billion \$2018)	0	0	1.82	5.34	15	16.4	37.2
Capital invested - Wind - Base (billion \$2018)	0	0.069	0.052	0	0	0	0

# Table 31: E+RE+ scenario - PILLAR 2: Clean Electricity - Generation

Item	2020	2025	2030	2035	2040	2045	2050
Solar - Base land use assumptions (GWh)	355	0	2,871	9,024	26,849	31,008	74,393
Solar - Constrained land use assumptions (GWh)	501	0	1,591	8,838	22,244	30,754	59,291
Wind - Base land use assumptions (GWh)	106	139	116	0	0	0	0
Wind - Constrained land use assumptions (GWh)	106	0	0	0	0	0	255

#### Table 32: E+RE+ scenario - PILLAR 6: Land sinks - Agriculture

Item	2020	2025	2050
Carbon sink potential - Aggressive deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tC02e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,357
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-108
Permanent conservation cover (1000 tC02e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,739
Total (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-1,769
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-54
Permanent conservation cover (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-2,097
Total (1000 tC02e/y)			
Land impacted for carbon sink - Aggressive	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	1,832
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Aggressive	0	0	197
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	2,141
deployment - Total (1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	965
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Moderate	0	0	98.3
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	1,176
deployment - Total (1000 hectares)			

#### Table 33: E+RE+ scenario - PILLAR 6: Land sinks - Forests

Item	2020	2025	2050
Carbon sink potential - High - Accelerate	0	0	116
regeneration (1000 tCO2e/y)			
Carbon sink potential - High - All (not counting	0	0	31,364
overlap) (1000 tCO2e/y)			
Carbon sink potential - High - Avoid deforestation	0	0	2,178
(1000 tCO2e/y)			

Table 33: E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)

