

# Net-Zero America - ohio state report

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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 <a href="https://netzeroamerica.princeton.edu">https://netzeroamerica.princeton.edu</a>.

#### Notes

- These data are all data from the study available at <a href="https://netzeroamerica.prince-ton.edu">https://netzeroamerica.prince-ton.edu</a>.
- 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 statelevel 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.)
- For Pillar 6 (Land sinks), values shown are maximum carbon storage potentials.

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	36,680	40,065	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	41	54.2	82.9	88.6	88.9	88.9	88.9
Resistance (%)							
Sales of cooking units - Gas (%)	59	45.8	17.1	11.4	11.1	11.1	11.1
Sales of space heating units - Electric	1.41	8.43	35.7	81.1	89	89.5	89.5
Heat Pump (%)							
Sales of space heating units - Electric	4.39	3.49	5.31	9.37	10.1	10.2	10.2
Resistance (%)							
Sales of space heating units - Fossil (%)	5.44	2.58	0.487	0.021	0	0	0
Sales of space heating units - Gas Furnace	88.8	85.5	58.5	9.54	0.892	0.356	0.356
(%)							
Sales of water heating units - Electric	0.454	2.53	19.6	46.2	50.8	51.1	51.1
Heat Pump (%)							
Sales of water heating units - Electric	4.26	4.67	18.3	43.9	48.4	48.7	48.7
Resistance (%)							
Sales of water heating units - Gas Furnace	95	92.6	61.9	9.69	0.569	0	0
(%)							
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		6.24	6.43	13.3	14.2	13.1	13.8
Cumulative 5-yr (billion \$2018)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	366	351	325	295	272	261
Final energy use - Industry (PJ)	602	619	627	629	639	647	652
Final energy use - Residential (PJ)	555	515	478	416	348	297	264
Final energy use - Transportation (PJ)	952	886	773	638	516	442	411

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.	0	9.7	12.8	0	0	0	0
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	61.8	69.9	94.9	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	38.2	30.1	5.14	0.259	0	0	0
Sales of space heating units - Electric	5.51	13.7	41.4	84.2	91.7	92.1	91.9
Heat Pump (%)							
Sales of space heating units - Electric	15.4	21.4	16.1	7.17	5.54	5.47	5.69
Resistance (%)							
Sales of space heating units - Fossil (%)	5.05	8.47	5.81	2.79	2.31	2.27	2.21
Sales of space heating units - Gas (%)	74	56.5	36.7	5.84	0.489	0.156	0.159
Sales of water heating units - Electric	0	1.79	15.1	34.7	38	38.3	38.3
Heat Pump (%)							
Sales of water heating units - Electric	32.2	48.8	51.7	60	61.5	61.6	61.5
Resistance (%)							
Sales of water heating units - Gas Furnace	67.7	49.3	33	5.17	0.303	0	0
(%)							
Sales of water heating units - Other (%)	0.083	0.169	0.17	0.17	0.168	0.168	0.17

Table 5: E+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -	0	2,095	5,367	8,700	13,178	14,344	13,675
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.326	0	3.65	0	16	0	25.9
_units)							
Public EV charging plugs - L2 (1000 units)	1.06	0	87.7	0	386	0	624
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 (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.42	16.7	48.8	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.9	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC	0.11	0.331	0.191	0.059	0.012	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	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	0.196	1.27	6.33	15.2	19.1	19.9	20
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

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	0	0
Capital invested - Solar PV - Base (billion \$2018)	0	0	0.621	12.5	9.71	12.6	4.83
Capital invested - Solar PV - Constrained (billion \$2018)	0	1.55	0.276	10.4	9.72	11.5	5.9
Capital invested - Wind - Base (billion \$2018)	0	0	5.07	13.6	21.4	2.52	3.08
Capital invested - Wind - Constrained (billion \$2018)	0	0	12.9	11.3	0	0	0.2
Installed (cumulative) - OffshoreWind - Base land use assumptions (MW)	0	0	0	0	0	0	0
Installed (cumulative) - Rooftop PV (MW)	152	228	303	401	518	653	807
Installed (cumulative) - Solar - Base land use assumptions (MW)	723	723	1,242	12,550	21,889	34,695	39,912
Installed (cumulative) - Wind - Base land use assumptions (MW)	827	827	4,636	15,584	33,653	35,902	38,809

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	0	0
Solar - Base land use assumptions (GWh)	1,454	0	915	19,820	16,205	22,080	8,874
Solar - Constrained land use assumptions (GWh)	1,334	0	2,761	16,908	20,103	22,310	12,598

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

Item	2020	2025	2030	2035	2040	2045	2050
Wind - Base land use assumptions (GWh)	2,973	0	11,912	33,278	50,514	5,936	7,442
Wind - Constrained land use assumptions	2,973	0	25,595	24,964	0	0	0
(GWh)							

## 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	0	0	402	1,858
Conversion capital investment -	0	0	0	0	0	6,167	22,362
Cumulative 5-yr (million \$2018)							
Number of facilities - Allam power w ccu	0	0	0	0	0	0	0
(quantity)							
Number of facilities - Beccs hydrogen	0	0	0	0	0	7	30
(quantity)							
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	0	0	0	0	0	0	0
(quantity)							
Number of facilities - Pyrolysis (quantity)	0	0	0	0	0	0	0
Number of facilities - Pyrolysis ccu	0	0	0	0	0	0	0
(quantity)							
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	0	7.93	36.7
Annual - BECCS (MMT)		0	0	0	0	7.93	36.7
Annual - Cement and lime (MMT)		0	0	0	0	0	0
Annual - NGCC (MMT)		0	0	0	0	0	0
Cumulative - All (MMT)		0	0	0	0	7.93	44.6
Cumulative - BECCS (MMT)		0	0	0	0	7.93	44.6
Cumulative - Cement and lime (MMT)		0	0	0	0	0	0
Cumulative - NGCC (MMT)		0	0	0	0	0	0

## Table 10: E+ scenario - PILLAR 4: CCUS - CO2 pipelines

Item	2020	2025	2030	2035	2040	2045	2050
All (km)		0	477	477	477	778	2,027
Cumulative investment - All (million \$2018)		0	1,555	1,555	1,555	1,905	3,017
Cumulative investment - Spur (million \$2018)		0	0	0	0	350	1,462
Cumulative investment - Trunk (million \$2018)		0	1,555	1,555	1,555	1,555	1,555
Spur (km)		0	0	0	0	301	1,550
Trunk (km)		0	477	477	477	477	477

#### Table 11: E+ scenario - PILLAR 4: CCUS - CO2 storage

Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)		0	0	0	0	0	0
Injection wells (wells)		0	0	0	0	0	0
Resource characterization, appraisal, permitting costs (million \$2020)		0	0	0	0	0	0
Wells and facilities construction costs (million \$2020)		0	0	0	0	0	0

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-5,463
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Aggressive							-214
deployment - Permanent conservation							
cover (1000 tC02e/y)							
Carbon sink potential - Aggressive							-6,932
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-2,883
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							-107
deployment - Permanent conservation							
cover (1000 tC02e/y)							
Carbon sink potential - Moderate							-4,245
deployment - Total (1000 tC02e/y)							
Land impacted for carbon sink -							523
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							3,526
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							390
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							4,439
Aggressive deployment - Total (1000							.,
hectares)							
Land impacted for carbon sink - Moderate							523
deployment - Corn-ethanol to energy							0_0
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							1,861
deployment - Cropland measures (1000							.,00.
hectares)							
Land impacted for carbon sink - Moderate							195
deployment - Permanent conservation							170
cover (1000 hectares)							
Land impacted for carbon sink - Moderate	+			+			2,578
deployment - Total (1000 hectares)							2,010
achioling in - intal (1000 lieutal eg)							

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

2020	2025	2030	2035	2040	2045	2050
						-180
						-21,474
						-3,130
						-3,434
						-219
						-4,749
	2020	2020 2025	2020 2025 2030	2020 2025 2030 2035	2020 2025 2030 2035 2040	2020 2025 2030 2035 2040 2045

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

Table 13: E+ scenario - PILLAR 6: Land sin		•					
Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Increase							-1,920
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-1,166
cropland (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-4,605
pasture (1000 tCO2e/y)							
Carbon sink potential - High - Restore							-2,070
productivity (1000 tCO2e/y)							
Carbon sink potential - Low - Accelerate							-90.3
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,927
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Low - Avoid							-522
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-1,319
rotation length (1000 tCO2e/y)							•
Carbon sink potential - Low - Improve							-112
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,583
retention of HWP (1000 tCO2e/y)							,,,,,,
Carbon sink potential - Low - Increase							-672
trees outside forests (1000 tC02e/y)							0.2
Carbon sink potential - Low - Reforest							-583
cropland (1000 tCO2e/y)							000
Carbon sink potential - Low - Reforest							-349
pasture (1000 tC02e/y)							047
Carbon sink potential - Low - Restore							-698
productivity (1000 tC02e/y)							-070
Carbon sink potential - Mid - Accelerate							-135
regeneration (1000 tCO2e/y)							-100
Carbon sink potential - Mid - All (not							-13,699
counting overlap) (1000 tCO2e/y)							-13,099
							-1,826
Carbon sink potential - Mid - Avoid							-1,826
deforestation (1000 tC02e/y)							0.077
Carbon sink potential - Mid - Extend							-2,377
rotation length (1000 tCO2e/y)							1/0
Carbon sink potential - Mid - Improve							-163
plantations (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-3,166
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-1,296
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Mid - Reforest							-874
cropland (1000 tCO2e/y)							
Carbon sink potential - Mid - Reforest							-2,477
pasture (1000 tCO2e/y)							
Carbon sink potential - Mid - Restore							-1,384
productivity (1000 tCO2e/y)							
Land impacted for carbon sink potential -							29.5
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							424
High - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000							•
hectares)							
Land impacted for carbon sink potential -							80.7
High - Improve plantations (1000							
hectares)							
,							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - High - Increase retention of HWP (1000							0
hectares)							
Land impacted for carbon sink potential -							182
High - Increase trees outside forests							
(1000 hectares)							771
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)  Land impacted for carbon sink potential -							131
High - Reforest pasture (1000 hectares)							131
Land impacted for carbon sink potential -			+				686
High - Restore productivity (1000							000
hectares)							
Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							14.7
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							398
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)  Land impacted for carbon sink potential -							40.4
Low - Improve plantations (1000							40.4
hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							Ū
hectares)							
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							415
Low - Restore productivity (1000							
hectares)							1/0/
Land impacted for carbon sink potential - Low - Total impacted (over 30 years)							1,696
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							22.1
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							
hectares)							

