

Net-Zero America - west virginia 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 https://netzeroamerica.princeton.edu.

Notes

- These data are all data from the study available at https://netzeroamerica.prince-ton.edu.
- The Net-Zero America study describes five pathways to reach net-zero emissions and one "no new policies" reference scenario. In this document, state-level results are grouped by scenario. For some scenarios, the study generated national, but not 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 - Cumulative 5-yr (million \$2018)		5,826	6,488				
Sales of cooking units - Electric Resistance (%)	32	46	79.9	86.5	86.9	86.9	86.9
Sales of cooking units - Gas (%)	68	54	20.1	13.5	13.1	13.1	13.1
Sales of space heating units - Electric Heat Pump (%)	3.31	21.4	54	79.9	84	84.2	84.2
Sales of space heating units - Electric Resistance (%)	3.22	8.3	10.8	13.4	13.9	13.9	13.9
Sales of space heating units - Fossil (%)	4.12	4.08	0.778	0.033	0	0	0
Sales of space heating units - Gas Furnace (%)	89.4	66.3	34.4	6.61	2.15	1.91	1.9
Sales of water heating units - Electric Heat Pump (%)	0.114	6.44	36.5	54	56.3	56.5	56.5
Sales of water heating units - Electric Resistance (%)	2.92	9.46	24.7	38.5	40.7	40.8	40.8
Sales of water heating units - Gas Furnace (%)	94.5	80.1	35.8	4.81	0.265	0	0
Sales of water heating units - Other (%)	2.43	4.02	2.96	2.7	2.7	2.7	2.7

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.954	0.978	1.95	2.08	1.75	1.83
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)	48.6	48.7	47.1	44.5	42	41	41.4
Final energy use - Industry (PJ)	185	197	201	206	212	214	218
Final energy use - Residential (PJ)	38.4	36.1	33.5	30.6	27.6	25.7	24.7
Final energy use - Transportation (PJ)	151	141	123	101	81	68.6	63.6

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.682	0.676				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.6	70.5	95	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	37.4	29.5	5.04	0.254	0	0	0
Sales of space heating units - Electric	20.6	34.6	64.3	82.8	85.4	85.5	85.5
Heat Pump (%)							
Sales of space heating units - Electric	18.3	20.1	12	6.25	5.33	5.36	5.42
Resistance (%)							
Sales of space heating units - Fossil (%)	10.8	15.7	9.07	6.34	6.05	5.96	5.93
Sales of space heating units - Gas (%)	50.2	29.6	14.6	4.64	3.25	3.16	3.14
Sales of water heating units - Electric	0	5.29	30.4	43.3	45	45.1	45.2
Heat Pump (%)							
Sales of water heating units - Electric	45	59.7	53.2	53.1	53.2	53.3	53.2
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	33	14.7	1.99	0.11	0	0
(%)							
Sales of water heating units - Other (%)	2.8	2.02	1.66	1.59	1.61	1.62	1.64

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs - Cumulative 5-yr (million \$2018)		326	832	1,355	2,050	2,233	2,128
Public EV charging plugs - DC Fast (1000	0.06		0.708		3.17		5.13
units)							
Public EV charging plugs - L2 (1000 units)	0.164		17		76.1		123
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 (%)	1.78	2.02	1.35	0.436	0.079	0.013	0
Vehicle sales - Light-duty - EV (%)	3.13	12.8	42.7	80.3	96.1	99.3	100
Vehicle sales - Light-duty - gasoline (%)	91.2	80.7	52.7	18	3.49	0.596	0
Vehicle sales - Light-duty - hybrid (%)	3.66	3.99	2.95	1.12	0.268	0.057	0
Vehicle sales - Light-duty - hydrogen FC	0.112	0.353	0.222	0.07	0.014	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.112	0.109	0.073	0.026	0.005	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	2.45	5.41	6.37	4.59
Capital invested - Solar PV - Constrained (billion \$2018)		0	0	1.91	3.94	5.57	3.3
Capital invested - Wind - Base (billion \$2018)		0	8.36	8.42	14.7	0.853	2.18
Capital invested - Wind - Constrained (billion \$2018)		0	26.5	33.7	0.092	0	2.31
Installed renewables - OffshoreWind - Base land use assumptions (MW)	0	0	0	0	0	0	0
Installed renewables - OffshoreWind - Constrained land use assumptions (MW)	0	0	0	0	0	0	0
Installed renewables - Rooftop PV (MW)	10	15	19.9	26.4	34.1	42.9	53.1
Installed renewables - Solar - Base land use assumptions (MW)	0	0	0	2,599	8,696	16,301	22,106
Installed renewables - Solar - Constrained land use assumptions (MW)	0	0	326	2,711	5,827	9,686	12,644
Installed renewables - Wind - Base land use assumptions (MW)	740	740	7,019	13,807	26,216	26,977	29,033
Installed renewables - Wind - Constrained land use assumptions (MW)	740	740	19,923	47,759	47,868	47,868	48,628