Carbon sink potential - High - Extend rotation   Carbon sink potential - High - Improve   Danatations (1000 tCO2e/y)   Carbon sink potential - High - Increase retention   Carbon sink potential - High - Increase retention   Carbon sink potential - High - Increase retention   Carbon sink potential - High - Increase trees   Carbon sink potential - High - Reforest cropland   Carbon sink potential - High - Reforest cropland   Carbon sink potential - High - Reforest cropland   Carbon sink potential - High - Reforest pasture   Carbon sink potential - High - Reforest pasture   Carbon sink potential - High - Restore   Carbon sink potential - High - Restore   Carbon sink potential - Low - Accelerate   Carbon sink potential - Low - All (not counting   Carbon sink potential - Low - All (not counting   Carbon sink potential - Low - Avoid deforestation   Carbon sink potential - Low - Avoid deforestation   Carbon sink potential - Low - Extend rotation   Carbon sink potential - Low - Extend rotation   Carbon sink potential - Low - Improve   Carbon sink potential - Low - Improve   Carbon sink potential - Low - Increase retention   Carbon sink potential - Low - Increase retention   Carbon sink potential - Low - Reforest cropland   Carbon sink potential - Mid - Accelerate   Carbon sink potential - Mid - Reforest cropland   Carbon sink potential - Mid - Reforest cropland   Carbon sink potential - Mid - Reforest cropland   Carbon sin	Table 33: E+RE+ scenario - PILLAR 6: Land sinks	- Forests (d		
Inength (1000 tC02e/v)		2020	2025	2050
Carbon sink potential - High - Improve   O		0	0	5,783
Dalnattions (1000 tcO2e/v)				
Carbon sink potential - High - Increase retention of HWP (1000 tC02e/v)		0	0	591
GHWP (1000 CO2e/y)   Carbon sink potential - High - Increase trees   0   0   928				
Carbon sink potential - High - Increase trees		0	0	6,834
outside forests (1000 tCO2e/y)         0         1,525           Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)         0         9,586 (1000 tCO2e/y)           Carbon sink potential - High - Restore productivity (1000 tCO2e/y)         0         3,823 productivity (1000 tCO2e/y)           Carbon sink potential - Low - Accelerate productivity (1000 tCO2e/y)         0         0         5,79 regeneration (1000 tCO2e/y)           Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)         0         0         8,323 overlap) (1000 tCO2e/y)           Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)         0         0         363 (1000 tCO2e/y)           Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)         0         0         363 (1000 tCO2e/y)           Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)         0         0         3,223 (1000 tCO2e/y)           Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)         0         0         3,278 (1000 tCO2e/y)           Carbon sink potential - Low - Increase trees on the potential - Low - Reforest cropland (1000 tCO2e/y)         0         3,25 (1000 tCO2e/y)           Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)         0         7,26 (1000 tCO2e/y)           Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)         0         0         1,289 (				
Carbon sink potential - High - Reforest cropland	Carbon sink potential - High - Increase trees	0	0	928
Carbon sink potential - High - Reforest pasture   0   0   9,586   (1000 tcO2e/y)   Carbon sink potential - High - Restore   0   0   3,823   productivity (1000 tcO2e/y)   Carbon sink potential - Low - Accelerate   0   0   57.9   regeneration (1000 tcO2e/y)   Carbon sink potential - Low - All (not counting   0   0   0   3.323   overlap) (1000 tcO2e/y)   Carbon sink potential - Low - All (not counting   0   0   0   363   (1000 tcO2e/y)   Carbon sink potential - Low - Avoid deforestation   0   0   0   363   (1000 tcO2e/y)   Carbon sink potential - Low - Extend rotation   0   0   2,221   length (1000 tcO2e/y)   Carbon sink potential - Low - Improve   0   0   301   length (1000 tcO2e/y)   Carbon sink potential - Low - Increase retention   0   0   2,278   of HWP (1000 tcO2e/y)   Carbon sink potential - Low - Increase trees   0   0   325   outside forests (1000 tcO2e/y)   Carbon sink potential - Low - Reforest cropland   0   0   763   (1000 tcO2e/y)   Carbon sink potential - Low - Reforest cropland   0   0   763   (1000 tcO2e/y)   Carbon sink potential - Low - Reforest pasture   0   0   726   (1000 tcO2e/y)   Carbon sink potential - Low - Restore   0   1,289   productivity (1000 tcO2e/y)   Carbon sink potential - Mid - Accelerate   0   0   86.8   regeneration (1000 tcO2e/y)   Carbon sink potential - Mid - Accelerate   0   0   86.8   regeneration (1000 tcO2e/y)   Carbon sink potential - Mid - Accelerate   0   0   4,002   (1000 tcO2e/y)   Carbon sink potential - Mid - Accelerate   0   0   4,002   (1000 tcO2e/y)   Carbon sink potential - Mid - Increase trees   0   0   4,002   (1000 tcO2e/y)   Carbon sink potential - Mid - Reforest cropland   0   0   4,556   (1000 tcO2e/y)   Carbon sink potential - Mid - Reforest cropland   0   0   1,144   (1000 tcO2e/y)   Carbon sink potential - Mid - Reforest cropland   0   0   1,144   (1000 tcO2e/y)   Carbon sink potential - Mid - Reforest cropland   0   0   1,556   (1000 tcO2e/y)   Carbon sink potential - Mid - Reforest cropland   0   0   1,556   (1000 tcO2e/y)   Carbon sink potentia	outside forests (1000 tCO2e/y)			
Carbon sink potential - High - Resforest pasture	Carbon sink potential - High - Reforest cropland	0	0	1,525
Carbon sink potential - High - Restore	(1000 tC02e/y)			
Carbon sink potential - High - Restore	Carbon sink potential - High - Reforest pasture	0	0	9,586
Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Accelerate   0   0   5.79				,
Department   Company   Carbon sink potential - Low - Accelerate   O   O   S7.9		0	0	3.823
Carbon sink potential - Low - Accelerate				·
Regeneration (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation   O   O   O   O   O   O   O   O   O		0	0	57.9
Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y)				
Overlap] (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation   O		0	0	8.323
Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y)				0,020
(1000 tC02e/y)   Carbon sink potential - Low - Extend rotation   Depth (1000 tC02e/y)   Carbon sink potential - Low - Improve   Depth (1000 tC02e/y)   Carbon sink potential - Low - Increase retention   Depth (1000 tC02e/y)   Carbon sink potential - Low - Increase retention   Depth (1000 tC02e/y)   Carbon sink potential - Low - Increase trees   Depth (1000 tC02e/y)   Depth (1000 tC02e/y		n	n	363
Carbon sink potential - Low - Extend rotation   Carbon sink potential - Low - Improve   Danish (1000 tCO2e/y)   Carbon sink potential - Low - Increase retention   Carbon sink potential - Low - Increase retention   Carbon sink potential - Low - Increase retention   Carbon sink potential - Low - Increase trees   Carbon sink potential - Low - Increase trees   Carbon sink potential - Low - Reforest cropland   Carbon sink potential - Low - Reforest cropland   Carbon sink potential - Low - Reforest pasture   Carbon sink potential - Low - Reforest pasture   Carbon sink potential - Low - Restore   Carbon sink potential - Low - Restore   Carbon sink potential - Low - Restore   Carbon sink potential - Mid - Accelerate   Carbon sink potential - Mid - Avoid deforestation   Carbon sink potential - Mid - Avoid deforestation   Carbon sink potential - Mid - Avoid deforestation   Carbon sink potential - Mid - Extend rotation   Carbon sink potential - Mid - Improve plantations   Carbon sink potential - Mid - Improve plantations   Carbon sink potential - Mid - Increase retention   Carbon sink potential - Mid - Increase trees   Carbon sink potential - Mid - Increase trees   Carbon sink potential - Mid - Reforest cropland   Carbon sink potential - Mid - Reforest pasture   Carbon sink potential - Mid - Reforest pasture   Carbon sink potential - Mid - Reforest pasture   Carbon sink potential - Mid - Restore   Carbon sink potential - High -   Carbon sink potential - High -   Carbon sink potential - High -   Car		0	0	000
Interest		0	0	2 221
Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)		o	0	2,221
Description		0	0	201
Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Low - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Low - Reforest cropland (1000 tC02e/y) Carbon sink potential - Low - Reforest pasture (1000 tC02e/y) Carbon sink potential - Low - Reforest pasture (1000 tC02e/y) Carbon sink potential - Low - Restore 0 0 1,289 productivity (1000 tC02e/y) Carbon sink potential - Mid - Accelerate 0 0 86.8 regeneration (1000 tC02e/y) Carbon sink potential - Mid - All (not counting 0 0 19,839 overlap) (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation 0 1,271 (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation 0 0 1,271 (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations 0 0 44,002 length (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations 0 0 44,556 of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase retention 0 0 626 outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland 0 0 1,144 (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland 0 0 1,144 (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture 0 0 5,156 (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture 0 0 5,156 (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,556 productivity (1000 tC02e/y) Carbon sink potential - Mid - Restore 0 0 2,949 Carbon sink potential - High - 0 0 2,949 Carbon sink potential - High - 0 0 2,949 Carbon sink potential - High - 0 0 2		U	U	301
of HWP (1000 tC02e/y)         Carbon sink potential - Low - Increase trees         0         0         325           outside forests (1000 tC02e/y)         Carbon sink potential - Low - Reforest cropland         0         0         763           (1000 tC02e/y)         Carbon sink potential - Low - Reforest pasture         0         0         726           (1000 tC02e/y)         Carbon sink potential - Low - Restore         0         0         1,289           productivity (1000 tC02e/y)         Carbon sink potential - Mid - Accelerate         0         0         86.8           regeneration (1000 tC02e/y)         Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/y)         0         0         19,839           overlap) (1000 tC02e/y)         Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)         0         0         1,271           (1000 tC02e/y)         Carbon sink potential - Mid - Extend rotation (1000 tc02e/y)         0         0         4,002           Larbon sink potential - Mid - Improve plantations (1000 tc02e/y)         0         0         4,41           (1000 tc02e/y)         Carbon sink potential - Mid - Increase retention of HWP (1000 tc02e/y)         0         0         4,556           of HWP (1000 tc02e/y)         Carbon sink potential - Mid - Reforest cropland (1000 tc02e/y)         0         0         5,15				0.070
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)		U	U	2,278
outside forests (1000 tCO2e/y)         Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)         0         763 (1000 tCO2e/y)           Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)         0         0         726 (1000 tCO2e/y)           Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)         0         0         1,289 (1000 tCO2e/y)           Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)         0         0         86.8 (1000 tCO2e/y)           Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)         0         0         1,271 (1000 tCO2e/y)           Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)         0         0         1,271 (1000 tCO2e/y)           Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)         0         0         4,002 (1000 tCO2e/y)           Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)         0         0         4,556 (1000 tCO2e/y)           Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)         0         0         4,556 (1000 tCO2e/y)           Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)         0         0         1,144 (1000 tCO2e/y)           Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)         0         0         5,156 (1000 tCO2e/y)           Carbon sink potential - Mid - Restore pro				
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)		U	0	325
Carbon sink potential - Low - Reforest pasture   O   O   726			_	
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)  Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)  Carbon sink potential - Mid - All (not counting or 19,839 overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation or 1,271 (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation or 1,271 (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation or 1,271 (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations or 1,271 (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention or 1,275 (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention or 1,275 (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees or 1,275 (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland or 1,144 (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture or 1,144 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,144 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,144 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,144 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,2556 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,2556 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,2556 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,2556 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,244 (1000 tCO2e/y)  Carbon sink potential - Mid - Restore or 1,244 (1000 tCO2e/y)  Carbon sink potential - High - 0 0 2,955 (1000 hectares)  Land impacted for carbon sink potential - High - 0 0 2,949 (1000 thectares)  Land impacted for carbon sink potential - High - 0 0 2,949 (1000 thectares)  Land impacted for carbon sink potential - High - 0 0 0 2,949 (1000 thectares)		0	0	763
Carbon sink potential - Low - Restore				
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)  Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore (1000 tCO2e/y)  Carbon sink potential - Mid - Restore (1000 tCO2e/y)  Carbon sink potential - Mid - Restore (1000 tCO2e/y)  Carbon sink potential - Mid - Restore (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)  Land impacted for carbon sink potential - High - (1000 tCO2e/y)		0	0	726
productivity (1000 tCO2e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)  Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture overlap (1000 tCO2e/y)  Carbon sink potential - Mid - Restore overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)  Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y)				
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) Carbon sink potential - Mid - Extend rotation overlap (1000 tCO2e/y) Carbon sink potential - Mid - Extend rotation overlap (1000 tCO2e/y) Carbon sink potential - Mid - Improve plantations overlap (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention overlap (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees overlap (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees overlap (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland overlap (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland overlap (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture overlap (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture overlap (1000 tCO2e/y) Carbon sink potential - Mid - Restore overlap (1000 tCO2e/y) Carbon sink potential - Mid - Restore overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impacted for carbon sink potential - High - overlap (1000 tCO2e/y) Land impa		0	0	1,289
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)				
Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Increase trees overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Increase trees overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Restore overlapting (1000 tC02e/y)  Carbon sink potential - Mid - Restore overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)  Land impacted for carbon sink potential - High - overlapting (1000 tC02e/y)		0	0	86.8
overlap) (1000 tC02e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation or carbon sink potential - Mid - Improve plantations or carbon sink potential - Mid - Improve plantations or carbon sink potential - Mid - Improve plantations or carbon sink potential - Mid - Increase retention or carbon sink potential - Mid - Increase retention or carbon sink potential - Mid - Increase trees or carbon sink potential - Mid - Increase trees or carbon sink potential - Mid - Reforest cropland or carbon sink potential - Mid - Reforest cropland or carbon sink potential - Mid - Reforest pasture or carbon sink potential - Mid - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Restore or carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Or or carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Or or carbon sink				
Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation of the property of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Increase trees of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture of the productivity (1000 tC02e/y)  Carbon sink potential - Mid - Restore productivity (1000 tC02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tC02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)  Land impacted for carbon sink potential - High - of the productivity (1000 tc02e/y)	Carbon sink potential - Mid - All (not counting	0	0	19,839
Carbon sink potential - Mid - Extend rotation   O	overlap) (1000 tCO2e/y)			
Carbon sink potential - Mid - Extend rotation   O	Carbon sink potential - Mid - Avoid deforestation	0	0	1,271
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O O O O O O O O O O O O O O O O O O	(1000 tC02e/y)			
length (1000 tCO2e/y)  Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture outside forest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture outside forest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - Outside for carbon sink potential - High		0	0	4.002
Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)  Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Mid - Restore outside for carbon sink potential - High - O100 tc02e/y)  Land impacted for carbon sink potential - High - O100 tc02e/y  Land impacted for carbon sink potential - High - O100 tc02e/s  Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - O100 tc02e/s  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O100 tc02e/s  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O100 tc02e/s  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O100 tc02e/s	·			.,
(1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 218		0	0	441
Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore outside for carbon sink potential - High - outside for carbon sink potential -				
Of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase trees Outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O O 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O O O O O O O O O O O O O O O O O O	7	Ω	n	4 556
Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Mid - Restore oppositely (1000 tC02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tC02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)  Land impacted for carbon sink potential - High - Ooo oppositely (1000 tc02e/y)		Ŭ	<u> </u>	4,000
outside forests (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - OOO 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - OOO 218		Ω	n	626
Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Mid - Restore productivity (1000 tC02e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O O 218		o	0	020
(1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O O 218		0	0	11/./.
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High -  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High -  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High -  O D 2,556  O 0 2,556  O 0 0 2,556  O 0 295		U	0	1,144
(1000 tCO2e/y)  Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO		0	0	F 1F/
Carbon sink potential - Mid - Restore productivity (1000 tC02e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO		U	U	5,156
productivity (1000 tC02e/y)  Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO				0.557
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO		U	U	2,556
Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - High - OOO OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO				
Land impacted for carbon sink potential - High - O O 295 Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - O O 2,949 Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - O O 218		0	0	18.9
Avoid deforestation (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - High - 0 0 2,949 Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - 0 0 218				
hectares) Land impacted for carbon sink potential - High - 0 0 2,949 Extend rotation length (1000 hectares) Land impacted for carbon sink potential - High - 0 0 218		0	0	295
Land impacted for carbon sink potential - High - 0 0 2,949  Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - 0 0 218				
Extend rotation length (1000 hectares)  Land impacted for carbon sink potential - High - 0 0 218				
Land impacted for carbon sink potential - High - 0 0 218		0	0	2,949
Improve plantations (1000 hectares)	Land impacted for carbon sink potential - High -	0	0	218
	Improve plantations (1000 hectares)			