Table 13: E+	cconario -	DTII AD 6.	Land cinke	Enrocte	(continued)
Table 15. E+	scenurio -	PILLAR D.	LUIIU SIIIKS ·	- Furests i	COHUHUEUT

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							57.8
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							2,902
Mid - Total impacted (over 30 years) (1000							
hectares)							

## Table 14: E+ scenario - IMPACTS - Fossil fuel industries

Item	2020	2025	2030	2035	2040	2045	2050
Natural gas consumption - Annual (tcf)		882	743	596	449	282	196
Natural gas consumption - Cumulative		0	0	0	0	0	17,958
(tcf)							
Natural gas production - Annual (tcf)		2,865	2,708	2,358	1,994	1,581	1,228
Oil consumption - Annual (million bbls)		183	157	120	85.6	58.3	37
Oil consumption - Cumulative (million		0	0	0	0	0	3,717
bbls)							
Oil production - Annual (million bbls)		30.1	30.2	30.2	23.9	19.4	12.9

#### Table 15: E+ scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)		2,185	5.74	5.72	5.49	4.18	0.407
Monetary damages from air pollution - Natural Gas (million 2019\$)		382	309	197	163	88.6	34.3
Monetary damages from air pollution - Transportation (million 2019\$)		3,979	3,697	2,802	1,624	753	313
Premature deaths from air pollution - Coal (deaths)		247	0.648	0.646	0.62	0.473	0.046
Premature deaths from air pollution - Natural Gas (deaths)		43.2	34.9	22.2	18.4	10	3.88
Premature deaths from air pollution - Transportation (deaths)		448	416	315	183	84.6	35.2

## Table 16: E+ scenario - IMPACTS - Jobs

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		991	1,049	946	522	572	1,838
By economic sector - Construction (jobs)		9,969	11,487	23,730	28,313	28,695	27,060
By economic sector - Manufacturing		18,228	21,175	27,550	26,341	21,459	26,714
(jobs)							
By economic sector - Mining (jobs)		11,133	8,438	6,292	4,037	2,522	1,363
By economic sector - Other (jobs)		431	631	2,989	3,778	4,619	4,316
By economic sector - Pipeline (jobs)		1,603	1,561	1,101	823	555	476
By economic sector - Professional (jobs)		5,422	5,881	12,178	16,070	16,982	18,364
By economic sector - Trade (jobs)		5,336	5,040	8,351	9,996	10,432	10,368
By economic sector - Utilities (jobs)		12,259	12,458	19,950	24,333	23,209	23,300
By education level - All sectors -		19,760	20,727	32,380	36,393	34,853	36,016
Associates degree or some college (jobs)							
By education level - All sectors -		14,492	14,596	21,253	23,462	22,280	23,250
Bachelors degree (jobs)							
By education level - All sectors - Doctoral		420	419	681	807	810	847
degree (jobs)							
By education level - All sectors - High		27,390	28,670	43,786	47,886	45,610	47,970
school diploma or less (jobs)							

Table 16: E+ scenario - IMPACTS - Jobs (continued)

Table 10. L+ Scenario - Intracto - Jobs (cor	•						
Item	2020	2025	2030	2035	2040	2045	2050
By education level - All sectors - Masters		3,311	3,307	4,987	5,665	5,492	5,715
or professional degree (jobs)							
By resource sector - Biomass (jobs)		2,429	2,442	2,131	1,241	2,132	8,003
By resource sector - CO2 (jobs)		0	1,539	0	0	131	1,132
By resource sector - Coal (jobs)		1,710	216	18	13.3	10.4	8.76
By resource sector - Grid (jobs)		10,491	12,032	29,799	39,082	39,898	42,049
By resource sector - Natural Gas (jobs)		18,143	15,108	12,583	10,498	6,865	3,994
By resource sector - Nuclear (jobs)		662	651	641	631	366	0
By resource sector - Oil (jobs)		19,280	16,571	13,779	9,722	6,954	4,254
By resource sector - Solar (jobs)		6,458	8,175	23,990	24,898	28,191	28,184
By resource sector - Wind (jobs)		6,200	10,985	20,146	28,128	24,499	26,172
Median wages - Annual - All (\$2019 per		59,967	60,097	60,244	61,374	62,277	62,669
job)							
On-Site or In-Plant Training - Total jobs - 1		10,393	10,820	16,714	18,681	17,853	18,325
to 4 years (jobs)							
On-Site or In-Plant Training - Total jobs - 4		3,916	4,051	6,532	7,521	7,323	7,285
to 10 years (jobs)							
On-Site or In-Plant Training - Total jobs -		10,491	10,907	16,728	18,591	17,806	18,682
None (jobs)							
On-Site or In-Plant Training - Total jobs -		516	548	872	993	954	981
Over 10 years (jobs)							
On-Site or In-Plant Training - Total jobs -		40,057	41,394	62,240	68,427	65,110	68,525
Up to 1 year (jobs)							
On-the-Job Training - All sectors - 1 to 4		13,258	13,803	21,420	24,058	23,014	23,535
years (jobs)							
On-the-Job Training - All sectors - 4 to 10		3,634	3,793	6,314	7,357	7,217	7,153
years (jobs)							
On-the-Job Training - All sectors - None		3,513	3,596	5,508	6,090	5,862	6,104
(jobs)							
On-the-Job Training - All sectors - Over 10		661	703	1,062	1,150	1,074	1,115
years (jobs)							
On-the-Job Training - All sectors - Up to 1		44,308	45,825	68,782	75,558	71,879	75,890
year (jobs)							
Related work experience - All sectors - 1		23,759	24,437	36,940	40,984	39,168	40,692
to 4 years (jobs)							
Related work experience - All sectors - 4		15,181	15,678	23,869	26,667	25,442	26,263
to 10 years (jobs)							
Related work experience - All sectors -		9,280	9,636	14,744	16,343	15,666	16,368
None (jobs)							
Related work experience - All sectors -		4,310	4,458	6,604	7,250	6,813	7,112
Over 10 years (jobs)							
Related work experience - All sectors - Up		12,843	13,510	20,929	22,969	21,957	23,363
to 1 year (jobs)							
Wage income - All (million \$2019)		3,920	4,070	6,211	7,010	6,792	7,132

Table 17: E- scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	36,676	40,057	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	41	45.8	49.8	60.5	75.4	84.5	87.7
Resistance (%)							
Sales of cooking units - Gas (%)	59	54.2	50.2	39.5	24.6	15.5	12.3
Sales of space heating units - Electric	1.41	6.26	9.41	19.5	41.8	67.8	82.5
Heat Pump (%)							
Sales of space heating units - Electric	4.39	3.42	3.62	4.32	6.06	8.25	9.52
Resistance (%)							
Sales of space heating units - Fossil (%)	5.44	2.99	2.75	2.06	1.03	0.337	0.088
Sales of space heating units - Gas Furnace	88.8	87.3	84.2	74.1	51.1	23.6	7.9
(%)							

Table 17: E- scenario -	DILLAR 1. Efficience	//Electrification -	Commercial	continued
Table II. E- Scellul IO -	PILLAK I. EIIILIEIIL	// EIECH 111CUHUH -	CUITITIETCIULT	Continueur

Item	2020	2025	2030	2035	2040	2045	2050
Sales of water heating units - Electric	0.454	1.05	3.02	9.27	22.8	38.3	47
Heat Pump (%)							
Sales of water heating units - Electric	4.26	3.81	5.35	10.5	22.3	36.6	44.8
Resistance (%)							
Sales of water heating units - Gas Furnace	95	94.9	91.4	80	54.7	25	8.07
(%)							
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		5.04	5.08	6.88	7.14	11.1	11.9
Cumulative 5-yr (billion \$2018)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	367	358	350	337	320	302
Final energy use - Industry (PJ)	602	620	630	637	652	659	663
Final energy use - Residential (PJ)	555	516	488	461	427	383	335
Final energy use - Transportation (PJ)	954	894	812	747	696	637	566