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
OffshoreWind - Base land use	0	0	0	0	0	0	0
assumptions (GWh)							
OffshoreWind - Constrained land use	0	0	0	0	0	0	0
assumptions (GWh)							
Solar - Base land use assumptions (GWh)	0	0	0	3,967	13,256	24,607	33,274
Solar - Constrained land use assumptions	0	0	507	4,116	8,819	14,584	18,996
(GWh)							
Wind - Base land use assumptions (GWh)	3,100	3,100	25,019	46,938	84,242	86,377	91,821
Wind - Constrained land use assumptions	3,100	3,100	64,947	135,343	135,594	135,594	138,323
(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	136
Conversion capital investment -		0	0	0	0	0	2,949
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	0	4
(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	0	7.32
Annual - BECCS (MMT)		0	0	0	0	0	3.79
Annual - Cement and lime (MMT)		0	0	0	0	0	3.53
Annual - NGCC (MMT)		0	0	0	0	0	0
Cumulative - All (MMT)		0	0	0	0	0	7.32
Cumulative - BECCS (MMT)		0	0	0	0	0	3.79
Cumulative - Cement and lime (MMT)		0	0	0	0	0	3.53
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	0	0	0	0	316
Cumulative investment - All (million \$2018)		0	0	0	0	0	223
Cumulative investment - Spur (million \$2018)		0	0	0	0	0	223
Cumulative investment - Trunk (million \$2018)		0	0	0	0	0	0
Spur (km)		0	0	0	0	0	316
Trunk (km)		0	0	0	0	0	0

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

Table 12: E+ Scenario - PILLAR 6: Land Sink			0000	0005	2010	00/5	0050
Item	2020	2025	2030	2035	2040	2045	2050 0
Carbon sink potential - Aggressive							U
deployment - Corn-ethanol to energy							
grasses (1000 tC02e/y)							F10
Carbon sink potential - Aggressive							-518
deployment - Cropland measures (1000							
tCO2e/y)							01.1
Carbon sink potential - Aggressive							-21.1
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-539
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-273
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							-10.5
deployment - Permanent conservation							
cover (1000 tC02e/y)							
Carbon sink potential - Moderate							-284
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							0
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							345
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							38.3
Aggressive deployment - Permanent							00.0
conservation cover (1000 hectares)							
Land impacted for carbon sink -							384
Aggressive deployment - Total (1000							304
hectares)							
Land impacted for carbon sink - Moderate							0
deployment - Corn-ethanol to energy							U
grasses (1000 hectares)							100
Land impacted for carbon sink - Moderate							182
deployment - Cropland measures (1000							
hectares)							46.5
Land impacted for carbon sink - Moderate							19.2
deployment - Permanent conservation							
cover (1000 hectares)							
Land impacted for carbon sink - Moderate							201
deployment - Total (1000 hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate							-108
regeneration (1000 tCO2e/y)							
Carbon sink potential - High - All (not							-17,784
counting overlap) (1000 tC02e/y)							
Carbon sink potential - High - Avoid							-724
deforestation (1000 tC02e/y)							
Carbon sink potential - High - Extend							-6,389
rotation length (1000 tCO2e/y) Carbon sink potential - High - Improve							-60.6
plantations (1000 tCO2e/y)							-60.6
Carbon sink potential - High - Increase							-4,441
retention of HWP (1000 tCO2e/y)							-4,441
Carbon sink potential - High - Increase							-197
trees outside forests (1000 tCO2e/y)							-171
Carbon sink potential - High - Reforest							0
cropland (1000 tCO2e/y)							U
Carbon sink potential - High - Reforest							-3,114
pasture (1000 tCO2e/y)							0,111
Carbon sink potential - High - Restore							-2,750
productivity (1000 tCO2e/y)							2,100
Carbon sink potential - Low - Accelerate							-53.9
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,372
counting overlap) (1000 tCO2e/y)							-,-
Carbon sink potential - Low - Avoid							-121
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-2,454
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-30.8
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,480
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-69.1
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							0
cropland (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-236
pasture (1000 tCO2e/y)							
Carbon sink potential - Low - Restore							-927
productivity (1000 tCO2e/y)							
Carbon sink potential - Mid - Accelerate							-80.7
regeneration (1000 tCO2e/y)							
Carbon sink potential - Mid - All (not							-11,577
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Mid - Avoid							-422
deforestation (1000 tCO2e/y)							
Carbon sink potential - Mid - Extend							-4,421
rotation length (1000 tC02e/y)							
Carbon sink potential - Mid - Improve							-45.2
plantations (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-2,961
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-133
trees outside forests (1000 tC02e/y)							
Carbon sink potential - Mid - Reforest							0
cropland (1000 tC02e/y)							
Carbon sink potential - Mid - Reforest							-1,675
pasture (1000 tC02e/y)							
Carbon sink potential - Mid - Restore							-1,839
productivity (1000 tCO2e/y)							