Table 33: E+RE+ scenario - PILLAR 6: Land sinks - Forests (continued)

Table 33: E+RE+ Scenario - PILLAR 6: Land Sinks	•	Jiitiiiueuj	
Item	2020	2025	2050
Land impacted for carbon sink potential - High -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	88.2
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	101
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	272
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	1,267
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	5,209
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	9.46
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	277
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Low -	0	0	1,130
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	109
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	46.4
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	50.4
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	47.2
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	767
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	2,436
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	14.2
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	286
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Mid -	0	0	2,039
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	164
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	67.3
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	75.6
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	341
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	1,544
Restore productivity (1000 hectares)			•
Land impacted for carbon sink potential - Mid -	0	0	4,532
Total impacted (over 30 years) (1000 hectares)	-	-	,
, , , , , , , , , , , , , , , , , , , ,			

Table 34: E+RE+ scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)	0	682	0.896	0.87	0.639	0.432	0.035
Monetary damages from air pollution - Natural Gas (million 2019\$)	0	188	134	69.9	43.8	12.3	4.63
Monetary damages from air pollution - Transportation (million 2019\$)	0	1,540	1,435	1,091	632	291	118

Table 34: E+RE+ scenario - IMPACTS - Health (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Premature deaths from air pollution - Coal	0	76.6	0.101	0.098	0.072	0.049	0.004
(deaths)							
Premature deaths from air pollution - Natural	0	21.2	15.1	7.9	4.95	1.39	0.523
Gas (deaths)							
Premature deaths from air pollution -	0	173	161	123	71.1	32.7	13.3
Transportation (deaths)							

Table 35: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.23	5.68	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	83.2	86.7	97.7	99.9	100	100	100
Sales of cooking units - Gas (%)	16.8	13.3	2.27	0.114	0	0	0
Sales of space heating units - Electric Heat Pump (%)	32.2	47.8	80.2	87.5	87.8	87.7	87.7
Sales of space heating units - Electric Resistance (%)	31.3	29.8	12.5	8.63	8.46	8.57	8.59
Sales of space heating units - Fossil (%)	4.13	4.49	1.84	1.23	1.19	1.17	1.17
Sales of space heating units - Gas (%)	32.4	17.9	5.43	2.67	2.55	2.52	2.52
Sales of water heating units - Electric Heat Pump (%)	0	9.08	48.1	56.8	57.1	57.2	57.2
Sales of water heating units - Electric Resistance (%)	68.9	73.7	46.7	40.6	40.3	40.3	40.3
Sales of water heating units - Gas Furnace (%)	27.4	14.7	2.75	0.116	0	0	0
Sales of water heating units - Other (%)	3.71	2.57	2.53	2.53	2.54	2.54	2.54