## Table 20: E- scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs. REF - Cumulative 5-yr (billion \$2018)	0	9.67	12.6	0	0	0	0
Sales of cooking units - Electric Resistance (%)	61.7	62.7	66.2	75.4	88.3	96.2	99
Sales of cooking units - Gas (%)	38.3	37.3	33.8	24.6	11.7	3.78	1.02
Sales of space heating units - Electric Heat Pump (%)	5.51	11.2	14.4	24.6	46.6	71.6	85.5
Sales of space heating units - Electric Resistance (%)	15.4	21.8	21.1	19.1	14.6	9.52	6.85
Sales of space heating units - Fossil (%)	5.05	8.79	8.51	7.56	5.72	3.8	2.74
Sales of space heating units - Gas (%)	74	58.2	56	48.7	33.1	15.1	4.95
Sales of water heating units - Electric Heat Pump (%)	0	0.549	2.08	6.92	17.2	28.8	35.3
Sales of water heating units - Electric Resistance (%)	32.2	48.8	49	50.1	53.4	57.7	60.3
Sales of water heating units - Gas Furnace (%)	67.7	50.5	48.8	42.8	29.2	13.3	4.31
Sales of water heating units - Other (%)	0.083	0.169	0.17	0.171	0.17	0.17	0.17

## Table 21: E- scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -	0	0	338	712	2,404	7,567	11,023
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.326	0	1.12	0	5.95	0	16.6
units)							
Public EV charging plugs - L2 (1000 units)	1.06	0	27	0	143	0	400
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 (%)	1.41	1.85	2.03	1.61	1.02	0.519	0.223

Table 21: E- scenario - PILLAR 1: Efficiency/Electrification - Transportation (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Light-duty - EV (%)	2.06	5.07	12.6	27.1	49.7	72.9	87.9
Vehicle sales - Light-duty - gasoline (%)	91.2	86.7	78.4	65.1	44.7	23.9	10.6
Vehicle sales - Light-duty - hybrid (%)	5.1	5.88	6.55	5.89	4.34	2.52	1.21
Vehicle sales - Light-duty - hydrogen FC	0.112	0.376	0.317	0.239	0.168	0.092	0.043
(%)							
Vehicle sales - Light-duty - other (%)	0.096	0.1	0.09	0.078	0.056	0.03	0.014
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	0.166	0.485	1.37	3.58	7.86	13.2	17
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

Table 22: E- scenario - PILLAR 6: Land sink			0000	0005	00/0	0015	0050
Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tC02e/y)							
Carbon sink potential - Aggressive							-5,463
deployment - Cropland measures (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-214
deployment - Permanent conservation							
cover (1000 tC02e/y)							
Carbon sink potential - Aggressive							-6,932
deployment - Total (1000 tC02e/y)							
Carbon sink potential - Moderate							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-2,883
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							-107
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-4,245
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							523
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							3,526
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							390
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							4,439
Aggressive deployment - Total (1000							
hectares)							
Land impacted for carbon sink - Moderate							523
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							1,861
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							195
deployment - Permanent conservation							
cover (1000 hectares)							

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

	_	•	-				
Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink - Moderate							2,578
deployment - Total (1000 hectares)							