Table 36: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr	0	1,105	2,839	4,591	6,958	7,569	7,219
(million \$2018)							
Public EV charging plugs - DC Fast (1000 units)	0.165	0	2.15	0	9.36	0	15.1
Public EV charging plugs - L2 (1000 units)	0.888	0	51.7	0	225	0	363
Vehicle sales - Heavy-duty - diesel (%)	97.2	92.1	67	23.3	4.22	0.628	0
Vehicle sales - Heavy-duty - EV (%)	0.588	3.81	19	45.6	57.4	59.6	60
Vehicle sales - Heavy-duty - gasoline (%)	0.227	0.227	0.176	0.066	0.013	0.002	0
Vehicle sales - Heavy-duty - hybrid (%)	0.082	0.09	0.077	0.031	0.007	0.001	0
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.392	2.54	12.7	30.4	38.2	39.7	40
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.55	1.81	1.26	0.402	0.074	0.013	0
Vehicle sales - Light-duty - EV (%)	3.92	15.2	46.5	81.8	96.3	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.9	78	48.8	16.5	3.29	0.59	0
Vehicle sales - Light-duty - hybrid (%)	4.42	4.54	3.21	1.19	0.291	0.064	0
Vehicle sales - Light-duty - hydrogen FC (%)	0.11	0.34	0.203	0.063	0.013	0.002	0
Vehicle sales - Light-duty - other (%)	0.102	0.098	0.064	0.022	0.004	0.001	0
Vehicle sales - Medium-duty - diesel (%)	64.7	59.7	42.3	14.4	2.59	0.384	0
Vehicle sales - Medium-duty - EV (%)	0.784	5.07	25.3	60.8	76.5	79.5	80
Vehicle sales - Medium-duty - gasoline (%)	33.7	33.3	25.5	9.32	1.77	0.277	0
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.402	0.341	0.14	0.03	0.005	0
Vehicle sales - Medium-duty - hydrogen FC (%)	0.196	1.27	6.33	15.2	19.1	19.9	20
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

## Table 37: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	171	165	155	148	145	145
Final energy use - Industry (PJ)	755	838	888	904	913	905	904
Final energy use - Residential (PJ)	260	243	223	197	176	163	157
Final energy use - Transportation (PJ)	679	622	545	451	367	315	293

Table 38: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,412	22,037	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	55.3	83.4	88.9	89.2	89.2	89.1
Sales of cooking units - Gas (%)	56.5	44.7	16.6	11.1	10.8	10.8	10.9
Sales of space heating units - Electric Heat Pump	9.56	30.6	77.3	90.8	91.9	92	92
(%)							
Sales of space heating units - Electric Resistance	4.81	4.61	4.92	6.26	6.57	6.58	6.55
(%)							
Sales of space heating units - Fossil (%)	0	2.83	0.549	0.023	0	0	0
Sales of space heating units - Gas Furnace (%)	85.6	62	17.3	2.94	1.48	1.43	1.43
Sales of water heating units - Electric Heat Pump	0.155	10.6	55.7	65.7	66.1	66.2	66.1
(%)							
Sales of water heating units - Electric Resistance	5.74	9.97	28	32.1	32.3	32.3	32.3
(%)							
Sales of water heating units - Gas Furnace (%)	92.5	77.8	14.7	0.62	0	0	0
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56

## Table 39: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.81	4.94	6.83	7.17	5.85	5.99
Cumulative 5-yr (billion \$2018)							

## Table 40: E+RE- scenario - PILLAR 2: Clean Electricity - Generating capacity

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Solar PV - Base (billion \$2018)	0	0	0	0	1.03	1.06	0.107
Capital invested - Solar PV - Constrained (billion \$2018)	0	0	0	0.233	0.639	1.71	0
Capital invested - Wind - Base (billion \$2018)	0	0.069	0	0	0.046	0	0
Capital invested - Wind - Constrained (billion \$2018)	0	0	0	0	0	0	0

# Table 41: E+RE- scenario - PILLAR 2: Clean Electricity - Generation

Item	2020	2025	2035	2040	2045	2050
Solar - Base land use assumptions (GWh)	1,029	0	0	1,871	2,014	219
Solar - Constrained land use assumptions (GWh)	501	0	401	1,150	3,257	0
Wind - Base land use assumptions (GWh)	106	139	0	116	0	0
Wind - Constrained land use assumptions (GWh)	106	0	0	0	0	0

# Table 42: E+RE- scenario - PILLAR 6: Land sinks - Agriculture

Item	2020	2025	2050
Carbon sink potential - Aggressive deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,357
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-108
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,739
Total (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-274
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-1,769
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-54
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-2,097
Total (1000 tC02e/y)			
Land impacted for carbon sink - Aggressive	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			

Table 42: E+RE- scenario - PILLAR 6: Land sinks - Agriculture (continued)

Item	2020	2025	2050
Land impacted for carbon sink - Aggressive	0	0	1,832
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Aggressive	0	0	197
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	2,141
deployment - Total (1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	112
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	965
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Moderate	0	0	98.3
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	1,176
deployment - Total (1000 hectares)			

Table 43: E+RE- scenario - PILLAR 6: Land sinks - Forests

The second residence of the second of the se	0000	0005	0050
Item	2020	2025	2050
Carbon sink potential - High - Accelerate	0	0	116
regeneration (1000 tCO2e/y)			
Carbon sink potential - High - All (not counting	0	0	31,364
overlap) (1000 tCO2e/y)			
Carbon sink potential - High - Avoid deforestation	0	0	2,178
(1000 tC02e/y)			
Carbon sink potential - High - Extend rotation	0	0	5,783
length (1000 tC02e/y)			
Carbon sink potential - High - Improve	0	0	591
plantations (1000 tCO2e/y)			
Carbon sink potential - High - Increase retention	0	0	6,834
of HWP (1000 tCO2e/y)			
Carbon sink potential - High - Increase trees	0	0	928
outside forests (1000 tCO2e/y)			
Carbon sink potential - High - Reforest cropland	0	0	1,525
(1000 tC02e/y)			
Carbon sink potential - High - Reforest pasture	0	0	9,586
(1000 tC02e/y)			
Carbon sink potential - High - Restore	0	0	3,823
productivity (1000 tCO2e/y)			
Carbon sink potential - Low - Accelerate	0	0	57.9
regeneration (1000 tCO2e/y)			
Carbon sink potential - Low - All (not counting	0	0	8,323
overlap) (1000 tCO2e/y)			,
Carbon sink potential - Low - Avoid deforestation	0	0	363
(1000 tCO2e/y)			
Carbon sink potential - Low - Extend rotation	0	0	2,221
length (1000 tC02e/y)			,
Carbon sink potential - Low - Improve	0	0	301
plantations (1000 tCO2e/y)			
Carbon sink potential - Low - Increase retention	0	0	2,278
of HWP (1000 tC02e/y)			_,
Carbon sink potential - Low - Increase trees	0	0	325
outside forests (1000 tCO2e/y)			020
Carbon sink potential - Low - Reforest cropland	0	0	763
(1000 tCO2e/y)	0	·	100
Carbon sink potential - Low - Reforest pasture	0	0	726
(1000 tC02e/y)	0	١ -	120
Carbon sink potential - Low - Restore	0	0	1,289
productivity (1000 tCO2e/y)	0	0	1,209
pi dudutivity (1000 tooze/y)			

Table 43: E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)

Table 43: E+RE- scenario - PILLAR 6: Land sinks	- Forests (co	ntinueaj	
Item	2020	2025	2050
Carbon sink potential - Mid - Accelerate	0	0	86.8
regeneration (1000 tCO2e/y)			
Carbon sink potential - Mid - All (not counting	0	0	19,839
overlap) (1000 tCO2e/y)			
Carbon sink potential - Mid - Avoid deforestation	0	0	1,271
(1000 tC02e/y)			
Carbon sink potential - Mid - Extend rotation	0	0	4,002
length (1000 tC02e/y)			,
Carbon sink potential - Mid - Improve plantations	0	0	441
(1000 tCO2e/y)			
Carbon sink potential - Mid - Increase retention	0	0	4,556
of HWP (1000 tCO2e/y)	0	•	4,000
Carbon sink potential - Mid - Increase trees	0	0	626
outside forests (1000 tC02e/y)	o	0	020
Carbon sink potential - Mid - Reforest cropland	0	0	1,144
(1000 tC02e/y)	o	0	1,144
Carbon sink potential - Mid - Reforest pasture	0	0	5,156
(1000 tC02e/y)	o	0	5,150
Carbon sink potential - Mid - Restore	0	0	0.55/
	U	U	2,556
productivity (1000 tCO2e/y)	0		10.0
Land impacted for carbon sink potential - High -	0	0	18.9
Accelerate regeneration (1000 hectares)			005
Land impacted for carbon sink potential - High -	0	0	295
Avoid deforestation (over 30 years) (1000			
hectares)	_		
Land impacted for carbon sink potential - High -	0	0	2,949
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	218
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	88.2
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	101
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	272
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	1,267
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - High -	0	0	5,209
Total impacted (over 30 years) (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	9.46
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	277
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Low -	0	0	1,130
Extend rotation length (1000 hectares)	•	0	1,100
Land impacted for carbon sink potential - Low -	0	0	109
Improve plantations (1000 hectares)	o	0	107
	0		0
Land impacted for carbon sink potential - Low -	U	0	0
Increase retention of HWP (1000 hectares)			1.7.1
Land impacted for carbon sink potential - Low -	0	0	46.4
Increase trees outside forests (1000 hectares)			·
Land impacted for carbon sink potential - Low -	0	0	50.4
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	47.2
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	767
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Low -	0	0	2,436

Table 43: E+RE- scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2050
Land impacted for carbon sink potential - Mid -	0	0	14.2
Accelerate regeneration (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	286
Avoid deforestation (over 30 years) (1000			
hectares)			
Land impacted for carbon sink potential - Mid -	0	0	2,039
Extend rotation length (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	164
Improve plantations (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	0
Increase retention of HWP (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	67.3
Increase trees outside forests (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	75.6
Reforest cropland (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	341
Reforest pasture (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	1,544
Restore productivity (1000 hectares)			
Land impacted for carbon sink potential - Mid -	0	0	4,532
Total impacted (over 30 years) (1000 hectares)			

## Table 44: E+RE- scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal	0	682	0.896	0.87	0.639	0.432	0.035
(million 2019\$)							
Monetary damages from air pollution - Natural	0	214	151	156	120	41.1	13.4
Gas (million 2019\$)							
Monetary damages from air pollution -	0	1,540	1,435	1,091	632	291	118
Transportation (million 2019\$)							
Premature deaths from air pollution - Coal	0	76.6	0.101	0.098	0.072	0.049	0.004
(deaths)							
Premature deaths from air pollution - Natural	0	24.1	17	17.6	13.5	4.64	1.51
Gas (deaths)							
Premature deaths from air pollution -	0	173	161	123	71.1	32.7	13.3
Transportation (deaths)							

# Table 45: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.17	5.41	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	83.1	83.5	85.1	89.2	94.8	98.3	99.6
Sales of cooking units - Gas (%)	16.9	16.5	14.9	10.8	5.17	1.67	0.449
Sales of space heating units - Electric Heat Pump	32.2	41.6	45.3	56	72.3	82.8	86.5
(%)							
Sales of space heating units - Electric Resistance	31.3	33.1	31	25.2	16.6	11.1	9.21
(%)							
Sales of space heating units - Fossil (%)	4.13	5	4.74	3.81	2.44	1.57	1.28
Sales of space heating units - Gas (%)	32.4	20.3	18.9	14.9	8.67	4.49	3.04
Sales of water heating units - Electric Heat Pump	0	1.56	6	18.8	38.4	51.1	55.6
(%)							
Sales of water heating units - Electric Resistance	68.9	78.9	75.9	67	53.3	44.5	41.4
(%)							
Sales of water heating units - Gas Furnace (%)	27.4	17	15.5	11.7	5.76	1.83	0.477
Sales of water heating units - Other (%)	3.71	2.57	2.54	2.55	2.56	2.54	2.54

Table 46: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr	0	0	180	376	1,271	3,991	5,817
(million \$2018)							
Public EV charging plugs - DC Fast (1000 units)	0.165	0	0.677	0	3.48	0	9.69
Public EV charging plugs - L2 (1000 units)	0.888	0	16.3	0	83.7	0	233
Vehicle sales - Heavy-duty - diesel (%)	97.4	96	91.3	79.8	58.2	32.1	13.7
Vehicle sales - Heavy-duty - EV (%)	0.498	1.45	4.11	10.8	23.6	39.5	51
Vehicle sales - Heavy-duty - gasoline (%)	0.228	0.236	0.239	0.225	0.179	0.109	0.051
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.094	0.104	0.107	0.092	0.06	0.03
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.332	0.969	2.74	7.17	15.7	26.3	34
Vehicle sales - Heavy-duty - other (%)	1.5	1.28	1.46	1.95	2.25	1.96	1.14
Vehicle sales - Light-duty - diesel (%)	1.56	1.97	2.06	1.64	1.05	0.537	0.23
Vehicle sales - Light-duty - EV (%)	1.89	4.68	11.9	25.9	48.4	72	87.6
Vehicle sales - Light-duty - gasoline (%)	91.7	87.5	79.6	66.7	46.2	24.9	11
Vehicle sales - Light-duty - hybrid (%)	4.59	5.39	6.05	5.51	4.13	2.44	1.18
Vehicle sales - Light-duty - hydrogen FC (%)	0.113	0.38	0.326	0.249	0.177	0.098	0.046
Vehicle sales - Light-duty - other (%)	0.103	0.106	0.097	0.084	0.061	0.033	0.015
Vehicle sales - Medium-duty - diesel (%)	64.8	62.2	57.7	49.4	35.6	19.6	8.37
Vehicle sales - Medium-duty - EV (%)	0.664	1.94	5.49	14.3	31.4	52.6	68
Vehicle sales - Medium-duty - gasoline (%)	33.8	34.7	34.7	31.9	24.4	14.2	6.33
Vehicle sales - Medium-duty - hybrid (%)	0.363	0.418	0.464	0.478	0.414	0.275	0.141
Vehicle sales - Medium-duty - hydrogen FC (%)	0.166	0.485	1.37	3.58	7.86	13.2	17
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

## Table 47: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	171	169	166	161	156	153
Final energy use - Industry (PJ)	755	838	889	910	921	912	909
Final energy use - Residential (PJ)	260	244	232	219	204	187	173
Final energy use - Transportation (PJ)	680	628	570	525	490	449	400