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

regeneration (1000 CC02e/y) Carbon sink potential - High - Auli (not counting overlap) (1000 CC02e/y) Carbon sink potential - High - Avoid deforestation (1000 CC02e/y) Carbon sink potential - High - Stend rotation length (1000 CC02e/y) Carbon sink potential - High - Improve plantations (1000 CC02e/y) Carbon sink potential - High - Improve plantations (1000 CC02e/y) Carbon sink potential - High - Increase retention of HWP (1000 CC02e/y) Carbon sink potential - High - Increase retendence of HWP (1000 CC02e/y) Carbon sink potential - High - Reforest cropland (1000 CC02e/y) Carbon sink potential - High - Reforest cropland (1000 CC02e/y) Carbon sink potential - High - Reforest pasture (1000 CC02e/y) Carbon sink potential - High - Reforest pasture (1000 CC02e/y) Carbon sink potential - Lingh - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 CC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 CC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 CC02e/y) Carbon sink potential - Low - All (Inot counting overlap) (1000 CC02e/y) Carbon sink potential - Low - All (Inot counting overlap) (1000 CC02e/y) Carbon sink potential - Low - Avoid deforestation (1000 CC02e/y) Carbon sink potential - Low - Fetnend rotation length (1000 CC02e/y) Carbon sink potential - Low - Fetnend rotation length (1000 CC02e/y) Carbon sink potential - Low - Fetnend rotation length (1000 CC02e/y) Carbon sink potential - Low - Reforest cropland (1000 CC02e/y) Carbon sink potential - Low - Reforest cropland (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - Low - Reforest pasture (1000 CC02e/y) Carbon sink potential - High - Restore productivity (1000 CC02e/y) Carbon sink potential - H	Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - All (not counting overlap) (1000 tC02e/v)   Carbon sink potential - High - Avoid deforestation (1000 tC02e/v)   Carbon sink potential - High - Extend rotation length (1000 tC02e/v)   Carbon sink potential - High - Improve plantations (1000 tC02e/v)   Carbon sink potential - High - Improve plantations (1000 tC02e/v)   Carbon sink potential - High - Improve plantations (1000 tC02e/v)   Carbon sink potential - High - Improve plantations (1000 tC02e/v)   Carbon sink potential - High - Improve plantations (1000 tC02e/v)   Carbon sink potential - High - Febrest coutside forests (1000 tC02e/v)   Carbon sink potential - High - Reforest cropland (1000 tC02e/v)   Carbon sink potential - High - Reforest cropland (1000 tC02e/v)   Carbon sink potential - High - Reforest cropland (1000 tC02e/v)   Carbon sink potential - Ligh - Reforest cropland (1000 tC02e/v)   Carbon sink potential - Ligh - Reforest cropland (1000 tC02e/v)   Carbon sink potential - Ligh - Reforest cropland (1000 tC02e/v)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/v)   Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/v)   Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/v)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/v)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/v)   Carbon sink potential - Low - Increase trees outside forests (1000 tC02e/v)   Carbon sink potential - Low - Increase trees outside forests (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Mid - And (1000 tC02e/v)   Carbon sink potential - Mid - And (1000 tC02e/v)   Carbon sink potential - Mid - And (1000 tC02e/v)   Carbon sink potential -	Carbon sink potential - High - Accelerate							-180
counting overlap) (1000 rC02e/y) Carbon sink potential - High - Avoid deforestation (1000 rC02e/y) Carbon sink potential - High - Extend rotation length (1000 rC02e/y) Carbon sink potential - High - Improve plantations (1000 rC02e/y) Carbon sink potential - High - Improve plantations (1000 rC02e/y) Carbon sink potential - High - Increase retention of HWP (1000 rC02e/y) Carbon sink potential - High - February Carbon sink potential - High - Reforest rese outside forests (1000 rC02e/y) Carbon sink potential - High - Reforest replantations (1000 rC02e/y) Carbon sink potential - High - Reforest pasture (1000 rC02e/y) Carbon sink potential - High - Reforest pasture (1000 rC02e/y) Carbon sink potential - High - Restore productivity (1000 rC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 rC02e/y) Carbon sink potential - Low - All (10t counting overlap) (1000 rC02e/y) Carbon sink potential - Low - All (10t counting overlap) (1000 rC02e/y) Carbon sink potential - Low - All (10t counting overlap) (1000 rC02e/y) Carbon sink potential - Low - Extend rotation length (1000 rC02e/y) Carbon sink potential - Low - Extend rotation length (1000 rc02e/y) Carbon sink potential - Low - February Carbon sink potential - Low - Reforest patential - Low - Reforest patential - Low - Reforest patential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink potential - Low - Reforest pasture (1000 rc02e/y) Carbon sink								
Carbon sink potential - High - Avoid deforestation (1000 tCO2e/y)   Carbon sink potential - High - Extend	,							-21,474
deforestation (1000 tC02e/y)   Carbon sink potential - High - Extend rotation length (1000 tC02e/y)   Carbon sink potential - High - Improve plantations (1000 tC02e/y)   Carbon sink potential - High - Improve plantations (1000 tC02e/y)   Carbon sink potential - High - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - High - Increase trees outside forests (1000 tC02e/y)   Carbon sink potential - High - Reforest corpland (1000 tC02e/y)   Carbon sink potential - High - Reforest corpland (1000 tC02e/y)   Carbon sink potential - High - Reforest pasture (1000 tC02e/y)   Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   Carbon sink potential - Mid - All (1000 tC02e/y)   Carbon sink potential - Mid - All (1000 tC02e/y)   Carbon sink potential - Mid - All (1000 tC02e/y)   Carbon sink potential - Mid - Accelerate regeneration (100								
Carbon sink potential - High - Extend	,							-3,130
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Carbon sink potential - High - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - High - Increase trees outside forests (1000 tC02e/y)   Carbon sink potential - High - Reforest corporate (1000 tC02e/y)   Carbon sink potential - High - Reforest corporate (1000 tC02e/y)   Carbon sink potential - High - Reforest corporate (1000 tC02e/y)   Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - Liow - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Auli (not counting overlap) (1000 tC02e/y)   Carbon sink potential - Low - Auli (not counting overlap) (1000 tC02e/y)   Carbon sink potential - Low - Auli (not counting overlap) (1000 tC02e/y)   Carbon sink potential - Low - Restore propagation (1000 tC02e/y)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Low - Ingrove plantations (1000 tC02e/y)   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 counting overlap (1000 tC02e/y)   Carbon sink potential - Low - Reforest counting overlap (1000 tC02e/y)   Carbon sink potential - Low - Reforest counting overlap (1000 tC02e/y)   Carbon sink potential - Low - Reforest counting overlap (1000 tC02e/y)   Carbon sink potential - Low - Reforest counting overlap (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)								-219
Petention of HWP (1000 tC02e/v)   Carbon sink potential - High - Increase trees outside forests (1000 tC02e/v)   Carbon sink potential - High - Reforest cropland (1000 tC02e/v)   Carbon sink potential - High - Reforest cropland (1000 tC02e/v)   Carbon sink potential - High - Restore productivity (1000 tC02e/v)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Low - Autor   Construction (1000 tC02e/v)   Carbon sink potential - Low - Autor   Construction (1000 tC02e/v)   Carbon sink potential - Low - Autor   Construction (1000 tC02e/v)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/v)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/v)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/v)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/v)   Carbon sink potential - Low - Reforest reso sutside forests (1000 tC02e/v)   Carbon sink potential - Low - Reforest reso sutside forests (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)   Carbon sink potential - Mid - Extend p								
Carbon sink potential - High - Increase trees outside forests (1000 tC02e/v)   Carbon sink potential - High - Reforest   -1,1   -1,0   -4,6     -4,6     -4,6     -4,6     -4,6     -4,6       -4,6       -4,6								-4,749
trees outside forests (1000 tC02e/y) Carbon sink potential - High - Reforest cropland (1000 tC02e/y) Carbon sink potential - High - Reforest pasture (1000 tC02e/y) Carbon sink potential - High - Restore productivity (1000 tC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y) Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Low - Extend rotation length (1000 tC02e/y) Carbon sink potential - Low - Improve plantations (1000 tC02e/y) Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Low - Increase retens outside forests (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Low - Reforest repoland (1000 tC02e/y) Carbon sink potential - Hid - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y) Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y) Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)   Carbon sink potential - High - Restore productivity (1000 tCO2e/y)   Carbon sink potential - Low - Restore productivity (1000 tCO2e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)   Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)   Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)   Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)   Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)   Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)   Carbon sink potential - Low - Reforest trees outside forests (1000 tCO2e/y)   Carbon sink potential - Low - Reforest trees outside forests (1000 tCO2e/y)   Carbon sink potential - Low - Reforest productivity (1000 tCO2e/y)   Carbon sink potential - Low - Reforest 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 - Avoid deforestation (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 length (1000 tCO2e/y)   Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)   Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)   Carbon sink potential - Mid - Increase retend to of HWP (1000 tCO2e/y)   Carbon sink potential - Mid - Increase retend to of HWP (1000 tCO2e/y)   Carbon sink potential - Mid - Increase retend to of HWP (1000 tCO2e/y)   Carbon sink potential - Mid - Increase retend to of HWP (1000 tCO2e/y)   Carbon sink potential - Mid - Increase retend to of HWP (1000 tCO2e	Carbon sink potential - High - Increase							-1,920
Carbon sink potential - High - Reforest   -4,6     -4,6	trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest pasture (1000 tC02e/y)   Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - All (100 tc001 t	Carbon sink potential - High - Reforest							-1,166
Carbon sink potential - High - Reforest pasture (1000 tC02e/y)	cropland (1000 tCO2e/y)							
Dasture (1000 tC02e/y)   Carbon sink potential - High - Restore productivity (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Low - Restore plantations (1000 tC02e/y)   Carbon sink potential - Low - Extend   -1,3   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   -1,5   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y)   -2   Carbon sink potential - Low - Increase resolution for the foliation of HWP (1000 tC02e/y)   -2   Carbon sink potential - Low - Reforest cropland (1000 tC02e/y)   -2   Carbon sink potential - Low - Reforest cropland (1000 tC02e/y)   -2   Carbon sink potential - Low - Reforest pasture (1000 tC02e/y)   -2   Carbon sink potential - Low - Reforest pasture (1000 tC02e/y)   -3   Carbon sink potential - Low - Restore productivity (1000 tC02e/y)   -3   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)   -3   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)   -3   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   -3   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   -3   Carbon sink potential - Mid - Extend   -3   Carbon sink potential - Mid - Extend   -3   Carbon sink potential - Mid - Extend   -3   Carbon sink potential - Mid - Improve   -3   Carbon sink potential - Mid - Impro	Carbon sink potential - High - Reforest							-4,605
Carbon sink potential - High - Restore   -2,0								•
Productivity (1000 tC02e/y)   Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/y)   Carbon sink potential - Low - Reforest cropland (1000 tC02e/y)   Carbon sink potential - Low - Reforest cropland (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 - Restore productivity (1000 tC02e/y)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improv								-2,070
Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y) Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Low - Extend rotation length (1000 tC02e/y) Carbon sink potential - Low - Improve plantations (1000 tC02e/y) 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 - 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 - Resore productivity (1000 tC02e/y) Carbon sink potential - Iow - Resore productivity (1000 tC02e/y) Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)								_,-,-
regeneration (1000 tCO2e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tCO2e/y) Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest posture (1000 tCO2e/y) Carbon sink potential - Low - Reforest resource (1000 tCO2e/y) Carbon sink potential - Low - Reforest productivity (1000 tCO2e/y) Carbon sink potential - Mid - Accelerate regeneration (1000 tCO2e/y) Carbon sink potential - Mid - Accelerate regeneration (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 length (1000 tCO2e/y) Carbon sink potential - Mid - Extend1,86 Carbon sink potential - Mid - Extend2,57 Carbon sink potential - Mid - Improve plantations (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 - Improve plantations (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 - Improve plantations (1000 tCO2e/y)								-90.3
Carbon sink potential - Low - All (not counting overhap) (1000 tCO2e/y) Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y) Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y) Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Low - Reforest pasture (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 - Accelerate regeneration (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 length (1000 tCO2e/y) Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y) Carbon sink potential - Mid - Extend rotation length (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 - Improve plantations (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 - Improve plantations (1000 tCO2e/y)								70.0
Counting overlap  (1000 tC02e/y)   Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y)   Carbon sink potential - Low - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   Carbon sink potential - Low - Improve plantations (1000 tC02e/y)   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 - Restore productivity (1000 tC02e/y)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)   Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)   Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)   Carbon sink potential - Mid -								-5,927
Carbon sink potential - Low - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Low - Extend rotation length (1000 tC02e/y) Carbon sink potential - Low - Improve plantations (1000 tC02e/y) 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 productivity (1000 tC02e/y) Carbon sink potential - Low - Restore productivity (1000 tC02e/y) Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 - Avoid deforestation (1000 tC02e/y) Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								0,721
Carbon sink potential - Low - Extend   -1,3								-522
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)  Carbon sink potential - Low - Improve plantations (1000 tCO2e/y)  Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)  Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y)  Carbon sink potential - Low - Reforest 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 overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)  Carbon sink potential - Mid - Extend -2.3  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)	·							-322
rotation length (1000 tCO2e/y) Carbon sink potential - Low - Improve plantations (1000 tCO2e/y) Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Low - Reforest 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 - Accelerate regeneration (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 length (1000 tCO2e/y) Carbon sink potential - Mid - Extend - 2,5 Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)								-1,319
Carbon sink potential - Low - Improve plantations (1000 tC02e/v)  Carbon sink potential - Low - Increase retention of HWP (1000 tC02e/v)  Carbon sink potential - Low - Increase trees outside forests (1000 tC02e/v)  Carbon sink potential - Low - Reforest cropland (1000 tC02e/v)  Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)  Carbon sink potential - Low - Reforest pasture (1000 tC02e/v)  Carbon sink potential - Low - Restore productivity (1000 tC02e/v)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/v)  Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/v)  Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/v)  Carbon sink potential - Mid - Extend rotation length (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/v)								-1,317
plantations (1000 tCO2e/y) Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest pasture (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 overlap) (1000 tCO2e/y) Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y) Carbon sink potential - Mid - Extend rotation length (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 - Improve plantations (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)								-112
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 - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/y)  Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	·							-112
retention of HWP (1000 tCO2e/y)  Carbon sink potential - Low - Increase trees outside forests (1000 tCO2e/y)  Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Low - Reforest pasture (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 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 length (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 of HWP (1000 tCO2e/y)								1.500
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 - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								-1,583
trees outside forests (1000 tCO2e/y)  Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Low - Reforest pasture (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 overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y)								(70
Carbon sink potential - Low - Reforest cropland (1000 tCO2e/y)  Carbon sink potential - Low - Reforest pasture (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 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 length (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 of HWP (1000 tCO2e/y)								-672
cropland (1000 tC02e/y)  Carbon sink potential - Low - Reforest pasture (1000 tC02e/y)  Carbon sink potential - Low - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								
Carbon sink potential - Low - Reforest pasture (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 overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  Carbon sink potential - Mid - Extend rotation length (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 of HWP (1000 tCO2e/y)	·							-583
pasture (1000 tC02e/y)  Carbon sink potential - Low - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								
Carbon sink potential - Low - Restore productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								-349
productivity (1000 tC02e/y)  Carbon sink potential - Mid - Accelerate regeneration (1000 tC02e/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 length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/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 length (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 of HWP (1000 tCO2e/y)								-698
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 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 - All (not counting overlap) (1000 tC02e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)								-135
counting overlap) (1000 tCO2e/y)  Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)  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 - Avoid deforestation (1000 tCO2e/y)  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 - All (not							-13,699
deforestation (1000 tC02e/y)  Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Mid - Extend rotation length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	Carbon sink potential - Mid - Avoid							-1,826
rotation length (1000 tC02e/y)  Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	deforestation (1000 tCO2e/y)							
Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	Carbon sink potential - Mid - Extend							-2,377
plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	rotation length (1000 tCO2e/y)							
plantations (1000 tC02e/y)  Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y)	.,							-163
Carbon sink potential - Mid - Increase -3,1 retention of HWP (1000 tCO2e/y)								
retention of HWP (1000 tCO2e/y)								-3,166
								27.00
Carbon sink potential - Mid - Increase12	Carbon sink potential - Mid - Increase		+					-1,296
trees outside forests (1000 tC02e/y)	·							1,270