## Table 48: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,401	22,003	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	47.1	51.3	61.6	76.1	85	88
Sales of cooking units - Gas (%)	56.5	52.9	48.7	38.4	23.9	15	12
Sales of space heating units - Electric Heat Pump	9.56	21.7	26.9	42.4	66.6	83.3	89.7
(%)							
Sales of space heating units - Electric Resistance	4.81	4.61	4.65	4.78	5.23	5.91	6.33
(%)							
Sales of space heating units - Fossil (%)	0	3.27	3.09	2.34	1.17	0.379	0.099
Sales of space heating units - Gas Furnace (%)	85.6	70.4	65.3	50.5	27	10.4	3.89
Sales of water heating units - Electric Heat Pump	0.155	1.96	7.08	21.8	44.4	59.2	64.3
(%)							
Sales of water heating units - Electric Resistance	5.74	6.48	8.39	14.4	23.5	29.5	31.6
(%)							
Sales of water heating units - Gas Furnace (%)	92.5	90	83	62.2	30.4	9.74	2.53
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56

## Table 49: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.14	4.18	4.77	4.88	5.83	6.04
Cumulative 5-yr (billion \$2018)							

## Table 50: E-B+ scenario - PILLAR 2: Clean Electricity - Generating capacity

	-		•				
Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass power plant (billion	0	0	0	0	0	0	0
\$2018)							

Item	2020	2025	2030	2035	2040	2045	2050
Capital invested - Biomass w/ccu allam power	0	0	0	0.046	0	0	0
plant (billion \$2018)							
Capital invested - Biomass w/ccu power plant	0	0	2.97	0.004	6.62	0	0
(billion \$2018)							

## Table 51: E-B+ scenario - PILLAR 2: Clean Electricity - Generation

Item	2020	2025	2030	2035	2040	2045	2050
Biomass power plant (GWh)	0	0	0	0	0	0	0
Biomass w/ccu allam power plant (GWh)	0	0	0	45.5	45.5	45.5	45.5
Biomass w/ccu power plant (GWh)	0	0	3,332	3,337	10,762	10,762	10,762

## Table 52: E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy

Item	2020	2025	2030	2035	2040	2045	2050
Biomass purchases (million \$2018/year)	0	0	214	575	1,886	2,174	2,174
Conversion capital investment - Cumulative 5-yr	0	0	2,724	4,018	15,288	3,181	0
(million \$2018)							
Number of facilities - Allam power w ccu	0	0	0	1	1	1	1
_ (quantity)							
Number of facilities - Beccs hydrogen (quantity)	0	0	0	4	15	18	18
Number of facilities - Diesel (quantity)	0	0	0	0	0	0	0
Number of facilities - Diesel ccu (quantity)	0	0	0	1	1	1	1
Number of facilities - Power (quantity)	0	0	0	0	0	0	0
Number of facilities - Power ccu (quantity)	0	0	2	3	9	9	9
Number of facilities - Pyrolysis (quantity)	0	0	0	0	0	0	0
Number of facilities - Pyrolysis ccu (quantity)	0	0	0	0	0	0	0
Number of facilities - Sng (quantity)	0	0	0	0	0	0	0
Number of facilities - Sng ccu (quantity)	0	0	1	1	1	1	1

#### Table 53: E-B+ scenario - PILLAR 4: CCUS - CO2 capture

Item	2020	2025	2030	2035	2040	2045	2050
Annual - All (MMT)	0	0	3.3	8.41	27.6	31.7	31.7
Annual - BECCS (MMT)	0	0	3.3	8.41	27.6	31.7	31.7
Annual - Cement and lime (MMT)	0	0	0	0	0	0	0
Annual - NGCC (MMT)	0	0	0	0	0	0	0.01
Cumulative - All (MMT)	0	0	3.3	11.7	39.3	71	103
Cumulative - BECCS (MMT)	0	0	3.3	11.7	39.3	71	103
Cumulative - Cement and lime (MMT)	0	0	0	0	0	0	0
Cumulative - NGCC (MMT)	0	0	0	0	0	0	0.01

## Table 54: E-B+ scenario - PILLAR 4: CCUS - CO2 storage

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)	0	0	0.92	3.21	7.13	9.85	10
Injection wells (wells)	0	0	2	7	12	20	24
Resource characterization, appraisal, permitting costs (million \$2020)	0	25.4	112	173	173	173	173
Wells and facilities construction costs (million \$2020)	0	0	50.8	198	353	590	732

## Table 55: E-B+ scenario - PILLAR 4: CCUS - CO2 pipelines

Item	2020	2025	2030	2035	2040	2045	2050
All (km)	0	0	499	1,390	2,745	2,186	2,944
Cumulative investment - All (million \$2018)	0	0	1,603	3,872	6,641	6,309	6,854
Cumulative investment - Spur (million \$2018)	0	0	310	1,287	2,763	2,431	2,976
Cumulative investment - Trunk (million \$2018)	0	0	1,293	2,585	3,878	3,878	3,878
Spur (km)	0	0	318	1,029	2,203	1,644	2,401
Trunk (km)	0	0	181	362	543	543	543

Table 56: E-B+ scenario - PILLAR 6: Land sinks - Agriculture

Table 56: E-B+ scenario - PILLAR 6: Land sinks	- Agriculture		
Item	2020	2025	2050
Carbon sink potential - Aggressive deployment -	0	0	-652
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,109
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	0
Cropland to woody energy crops (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	0
Pasture to energy crops (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-97.8
Permanent conservation cover (1000 tCO2e/y)			
Carbon sink potential - Aggressive deployment -	0	0	-3,859
Total (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-652
Corn-ethanol to energy grasses (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	-1,638
Cropland measures (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	0
Cropland to woody energy crops (1000 tCO2e/y)			
Carbon sink potential - Moderate deployment -	0	0	0
Pasture to energy crops (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-48.9
Permanent conservation cover (1000 tC02e/y)			
Carbon sink potential - Moderate deployment -	0	0	-2,339
Total (1000 tC02e/y)			,
Land impacted for carbon sink - Aggressive	0	0	292
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	4,110
deployment - Cropland measures (1000			
hectares)			
Land impacted for carbon sink - Aggressive	0	0	110
deployment - Cropland to woody energy crops			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	442
deployment - Pasture to energy crops (1000			
hectares)			
Land impacted for carbon sink - Aggressive	0	0	178
deployment - Permanent conservation cover			
(1000 hectares)			
Land impacted for carbon sink - Aggressive	0	0	5,132
deployment - Total (1000 hectares)			-, -
Land impacted for carbon sink - Moderate	0	0	292
deployment - Corn-ethanol to energy grasses			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	877
deployment - Cropland measures (1000		•	0
hectares)			
Land impacted for carbon sink - Moderate	0	0	110
deployment - Cropland to woody energy crops			
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	442
deployment - Pasture to energy crops (1000		0	744
hectares)			
Land impacted for carbon sink - Moderate	0	0	89
deployment - Permanent conservation cover	"	U	07
(1000 hectares)			
Land impacted for carbon sink - Moderate	0	0	1,810
deployment - Total (1000 hectares)		U	1,010
deproyment - rotal (1000 nectal es)			

Table 57: E-B+ scenario - PILLAR 6: Land sinks - Forests

Table 57: E-B+ scenario - PILLAR 6: Land sinks	- Forests		
Item	2020	2025	2050
Carbon sink potential - High - Accelerate	0	0	116
regeneration (1000 tCO2e/y)			
Carbon sink potential - High - All (not counting	0	0	31,364
overlap) (1000 tCO2e/y)			
Carbon sink potential - High - Avoid deforestation	0	0	2,178
(1000 tCO2e/y)			
Carbon sink potential - High - Extend rotation	0	0	5,783
length (1000 tCO2e/y)			
Carbon sink potential - High - Improve	0	0	591
plantations (1000 tCO2e/y)			
Carbon sink potential - High - Increase retention	0	0	6,834
of HWP (1000 tCO2e/y)			
Carbon sink potential - High - Increase trees	0	0	928
outside forests (1000 tCO2e/y)			
Carbon sink potential - High - Reforest cropland	0	0	1,525
(1000 tC02e/y)			,
Carbon sink potential - High - Reforest pasture	0	0	9,586
(1000 tC02e/y)		-	.,
Carbon sink potential - High - Restore	0	0	3,823
productivity (1000 tCO2e/y)			0,020
Carbon sink potential - Low - Accelerate	0	0	57.9
regeneration (1000 tC02e/y)		o	01.7
Carbon sink potential - Low - All (not counting	0	0	8,323
overlap) (1000 tCO2e/y)		0	0,020
Carbon sink potential - Low - Avoid deforestation	0	0	363
(1000 tCO2e/y)		o	303
Carbon sink potential - Low - Extend rotation	0	0	2,221
length (1000 tC02e/y)		o	2,221
Carbon sink potential - Low - Improve	0	0	301
plantations (1000 tCO2e/y)	0	U	301
Carbon sink potential - Low - Increase retention	0	0	2,278
of HWP (1000 tCO2e/y)	0	U	2,210
	0	0	325
Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)	U	U	323
	0	0	7/0
Carbon sink potential - Low - Reforest cropland	0	0	763
(1000 tC02e/y)	0	0	707
Carbon sink potential - Low - Reforest pasture	0	0	726
(1000 tCO2e/y)	0	0	1.000
Carbon sink potential - Low - Restore	0	0	1,289
productivity (1000 tC02e/y)			0/0
Carbon sink potential - Mid - Accelerate	0	0	86.8
regeneration (1000 tCO2e/y)			10.000
Carbon sink potential - Mid - All (not counting	0	0	19,839
overlap) (1000 tC02e/y)			4.074
Carbon sink potential - Mid - Avoid deforestation	0	0	1,271
(1000 tC02e/y)			
Carbon sink potential - Mid - Extend rotation	0	0	4,002
length (1000 tC02e/y)			
Carbon sink potential - Mid - Improve plantations	0	0	441
(1000 tC02e/y)			
Carbon sink potential - Mid - Increase retention	0	0	4,556
of HWP (1000 tCO2e/y)			
Carbon sink potential - Mid - Increase trees	0	0	626
outside forests (1000 tCO2e/y)			
Carbon sink potential - Mid - Reforest cropland	0	0	1,144
(1000 tC02e/y)			
Carbon sink potential - Mid - Reforest pasture	0	0	5,156
(1000 tC02e/y)			
Carbon sink potential - Mid - Restore	0	0	2,556
productivity (1000 tCO2e/y)			
productivity (1000 t002c/y)			
Land impacted for carbon sink potential - High -	0	0	18.9

Table 57: E-B+ scenario - PILLAR 6: Land sinks - Forests (continued)

Table EQ. DEF according	PILLAR 1: Efficiency/Electrification -	Dooidontial
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Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF -	0	5.15	4.97	0	0	0	0
Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric Resistance (%)	82.9	82.9	82.9	82.9	82.9	82.9	82.9
Sales of cooking units - Gas (%)	17.1	17.1	17.1	17.1	17.1	17.1	17.1
Sales of space heating units - Electric Heat Pump	30.6	53.8	54.6	55.9	57.2	58.9	61.6
(%)							
Sales of space heating units - Electric Resistance	32	27.2	26.7	25.9	24.9	23.3	20.6
(%)							
Sales of space heating units - Fossil (%)	4.21	3.29	3.32	3.27	3.22	3.18	3.2
Sales of space heating units - Gas (%)	33.2	15.8	15.4	14.9	14.7	14.6	14.6
Sales of water heating units - Electric Heat Pump	0	0	0	0	0	0	0
(%)							
Sales of water heating units - Electric Resistance	68.9	80	80.1	80	79.9	79.9	79.9
(%)							
Sales of water heating units - Gas Furnace (%)	27.4	17.5	17.3	17.5	17.6	17.5	17.6
Sales of water heating units - Other (%)	3.71	2.57	2.54	2.55	2.57	2.56	2.57

# Table 59: REF scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Heavy-duty - diesel (%)	98.1	98.2	97.9	97	95.6	93.5	91.6
Vehicle sales - Heavy-duty - EV (%)	0	0	0	0	0	0	0
Vehicle sales - Heavy-duty - gasoline (%)	0.229	0.242	0.257	0.274	0.294	0.317	0.343
Vehicle sales - Heavy-duty - hybrid (%)	0.083	0.096	0.112	0.13	0.15	0.174	0.202
Vehicle sales - Heavy-duty - hydrogen FC (%)	0.119	0.138	0.16	0.186	0.216	0.25	0.29
Vehicle sales - Heavy-duty - other (%)	1.51	1.31	1.57	2.37	3.69	5.71	7.57
Vehicle sales - Light-duty - diesel (%)	1.55	1.97	2.18	2.03	1.83	1.71	1.62
Vehicle sales - Light-duty - EV (%)	3.56	5.6	6.38	7.84	9.55	11.1	12.2
Vehicle sales - Light-duty - gasoline (%)	90.2	86.7	84.5	82.7	80.6	78.7	77.1
Vehicle sales - Light-duty - hybrid (%)	4.44	5.28	6.47	7.04	7.6	8.18	8.63
Vehicle sales - Light-duty - hydrogen FC (%)	0.111	0.377	0.346	0.307	0.304	0.305	0.315
Vehicle sales - Light-duty - other (%)	0.102	0.106	0.102	0.103	0.102	0.101	0.104
Vehicle sales - Medium-duty - diesel (%)	65.2	63.5	61.6	59.6	58	56.5	55.2
Vehicle sales - Medium-duty - EV (%)	0.027	0.105	0.329	0.671	0.895	0.973	0.993
Vehicle sales - Medium-duty - gasoline (%)	34	35.5	37	38.5	39.7	40.8	41.7
Vehicle sales - Medium-duty - hybrid (%)	0.365	0.427	0.496	0.577	0.674	0.793	0.929
Vehicle sales - Medium-duty - hydrogen FC (%)	0.175	0.208	0.242	0.285	0.339	0.409	0.487
Vehicle sales - Medium-duty - other (%)	0.255	0.271	0.298	0.345	0.42	0.528	0.671

# Table 60: REF scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	171	174	176	176	177	181	190
Final energy use - Industry (PJ)	755	847	903	938	959	961	976
Final energy use - Residential (PJ)	260	244	236	230	227	228	229
Final energy use - Transportation (PJ)	680	628	576	545	545	562	584