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

Item Property Mid-Property	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Mid - Reforest							-874
cropland (1000 tCO2e/y)							0.777
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-2,477
Carbon sink potential - Mid - Restore							-1,384
productivity (1000 tCO2e/y)							1,004
Land impacted for carbon sink potential -							29.5
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							424
High - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							80.7
High - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
High - Increase retention of HWP (1000							
hectares)							100
Land impacted for carbon sink potential -							182
High - Increase trees outside forests							
(1000 hectares)							771
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)  Land impacted for carbon sink potential -							131
High - Reforest pasture (1000 hectares)							131
Land impacted for carbon sink potential -						+	686
High - Restore productivity (1000							000
hectares)							
Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							0,002
(1000 hectares)							
Land impacted for carbon sink potential -							14.7
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							398
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							40.4
Low - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							
hectares)							0.4
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							20.5
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							007
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							/15
Land impacted for carbon sink potential - Low - Restore productivity (1000							415

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							1,696
Low - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							57.8
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							2,902
Mid - 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 (million 2019\$)		2,185	5.74	5.72	5.49	4.18	0.407
Monetary damages from air pollution - Natural Gas (million 2019\$)		350	226	86.9	38.1	12.7	7.67
Monetary damages from air pollution - Transportation (million 2019\$)		4,048	4,080	3,966	3,572	2,847	1,959
Premature deaths from air pollution - Coal (deaths)		247	0.648	0.646	0.62	0.473	0.046
Premature deaths from air pollution - Natural Gas (deaths)		39.5	25.5	9.81	4.31	1.44	0.866
Premature deaths from air pollution - Transportation (deaths)		455	459	446	402	320	220

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	36,680	40,065	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	41	54.2	82.9	88.6	88.9	88.9	88.9
Resistance (%)							
Sales of cooking units - Gas (%)	59	45.8	17.1	11.4	11.1	11.1	11.1
Sales of space heating units - Electric	1.41	8.43	35.7	81.1	89	89.5	89.5
Heat Pump (%)							
Sales of space heating units - Electric	4.39	3.49	5.31	9.37	10.1	10.2	10.2
Resistance (%)							
Sales of space heating units - Fossil (%)	5.44	2.58	0.487	0.021	0	0	0

Table 25: <i>E+RE+</i>	scenario -	PTIIAR 1.	Efficiency/	Flectrification -	Commercial	(continued)

Item	2020	2025	2030	2035	2040	2045	2050
Sales of space heating units - Gas Furnace (%)	88.8	85.5	58.5	9.54	0.892	0.356	0.356
Sales of water heating units - Electric Heat Pump (%)	0.454	2.53	19.6	46.2	50.8	51.1	51.1
Sales of water heating units - Electric Resistance (%)	4.26	4.67	18.3	43.9	48.4	48.7	48.7
Sales of water heating units - Gas Furnace (%)	95	92.6	61.9	9.69	0.569	0	0
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		6.24	6.43	13.3	14.2	13.1	13.8
Cumulative 5-yr (billion \$2018)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	366	351	325	295	272	261
Final energy use - Industry (PJ)	602	619	627	629	639	647	652
Final energy use - Residential (PJ)	555	515	478	416	348	297	264
Final energy use - Transportation (PJ)	952	886	773	638	516	442	411

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.	0	9.7	12.8	0	0	0	0
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	61.8	69.9	94.9	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	38.2	30.1	5.14	0.259	0	0	0
Sales of space heating units - Electric	5.51	13.7	41.4	84.2	91.7	92.1	91.9
Heat Pump (%)							
Sales of space heating units - Electric	15.4	21.4	16.1	7.17	5.54	5.47	5.69
Resistance (%)							
Sales of space heating units - Fossil (%)	5.05	8.47	5.81	2.79	2.31	2.27	2.21
Sales of space heating units - Gas (%)	74	56.5	36.7	5.84	0.489	0.156	0.159
Sales of water heating units - Electric	0	1.79	15.1	34.7	38	38.3	38.3
Heat Pump (%)							
Sales of water heating units - Electric	32.2	48.8	51.7	60	61.5	61.6	61.5
Resistance (%)							
Sales of water heating units - Gas Furnace	67.7	49.3	33	5.17	0.303	0	0
(%)							
Sales of water heating units - Other (%)	0.083	0.169	0.17	0.17	0.168	0.168	0.17

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -	0	2,095	5,367	8,700	13,178	14,344	13,675
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.326	0	3.65	0	16	0	25.9
units)							
Public EV charging plugs - L2 (1000 units)	1.06	0	87.7	0	386	0	624
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
(%)							

Table 29: E+RE+ scena	nio DILLAD 1. Efficience	v/Electrification	Transportation	(nontinued)
Table 29. E+RE+ Scellu	II IU - PILLAR I. EIIIUIEIIU	: 7/ = 12011 1110011011 -	Trunsbortution	COMUNICEUM

Item	2020	2025	2030	2035	2040	2045	2050
Vehicle sales - Heavy-duty - other (%)	1.5	1.23	1.07	0.568	0.163	0.038	0
Vehicle sales - Light-duty - diesel (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.42	16.7	48.8	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.9	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC	0.11	0.331	0.191	0.059	0.012	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	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	0.196	1.27	6.33	15.2	19.1	19.9	20
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

## 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	1.49	2.39	24.4	14.9	8.53	10.3
Capital invested - Wind - Base (billion \$2018)	0	0	11.4	22	18.4	0.135	0
Installed (cumulative) - OffshoreWind - Base land use assumptions (MW)	0	0	0	0	0	0	0
Installed (cumulative) - Solar - Base land use assumptions (MW)	723	1,838	3,836	25,953	40,258	48,953	60,059
Installed (cumulative) - Wind - Base land use assumptions (MW)	827	827	9,413	27,115	42,706	42,827	42,827

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

Item	2020	2025	2030	2035	2040	2045	2050
Solar - Base land use assumptions (GWh)	1,454	1,976	3,522	38,403	24,543	14,799	19,567
Solar - Constrained land use assumptions (GWh)	1,454	612	6,994	35,358	16,495	3,550	27,649
Wind - Base land use assumptions (GWh)	2,973	0	26,510	51,446	40,723	275	0
Wind - Constrained land use assumptions (GWh)	2,973	0	47,355	3,203	0	0	75,490

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-5,463
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Aggressive							-214
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-6,932
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							-1,255
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-2,883
deployment - Cropland measures (1000							
tCO2e/y)							

Table 32: E+RE+ scenario - PILLAR 6: Land sinks - Agriculture (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Moderate							-107
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-4,245
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							523
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							3,526
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							390
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							4,439
Aggressive deployment - Total (1000							
hectares)							
Land impacted for carbon sink - Moderate							523
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							1,861
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							195
deployment - Permanent conservation							
cover (1000 hectares)							
Land impacted for carbon sink - Moderate							2,578
deployment - Total (1000 hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-180
Carbon sink potential - High - All (not counting overlap) (1000 tCO2e/y)							-21,474
Carbon sink potential - High - Avoid deforestation (1000 tC02e/y)							-3,130
Carbon sink potential - High - Extend rotation length (1000 tCO2e/y)							-3,434
Carbon sink potential - High - Improve plantations (1000 tCO2e/y)							-219
Carbon sink potential - High - Increase retention of HWP (1000 tCO2e/y)							-4,749
Carbon sink potential - High - Increase trees outside forests (1000 tC02e/y)							-1,920
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-1,166
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-4,605
Carbon sink potential - High - Restore productivity (1000 tCO2e/y)							-2,070
Carbon sink potential - Low - Accelerate regeneration (1000 tC02e/y)							-90.3
Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y)							-5,927
Carbon sink potential - Low - Avoid deforestation (1000 tCO2e/y)							-522
Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)							-1,319

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

Item Conhancink natantial Law Improve	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Low - Improve plantations (1000 tC02e/y)							-112
							1 500
Carbon sink potential - Low - Increase							-1,583
retention of HWP (1000 tC02e/y)							/70
Carbon sink potential - Low - Increase							-672
trees outside forests (1000 tC02e/y)							500
Carbon sink potential - Low - Reforest							-583
cropland (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-349
pasture (1000 tCO2e/y)							
Carbon sink potential - Low - Restore							-698
productivity (1000 tCO2e/y)							
Carbon sink potential - Mid - Accelerate							-135
regeneration (1000 tCO2e/y)							
Carbon sink potential - Mid - All (not							-13,699
counting overlap) (1000 tC02e/y)							
Carbon sink potential - Mid - Avoid							-1,826
deforestation (1000 tCO2e/y)							.,
Carbon sink potential - Mid - Extend							-2,377
rotation length (1000 tC02e/y)							2,011
Carbon sink potential - Mid - Improve							-163
·							-103
plantations (1000 tC02e/y)							01//
Carbon sink potential - Mid - Increase							-3,166
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-1,296
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Mid - Reforest							-874
cropland (1000 tCO2e/y)							
Carbon sink potential - Mid - Reforest							-2,477
pasture (1000 tCO2e/y)							
Carbon sink potential - Mid - Restore							-1,384
productivity (1000 tCO2e/y)							•
Land impacted for carbon sink potential -				+			29.5
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							424
High - Avoid deforestation (over 30 years)							424
(1000 hectares)							
							1 7 7 1
Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							80.7
High - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
High - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							182
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							131
							131
High - Reforest pasture (1000 hectares)							/0/
Land impacted for carbon sink potential -							686
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							
(1000 hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -	2020	2023	2030	2033	2040	2045	14.7
Low - Accelerate regeneration (1000							14.1
hectares)							
Land impacted for carbon sink potential -							398
							390
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							/74
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							40.4
Low - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							415
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,696
Low - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							1,211
hectares)							
Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							00.0
Land impacted for carbon sink potential -						<del></del>	0
Mid - Increase retention of HWP (1000							U
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							137
hectares)							
Land impacted for carbon sink potential -							57.8
							51.6
Mid - Reforest cropland (1000 hectares)							4//
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							2,902
Mid - 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\$)		2,185	5.74	5.72	5.49	4.18	0.407

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Table 34: <i>E</i> -	+RE+ scenario -	IMPACIS - F	teaith i	continueai

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Natural Gas (million 2019\$)		316	231	136	90.6	30.2	7.22
Monetary damages from air pollution - Transportation (million 2019\$)		3,979	3,697	2,802	1,624	753	313
Premature deaths from air pollution - Coal (deaths)		247	0.648	0.646	0.62	0.473	0.046
Premature deaths from air pollution - Natural Gas (deaths)		35.7	26	15.4	10.2	3.41	0.815
Premature deaths from air pollution - Transportation (deaths)		448	416	315	183	84.6	35.2

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	36,680	40,065	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	41	54.2	82.9	88.6	88.9	88.9	88.9
Resistance (%)							
Sales of cooking units - Gas (%)	59	45.8	17.1	11.4	11.1	11.1	11.1
Sales of space heating units - Electric	1.41	8.43	35.7	81.1	89	89.5	89.5
Heat Pump (%)							
Sales of space heating units - Electric	4.39	3.49	5.31	9.37	10.1	10.2	10.2
Resistance (%)							
Sales of space heating units - Fossil (%)	5.44	2.58	0.487	0.021	0	0	0
Sales of space heating units - Gas Furnace	88.8	85.5	58.5	9.54	0.892	0.356	0.356
(%)							
Sales of water heating units - Electric	0.454	2.53	19.6	46.2	50.8	51.1	51.1
Heat Pump (%)							
Sales of water heating units - Electric	4.26	4.67	18.3	43.9	48.4	48.7	48.7
Resistance (%)							
Sales of water heating units - Gas Furnace	95	92.6	61.9	9.69	0.569	0	0
(%)							
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

## Table 36: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		6.24	6.43	13.3	14.2	13.1	13.8
Cumulative 5-yr (billion \$2018)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	366	351	325	295	272	261
Final energy use - Industry (PJ)	602	619	627	629	639	647	652
Final energy use - Residential (PJ)	555	515	478	416	348	297	264
Final energy use - Transportation (PJ)	952	886	773	638	516	442	411

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.	0	9.7	12.8	0	0	0	0
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	61.8	69.9	94.9	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	38.2	30.1	5.14	0.259	0	0	0
Sales of space heating units - Electric	5.51	13.7	41.4	84.2	91.7	92.1	91.9
Heat Pump (%)							
Sales of space heating units - Electric	15.4	21.4	16.1	7.17	5.54	5.47	5.69
Resistance (%)							

Table 38: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Residential (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Sales of space heating units - Fossil (%)	5.05	8.47	5.81	2.79	2.31	2.27	2.21
Sales of space heating units - Gas (%)	74	56.5	36.7	5.84	0.489	0.156	0.159
Sales of water heating units - Electric Heat Pump (%)	0	1.79	15.1	34.7	38	38.3	38.3
Sales of water heating units - Electric Resistance (%)	32.2	48.8	51.7	60	61.5	61.6	61.5
Sales of water heating units - Gas Furnace (%)	67.7	49.3	33	5.17	0.303	0	0
Sales of water heating units - Other (%)	0.083	0.169	0.17	0.17	0.168	0.168	0.17

Table 39: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -	0	2,095	5,367	8,700	13,178	14,344	13,675
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.326	0	3.65	0	16	0	25.9
units)							
Public EV charging plugs - L2 (1000 units)	1.06	0	87.7	0	386	0	624
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 (%)	1.4	1.68	1.2	0.382	0.072	0.013	0
Vehicle sales - Light-duty - EV (%)	4.42	16.7	48.8	82.7	96.4	99.3	100
Vehicle sales - Light-duty - gasoline (%)	89.1	76.3	46.4	15.6	3.17	0.586	0
Vehicle sales - Light-duty - hybrid (%)	4.91	4.9	3.38	1.24	0.304	0.067	0
Vehicle sales - Light-duty - hydrogen FC	0.11	0.331	0.191	0.059	0.012	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.095	0.091	0.058	0.02	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	0.196	1.27	6.33	15.2	19.1	19.9	20
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.253	0.255	0.205	0.083	0.019	0.004	0

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	0.381	0.599	1.35	0
Capital invested - Solar PV - Constrained (billion \$2018)		0	0	0.265	2.47	1.43	0
Capital invested - Wind - Base (billion \$2018)		0	0.252	0	0.132	0	0.036
Capital invested - Wind - Constrained (billion \$2018)		0	0.873	0	0.71	0.217	0.157

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

Item	2020	2025	2030	2035	2040	2045	2050
Solar - Base land use assumptions (GWh)	1,454		0	611	1,014	2,420	0
Solar - Constrained land use assumptions (GWh)	1,454		0	425	4,187	2,562	0
Wind - Base land use assumptions (GWh)	2,973		606	0	358	0	108
Wind - Constrained land use assumptions (GWh)	2,973		2,006	0	1,815	562	442

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

)20	2025	2030	2035	2040	2045	2050
						-1,255
						-5,463
						-214
						-6,932
						-1,255
						•
						-2,883
						,
						-107
						-4,245
						.,0
						523
						020
						3,526
						0,020
-						390
						070
						4,439
						4,407
-+						523
						323
						1,861
						1,001
-						105
						195
$\longrightarrow$						0.550
						2,578
- 1						
	7 Agric 020			- Agriculture 020   2025   2030   2035		<u> </u>

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

2020	2025	2030	2035	2040	2045	2050
						-180
						-21,474
						-3,130
						-3,434
						-219
						-4,749
	2020	2020 2025	2020 2025 2030	2020 2025 2030 2035	2020 2025 2030 2035 2040	2020 2025 2030 2035 2040 2045

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Increase							-1,920
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							-1,166
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-4,605
Carbon sink potential - High - Restore productivity (1000 tC02e/y)							-2,070
Carbon sink potential - Low - Accelerate regeneration (1000 tCO2e/y)							-90.3
Carbon sink potential - Low - All (not counting overlap) (1000 tC02e/y)							-5,927
Carbon sink potential - Low - Avoid							-522
deforestation (1000 tCO2e/y)  Carbon sink potential - Low - Extend							-1,319
rotation length (1000 tC02e/y)  Carbon sink potential - Low - Improve							-112
plantations (1000 tCO2e/y) Carbon sink potential - Low - Increase							-1,583
retention of HWP (1000 tCO2e/y) Carbon sink potential - Low - Increase							-672
trees outside forests (1000 tCO2e/y) Carbon sink potential - Low - Reforest							-583
cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest							-349
pasture (1000 tCO2e/y) Carbon sink potential - Low - Restore							-698
productivity (1000 tCO2e/y) Carbon sink potential - Mid - Accelerate							-135
regeneration (1000 tCO2e/y) Carbon sink potential - Mid - All (not							-13,699
counting overlap) (1000 tC02e/y) Carbon sink potential - Mid - Avoid							-1,826
deforestation (1000 tCO2e/y) Carbon sink potential - Mid - Extend							-2,377
rotation length (1000 tCO2e/y) Carbon sink potential - Mid - Improve							-163
plantations (1000 tCO2e/y) Carbon sink potential - Mid - Increase							-3,166
retention of HWP (1000 tCO2e/y)  Carbon sink potential - Mid - Increase							-1,296
trees outside forests (1000 tCO2e/y)							-874
Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)							
Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y)							-2,477
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-1,384
Land impacted for carbon sink potential - High - Accelerate regeneration (1000							29.5
hectares)  Land impacted for carbon sink potential - High - Avoid deforestation (over 30 years)							424
(1000 hectares) Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000 hectares)							1,101
Land impacted for carbon sink potential - High - Improve plantations (1000 hectares)							80.7

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential - High - Increase retention of HWP (1000							0
hectares)							
Land impacted for carbon sink potential -	+						182
High - Increase trees outside forests							.02
(1000 hectares)							
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							131
High - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							686
High - Restore productivity (1000							
hectares)  Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							3,302
(1000 hectares)							
Land impacted for carbon sink potential -		+					14.7
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							398
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							40.4
Low - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							U
hectares)							
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							415
Low - Restore productivity (1000 hectares)							
Land impacted for carbon sink potential -	+	+		+			1,696
Low - Total impacted (over 30 years)							1,070
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							4.044
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							
hectares)  Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							00.8
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							U
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							
hectares)							