## Table 61: REF scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	19,056	19,846	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric Resistance (%)	43.5	45.6	45.9	45.7	46	45.9	45.7
Sales of cooking units - Gas (%)	56.5	54.4	54.1	54.3	54	54.1	54.3
Sales of space heating units - Electric Heat Pump (%)	9.56	27.5	56.9	76.1	79	79.4	79.4
Sales of space heating units - Electric Resistance (%)	4.81	5.67	10	15.4	18.7	19.2	19.2
Sales of space heating units - Fossil (%)	0	2.93	1.3	0.192	0.019	0	0
Sales of space heating units - Gas Furnace (%)	85.6	63.9	31.8	8.33	2.28	1.48	1.43
Sales of water heating units - Electric Heat Pump (%)	0.155	0.153	0.147	0.149	0.149	0.146	0.148

Table 61: REF scenario - PILLAR 1: Efficiency/Electrification - Commercial (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Electric Resistance	5.74	5.75	5.58	5.66	5.62	5.56	5.61
(%)							
Sales of water heating units - Gas Furnace (%)	92.5	92.5	92.7	92.6	92.7	92.7	92.7
Sales of water heating units - Other (%)	1.59	1.58	1.58	1.58	1.58	1.57	1.56

Table 62: REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -	0	4.86	5	5.95	6.18	5.74	5.89
Cumulative 5-yr (billion \$2018)							

Table 63: REF scenario - PILLAR 6: Land sinks - Forests

Table 63: REF scenario - PILLAR 6: Land sinks - F				
Item	2020	2025	2030	2050
Business-as-usual carbon sink - Natural uptake (Mt CO2e/y)	-8.29	0	-10.7	-8.71
Business-as-usual carbon sink - Retained in Hardwood Products (Mt CO2e/y)	-1.86	0	-3.1	-3.26
Business-as-usual carbon sink - Total (Mt CO2e/y)	-10.1	0	-13.8	-12
Carbon sink potential - High - Accelerate	0	0	0	116
regeneration (1000 tCO2e/y)	0	0	0	
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)	0	0	0	31,364
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)	0	0	0	2,178
Carbon sink potential - High - Extend rotation length (1000 tC02e/y)	0	0	0	5,783
Carbon sink potential - High - Improve plantations (1000 tC02e/y)	0	0	0	591
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)	0	0	0	6,834
Carbon sink potential - High - Increase trees outside forests (1000 tCO2e/y)	0	0	0	928
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)	0	0	0	1,525
Carbon sink potential - High - Reforest pasture (1000 tC02e/y)	0	0	0	9,586
Carbon sink potential - High - Restore productivity (1000 tC02e/y)	0	0	0	3,823
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)	0	0	0	57.9
Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y)	0	0	0	8,323
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)	0	0	0	363
Carbon sink potential - Low - Extend rotation	0	0	0	2,221
length (1000 tC02e/y) Carbon sink potential - Low - Improve	0	0	0	301
plantations (1000 tCO2e/y)  Carbon sink potential - Low - Increase retention	0	0	0	2,278
of HWP (1000 tCO2e/γ) Carbon sink potential - Low - Increase trees	0	0	0	325
outside forests (1000 tCO2e/y)  Carbon sink potential - Low - Reforest cropland	0	0	0	763
(1000 tC02e/y) Carbon sink potential - Low - Reforest pasture	0	0	0	726
(1000 tC02e/y)				
Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)	0	0	0	1,289
Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y)	0	0	0	86.8
Carbon sink potential - Mid - All (not counting overlap) (1000 tCO2e/y)	0	0	0	19,839

Table 63: REF scenario - PILLAR 6: Land sinks - Forests (continued)

Table 63: REF scenario - PILLAR 6: Land sinks -	•			
Item	2020	2025	2030	2050
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)	0	0	0	1,271
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)	0	0	0	4,002
Carbon sink potential - Mid - Improve plantations	0	0	0	441
(1000 tC02e/y)  Carbon sink potential - Mid - Increase retention	0	0	0	4,556
of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees	0	0	0	626
outside forests (1000 tC02e/y)  Carbon sink potential - Mid - Reforest cropland	0	0	0	1,144
(1000 tCO2e/y)  Carbon sink potential - Mid - Reforest pasture	0	0	0	5,156
(1000 tCO2e/y)  Carbon sink potential - Mid - Restore	0	0	0	2,556
productivity (1000 tCO2e/y)				
Land impacted for carbon sink potential - High - Accelerate regeneration (1000 hectares)	0	0	0	18.9
Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years) (1000	0	0	0	295
hectares)				_
Land impacted for carbon sink potential - High - Extend rotation length (1000 hectares)	0	0	0	2,949
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)	0	0	0	218
Land impacted for carbon sink potential - High - Increase retention of HWP (1000 hectares)	0	0	0	0
Land impacted for carbon sink potential - High - Increase trees outside forests (1000 hectares)	0	0	0	88.2
Land impacted for carbon sink potential - High -	0	0	0	101
Reforest cropland (1000 hectares)  Land impacted for carbon sink potential - High -	0	0	0	272
Reforest pasture (1000 hectares)  Land impacted for carbon sink potential - High -	0	0	0	1,267
Restore productivity (1000 hectares)  Land impacted for carbon sink potential - High -	0	0	0	5,209
Total impacted (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	9.46
Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	277
Avoid deforestation (over 30 years) (1000 hectares)				
Land impacted for carbon sink potential - Low - Extend rotation length (1000 hectares)	0	0	0	1,130
Land impacted for carbon sink potential - Low - Improve plantations (1000 hectares)	0	0	0	109
Land impacted for carbon sink potential - Low - Increase retention of HWP (1000 hectares)	0	0	0	0
Land impacted for carbon sink potential - Low -	0	0	0	46.4
Increase trees outside forests (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	50.4
Reforest cropland (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	47.2
Reforest pasture (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	767
Restore productivity (1000 hectares)  Land impacted for carbon sink potential - Low -	0	0	0	2,436
Total impacted (over 30 years) (1000 hectares)  Land impacted for carbon sink potential - Mid -	0	0	0	14.2
Accelerate regeneration (1000 hectares)  Land impacted for carbon sink potential - Mid -	0	0	0	286
Avoid deforestation (over 30 years) (1000 hectares)		U		200

Table 63: REF scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2030	2050
Land impacted for carbon sink potential - Mid -	0	0	0	2,039
Extend rotation length (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	164
Improve plantations (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	0
Increase retention of HWP (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	67.3
Increase trees outside forests (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	75.6
Reforest cropland (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	341
Reforest pasture (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	1,544
Restore productivity (1000 hectares)				
Land impacted for carbon sink potential - Mid -	0	0	0	4,532
Total impacted (over 30 years) (1000 hectares)				

# Table 64: REF scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)	0	2,429	1,663	1,315	1,135	1,069	1,059
Monetary damages from air pollution - Natural Gas (million 2019\$)	0	190	205	222	260	220	209
Monetary damages from air pollution - Transportation (million 2019\$)	0	1,564	1,601	1,639	1,685	1,732	1,780
Premature deaths from air pollution - Coal (deaths)	0	273	187	148	127	120	119
Premature deaths from air pollution - Natural Gas (deaths)	0	21.5	23.2	25.1	29.4	24.8	23.6
Premature deaths from air pollution - Transportation (deaths)	0	176	180	184	190	195	200