Table 43: E+RE-	cconario	DTIIAD	6. Land sinks	Enrocte	(continued)
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Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							57.8
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							2,902
Mid - 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 -		2,185	5.74	5.72	5.49	4.18	0.407
Coal (million 2019\$)							
Monetary damages from air pollution -		358	286	365	271	94.9	28.9
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		3,979	3,697	2,802	1,624	753	313
Transportation (million 2019\$)							
Premature deaths from air pollution -		247	0.648	0.646	0.62	0.473	0.046
Coal (deaths)							
Premature deaths from air pollution -		40.4	32.3	41.2	30.5	10.7	3.26
Natural Gas (deaths)							
Premature deaths from air pollution -		448	416	315	183	84.6	35.2
Transportation (deaths)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s - Cumulative 5-yr (million \$2018)	0	36,676	40,057	0	0	0	0
Sales of cooking units - Electric Resistance (%)	41	45.8	49.8	60.5	75.4	84.5	87.7
Sales of cooking units - Gas (%)	59	54.2	50.2	39.5	24.6	15.5	12.3
Sales of space heating units - Electric Heat Pump (%)	1.41	6.26	9.41	19.5	41.8	67.8	82.5
Sales of space heating units - Electric Resistance (%)	4.39	3.42	3.62	4.32	6.06	8.25	9.52
Sales of space heating units - Fossil (%)	5.44	2.99	2.75	2.06	1.03	0.337	0.088
Sales of space heating units - Gas Furnace (%)	88.8	87.3	84.2	74.1	51.1	23.6	7.9
Sales of water heating units - Electric Heat Pump (%)	0.454	1.05	3.02	9.27	22.8	38.3	47
Sales of water heating units - Electric Resistance (%)	4.26	3.81	5.35	10.5	22.3	36.6	44.8
Sales of water heating units - Gas Furnace (%)	95	94.9	91.4	80	54.7	25	8.07
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

## Table 46: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		5.04	5.08	6.88	7.14	11.1	11.9
Cumulative 5-yr (billion \$2018)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	367	358	350	337	320	302

Table 47: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Overview (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Industry (PJ)	602	620	630	637	652	659	663
Final energy use - Residential (PJ)	555	516	488	461	427	383	335
Final energy use - Transportation (PJ)	954	894	812	747	696	637	566

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.	0	9.67	12.6	0	0	0	0
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	61.7	62.7	66.2	75.4	88.3	96.2	99
Resistance (%)							
Sales of cooking units - Gas (%)	38.3	37.3	33.8	24.6	11.7	3.78	1.02
Sales of space heating units - Electric	5.51	11.2	14.4	24.6	46.6	71.6	85.5
Heat Pump (%)							
Sales of space heating units - Electric	15.4	21.8	21.1	19.1	14.6	9.52	6.85
Resistance (%)							
Sales of space heating units - Fossil (%)	5.05	8.79	8.51	7.56	5.72	3.8	2.74
Sales of space heating units - Gas (%)	74	58.2	56	48.7	33.1	15.1	4.95
Sales of water heating units - Electric	0	0.549	2.08	6.92	17.2	28.8	35.3
Heat Pump (%)							
Sales of water heating units - Electric	32.2	48.8	49	50.1	53.4	57.7	60.3
Resistance (%)							
Sales of water heating units - Gas Furnace	67.7	50.5	48.8	42.8	29.2	13.3	4.31
(%)							
Sales of water heating units - Other (%)	0.083	0.169	0.17	0.171	0.17	0.17	0.17

Table 49: E-B+ scenario - PILLAR 1: Efficiency/Electrification - Transportation

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -	0	0	338	712	2,404	7,567	11,023
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.326	0	1.12	0	5.95	0	16.6
_units)							
Public EV charging plugs - L2 (1000 units)	1.06	0	27	0	143	0	400
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 (%)	1.41	1.85	2.03	1.61	1.02	0.519	0.223
Vehicle sales - Light-duty - EV (%)	2.06	5.07	12.6	27.1	49.7	72.9	87.9
Vehicle sales - Light-duty - gasoline (%)	91.2	86.7	78.4	65.1	44.7	23.9	10.6
Vehicle sales - Light-duty - hybrid (%)	5.1	5.88	6.55	5.89	4.34	2.52	1.21
Vehicle sales - Light-duty - hydrogen FC	0.112	0.376	0.317	0.239	0.168	0.092	0.043
(%)							
Vehicle sales - Light-duty - other (%)	0.096	0.1	0.09	0.078	0.056	0.03	0.014
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	0.166	0.485	1.37	3.58	7.86	13.2	17
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.253	0.266	0.279	0.286	0.258	0.184	0.102

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 \$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	0	0

## 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	0	0	0	0
Biomass w/ccu power plant (GWh)	0	0	0	0	0	0.179	0.179

## 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	0	0	0	1,897	5,611
Conversion capital investment -	0	0	0	0	0	19,240	37,955
Cumulative 5-yr (million \$2018)							
Number of facilities - Allam power w ccu	0	0	0	0	0	0	0
(quantity)							
Number of facilities - Beccs hydrogen	0	0	0	0	0	23	65
(quantity)							
Number of facilities - Diesel (quantity)	0	0	0	0	0	0	0
Number of facilities - Diesel ccu (quantity)	0	0	0	0	0	1	2
Number of facilities - Power (quantity)	0	0	0	0	0	0	0
Number of facilities - Power ccu	0	0	0	0	0	1	1
(quantity)							
Number of facilities - Pyrolysis (quantity)	0	0	0	0	0	0	0
Number of facilities - Pyrolysis ccu	0	0	0	0	0	1	2
(quantity)							
Number of facilities - Sng (quantity)	0	0	0	0	0	0	0
Number of facilities - Sng ccu (quantity)	0	0	0	0	0	0	1

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

Item	2020	2025	2030	2035	2040	2045	2050
Annual - All (MMT)		0	0	0	0	24.7	72.9
Annual - BECCS (MMT)		0	0	0	0	24.7	72.9
Annual - Cement and lime (MMT)		0	0	0	0	0	0
Annual - NGCC (MMT)		0	0	0	0	0	0
Cumulative - All (MMT)		0	0	0	0	24.7	97.6
Cumulative - BECCS (MMT)		0	0	0	0	24.7	97.6
Cumulative - Cement and lime (MMT)		0	0	0	0	0	0
Cumulative - NGCC (MMT)		0	0	0	0	0	0

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

Item	2020	2025	2030	2035	2040	2045	2050
All (km)		0	477	477	477	1,409	3,066
Cumulative investment - All (million \$2018)		0	1,555	1,555	1,555	3,014	4,988
Cumulative investment - Spur (million \$2018)		0	0	0	0	1,080	3,054
Cumulative investment - Trunk (million \$2018)		0	1,555	1,555	1,555	1,934	1,934
Spur (km)		0	0	0	0	932	2,589
Trunk (km)		0	477	477	477	477	477

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

		•					
Item	2020	2025	2030	2035	2040	2045	2050
CO2 storage (MMT)		0	0	0	0	0	0
Injection wells (wells)		0	0	0	0	0	0
Resource characterization, appraisal, permitting costs (million \$2020)		0	0	0	0	0	0
Wells and facilities construction costs (million \$2020)		0	0	0	0	0	0

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							-1,772
deployment - Corn-ethanol to energy							.,
grasses (1000 tC02e/y)							
Carbon sink potential - Aggressive							-4,907
deployment - Cropland measures (1000							, -
tC02e/y)							
Carbon sink potential - Aggressive							0
deployment - Cropland to woody energy							
crops (1000 tCO2e/y)							
Carbon sink potential - Aggressive							0
deployment - Pasture to energy crops							
(1000 tCO2e/y)							
Carbon sink potential - Aggressive							-193
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-6,872
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							-1,772
deployment - Corn-ethanol to energy							
grasses (1000 tC02e/y)							
Carbon sink potential - Moderate							-2,589
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Cropland to woody energy							
crops (1000 tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Pasture to energy crops							
(1000 tC02e/y)							
Carbon sink potential - Moderate							-96.4
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-4,458
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							903
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							7,832
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							166
Aggressive deployment - Cropland to							
woody energy crops (1000 hectares)							
Land impacted for carbon sink -							129
Aggressive deployment - Pasture to							
energy crops (1000 hectares)							
Land impacted for carbon sink -							351
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							9,381
Aggressive deployment - Total (1000							
hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink - Moderate							903
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							1,674
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							166
deployment - Cropland to woody energy							
crops (1000 hectares)							
Land impacted for carbon sink - Moderate							129
deployment - Pasture to energy crops							
(1000 hectares)							
Land impacted for carbon sink - Moderate							175
deployment - Permanent conservation							
cover (1000 hectares)							
Land impacted for carbon sink - Moderate							3,047
deployment - Total (1000 hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate							-180
regeneration (1000 tCO2e/y)							
Carbon sink potential - High - All (not							-21,474
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - High - Avoid							-3,130
deforestation (1000 tCO2e/y)							
Carbon sink potential - High - Extend							-3,434
rotation length (1000 tCO2e/y)							
Carbon sink potential - High - Improve							-219
plantations (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-4,749
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-1,920
trees outside forests (1000 tC02e/y)							
Carbon sink potential - High - Reforest							-1,166
cropland (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-4,605
pasture (1000 tCO2e/y)							
Carbon sink potential - High - Restore							-2,070
productivity (1000 tCO2e/y)							
Carbon sink potential - Low - Accelerate							-90.3
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,92
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Low - Avoid							-522
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-1,319
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-112
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,583
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-672
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-583
cropland (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-349
pasture (1000 tC02e/y)							
Carbon sink potential - Low - Restore							-698
productivity (1000 tCO2e/y)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Mid - Accelerate							-135
regeneration (1000 tCO2e/y)							
Carbon sink potential - Mid - All (not							-13,699
counting overlap) (1000 tCO2e/y)							1.007
Carbon sink potential - Mid - Avoid							-1,826
deforestation (1000 tC02e/y)							0.077
Carbon sink potential - Mid - Extend							-2,377
rotation length (1000 tC02e/y)							-163
Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y)							-163
Carbon sink potential - Mid - Increase							-3,166
retention of HWP (1000 tC02e/y)							-3,100
Carbon sink potential - Mid - Increase							-1,296
trees outside forests (1000 tCO2e/y)							-1,270
Carbon sink potential - Mid - Reforest							-874
cropland (1000 tCO2e/y)							-014
Carbon sink potential - Mid - Reforest							-2,477
pasture (1000 tC02e/y)							-2,411
Carbon sink potential - Mid - Restore							-1,384
productivity (1000 tC02e/y)							-1,304
Land impacted for carbon sink potential -							29.5
High - Accelerate regeneration (1000							27.0
hectares)							
Land impacted for carbon sink potential -							424
High - Avoid deforestation (over 30 years)							424
(1000 hectares)							
Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000							1,101
hectares)							
Land impacted for carbon sink potential -							80.7
High - Improve plantations (1000							00
hectares)							
Land impacted for carbon sink potential -							0
High - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							182
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							131
High - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							686
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							14.7
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							398
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -		T	Т	T		T	40.4
Low - Improve plantations (1000							
hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							415
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,696
Low - Total impacted (over 30 years)							,
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							,
hectares)							
Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							57.8
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -					+		2,902
Mid - Total impacted (over 30 years) (1000							_,,
hectares)							

Table 58: E-B+ scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)		2,185	5.74	5.72	5.49	4.18	0.407
Monetary damages from air pollution - Natural Gas (million 2019\$)		339	196	109	70.8	36.1	11.7
Monetary damages from air pollution - Transportation (million 2019\$)		4,048	4,080	3,966	3,572	2,847	1,959
Premature deaths from air pollution - Coal (deaths)		247	0.648	0.646	0.62	0.473	0.046
Premature deaths from air pollution - Natural Gas (deaths)		38.3	22.1	12.3	7.99	4.07	1.32
Premature deaths from air pollution - Transportation (deaths)		455	459	446	402	320	220

Table 59: REF scenario - PILLAR 1: Efficiency/Electrification - Commercial

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -	0	36,280	37,607	0	0	0	0
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	41	44.2	44.3	44.3	44.3	44.4	44.5
Resistance (%)							
Sales of cooking units - Gas (%)	59	55.8	55.7	55.7	55.7	55.6	55.5
Sales of space heating units - Electric	1.41	12.6	44.7	71.1	75.4	75.9	75.9
Heat Pump (%)							
Sales of space heating units - Electric	4.39	4.3	8.91	17.1	22.8	23.6	23.7
Resistance (%)							
Sales of space heating units - Fossil (%)	5.44	2.76	1.39	0.243	0.027	0.001	0
Sales of space heating units - Gas Furnace	88.8	80.4	45	11.5	1.77	0.436	0.356
(%)							
Sales of water heating units - Electric	0.454	0.344	0.348	0.348	0.342	0.344	0.345
Heat Pump (%)							
Sales of water heating units - Electric	4.26	3.24	3.2	3.21	3.19	3.18	3.18
Resistance (%)							
Sales of water heating units - Gas Furnace	95	96.2	96.3	96.3	96.3	96.3	96.3
(%)							
Sales of water heating units - Other (%)	0.252	0.187	0.187	0.189	0.188	0.188	0.189

Table 60: REF scenario - PILLAR 1: Efficiency/Electrification - Electricity demand

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		5.42	5.51	10.6	11.3	10.6	11.1
Cumulative 5-yr (billion \$2018)							

Table 61: REF scenario - PILLAR 1: Efficiency/Electrification - Overview

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Commercial (PJ)	372	372	369	360	351	351	360
Final energy use - Industry (PJ)	602	634	654	668	689	709	731
Final energy use - Residential (PJ)	555	517	496	481	472	466	461
Final energy use - Transportation (PJ)	953	894	818	774	775	799	830

Table 62: REF scenario - PILLAR 1: Efficiency/Electrification - Residential

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.	0	9.28	9.99	0	0	0	0
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	61.3	61.3	61.3	61.3	61.3	61.3	61.3
Resistance (%)							
Sales of cooking units - Gas (%)	38.7	38.7	38.7	38.7	38.7	38.7	38.7
Sales of space heating units - Electric	4.34	15.8	16.3	17.1	17.8	18.6	19.7
Heat Pump (%)							
Sales of space heating units - Electric	15.7	20.7	20.5	20.2	19.5	18.6	17.7
Resistance (%)							
Sales of space heating units - Fossil (%)	5.21	7.94	7.37	6.96	6.98	7	6.99
Sales of space heating units - Gas (%)	74.7	55.6	55.9	55.8	55.7	55.8	55.7
Sales of water heating units - Electric	0	0	0	0	0	0	0
Heat Pump (%)							
Sales of water heating units - Electric	32.2	48.7	48.5	48.4	48.4	48.3	48.2
Resistance (%)							
Sales of water heating units - Gas Furnace	67.7	51.2	51.4	51.4	51.5	51.6	51.6
(%)							
Sales of water heating units - Other (%)	0.083	0.169	0.171	0.171	0.171	0.172	0.172

Table 63: 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 (%)	1.4	1.84	2.16	2.01	1.81	1.68	1.6
Vehicle sales - Light-duty - EV (%)	4.06	6.25	7.06	8.72	10.6	12.1	13.3
Vehicle sales - Light-duty - gasoline (%)	89.4	85.7	83.3	81.3	79.2	77.2	75.7
Vehicle sales - Light-duty - hybrid (%)	4.93	5.76	7	7.56	8.09	8.59	8.95
Vehicle sales - Light-duty - hydrogen FC	0.11	0.371	0.337	0.297	0.293	0.293	0.303
(%)							
Vehicle sales - Light-duty - other (%)	0.095	0.099	0.095	0.096	0.095	0.094	0.096
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	0.175	0.208	0.242	0.285	0.339	0.409	0.487
FC (%)							
Vehicle sales - Medium-duty - other (%)	0.255	0.271	0.298	0.345	0.42	0.528	0.671

Table 64: REF scenario - PILLAR 6: Land sinks - Forests

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-180
Carbon sink potential - High - All (not							-21,474
counting overlap) (1000 tCO2e/y)							-21,474
Carbon sink potential - High - Avoid							-3,130
							-3,130
deforestation (1000 tC02e/y)							0.404
Carbon sink potential - High - Extend							-3,434
rotation length (1000 tC02e/y)							010
Carbon sink potential - High - Improve							-219
plantations (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-4,749
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-1,920
trees outside forests (1000 tC02e/y)							
Carbon sink potential - High - Reforest							-1,166
cropland (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-4,605
pasture (1000 tCO2e/y)							
Carbon sink potential - High - Restore							-2,070
productivity (1000 tCO2e/y)							
Carbon sink potential - Low - Accelerate							-90.3
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,927
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Low - Avoid							-522
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-1,319
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-112
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,583
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-672
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-583
cropland (1000 tCO2e/y)							

Table 64: REF scenario - PILLAR 6: Land sinks - Forests (continued)

Item Conhon sink notantial Law Referent	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Low - Reforest							-349
pasture (1000 tC02e/y)							
Carbon sink potential - Low - Restore							-698
productivity (1000 tCO2e/y)							40.5
Carbon sink potential - Mid - Accelerate							-135
regeneration (1000 tC02e/y)							10 (00
Carbon sink potential - Mid - All (not							-13,699
counting overlap) (1000 tC02e/y)							1.007
Carbon sink potential - Mid - Avoid							-1,826
deforestation (1000 tC02e/y)							0.077
Carbon sink potential - Mid - Extend							-2,377
rotation length (1000 tC02e/y)							1/0
Carbon sink potential - Mid - Improve							-163
plantations (1000 tC02e/y)							0.1//
Carbon sink potential - Mid - Increase							-3,166
retention of HWP (1000 tCO2e/y)							1.007
Carbon sink potential - Mid - Increase							-1,296
trees outside forests (1000 tC02e/y)							
Carbon sink potential - Mid - Reforest							-874
cropland (1000 tCO2e/y)							
Carbon sink potential - Mid - Reforest							-2,477
pasture (1000 tC02e/y)							
Carbon sink potential - Mid - Restore							-1,384
productivity (1000 tCO2e/y)							
Land impacted for carbon sink potential -							29.5
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							424
High - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,751
High - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							80.7
High - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
High - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							182
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							77.1
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							131
High - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							686
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,362
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							14.7
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							398
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							671
Low - Extend rotation length (1000							
hectares)							

Table 64: REF scenario - PILLAR 6: Land sinks - Forests (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							40.4
Low - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							96
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							38.5
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							22.7
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							415
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,696
Low - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							22.1
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							411
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,211
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							60.8
Mid - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							139
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							57.8
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							164
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							836
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							2,902
Mid - Total impacted (over 30 years) (1000							,
hectares)							

Table 65: REF scenario - PILLAR 6: Land sinks - Forests - REF only

Item	2020	2025	2030	2035	2040	2045	2050
Business-as-usual carbon sink - Natural uptake (Mt CO2e/y)	0.94		-7.03				-6.29
Business-as-usual carbon sink - Retained in Hardwood Products (Mt CO2e/y)	-1.29		-2.32				-2.42
Business-as-usual carbon sink - Total (Mt CO2e/y)	-0.352		-9.35				-8.7

Table 66: REF scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)		5,580	3,705	3,251	3,017	2,925	2,742
Monetary damages from air pollution - Natural Gas (million 2019\$)		287	334	430	450	426	367
Monetary damages from air pollution - Transportation (million 2019\$)		4,043	4,133	4,226	4,344	4,463	4,584
Premature deaths from air pollution - Coal (deaths)		630	419	367	341	330	310
Premature deaths from air pollution - Natural Gas (deaths)		32.4	37.8	48.5	50.8	48	41.5
Premature deaths from air pollution - Transportation (deaths)		455	465	475	489	502	516