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

Table 13: E+ scenario - PILLAR 6: Land sink		<u> </u>					
Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							17.6
High - Accelerate regeneration (1000							
hectares)							98.1
Land impacted for carbon sink potential -							98.1
High - Avoid deforestation (over 30 years) (1000 hectares)							
Land impacted for carbon sink potential -							3,258
High - Extend rotation length (1000							3,238
hectares)							
Land impacted for carbon sink potential -							22.3
High - Improve plantations (1000							22.0
hectares)							
Land impacted for carbon sink potential -							0
High - Increase retention of HWP (1000							U
hectares)							
Land impacted for carbon sink potential -							18.7
High - Increase trees outside forests							10.1
(1000 hectares)							
Land impacted for carbon sink potential -							0
High - Reforest cropland (1000 hectares)							Ü
Land impacted for carbon sink potential -							88.5
High - Reforest pasture (1000 hectares)							00.0
Land impacted for carbon sink potential -							912
High - Restore productivity (1000							,
hectares)							
Land impacted for carbon sink potential -							4,415
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							8.8
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							92.1
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,248
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							11.2
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 -							9.87
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							45.0
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							550
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000							
hectares)							1 007
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							
(1000 hectares)							10.0
Land impacted for carbon sink potential -							13.2
Mid - Accelerate regeneration (1000							
hectares)							

					_
Table 13: F+:	scenaria -	PTII AR 6.	I and sinks -	. Forests i	(continued)

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							95.1
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							16.8
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 -							14.3
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,614
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)		158	133	107	80.5	50.6	35.1
Natural gas consumption - Cumulative							3,220
(tcf)							
Natural gas production - Annual (tcf)		2,002	1,893	1,648	1,394	1,105	859
Oil consumption - Annual (million bbls)		31	26.8	20.4	14.4	9.6	5.68
Oil consumption - Cumulative (million							627
bbls)							
Oil production - Annual (million bbls)		15.1	15.1	15.1	12	9.71	6.46

Table 15: E+ scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution - Coal (million 2019\$)		442	0.447	0.442	0.404	0.296	0.027
Monetary damages from air pollution - Natural Gas (million 2019\$)		60	42.9	24.9	19.5	10.8	3.95
Monetary damages from air pollution - Transportation (million 2019\$)		354	313	226	124	53.7	20.3
Premature deaths from air pollution - Coal (deaths)		49.9	0.05	0.05	0.046	0.033	0.003
Premature deaths from air pollution - Natural Gas (deaths)		6.77	4.84	2.81	2.2	1.21	0.446
Premature deaths from air pollution - Transportation (deaths)		39.8	35.2	25.4	13.9	6.04	2.28

Table 16: E+ scenario - IMPACTS - Jobs

Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Agriculture (jobs)		0	0	0	0	0	187
By economic sector - Construction (jobs)		3,000	4,786	8,330	13,768	13,606	14,092
By economic sector - Manufacturing		8,241	9,292	11,903	11,721	9,648	11,803
(jobs)							
By economic sector - Mining (jobs)		9,227	6,030	4,762	3,441	2,534	1,768

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

Table 16: E+ scenario - IMPACTS - Jobs (co	ntinueaj						
Item	2020	2025	2030	2035	2040	2045	2050
By economic sector - Other (jobs)		101	282	883	1,891	2,238	2,476
By economic sector - Pipeline (jobs)		576	498	405	305	202	170
By economic sector - Professional (jobs)		2,755	3,602	5,766	9,371	9,332	9,924
By economic sector - Trade (jobs)		3,088	2,895	3,916	5,799	5,886	6,180
By economic sector - Utilities (jobs)		3,826	3,995	5,997	9,625	9,272	10,485
By education level - All sectors -		9,180	9,560	13,054	17,709	16,762	18,204
Associates degree or some college (jobs)							
By education level - All sectors -		6,444	6,702	8,804	11,602	10,887	11,717
Bachelors degree (jobs)							
By education level - All sectors - Doctoral		190	214	300	439	425	447
degree (jobs)							
By education level - All sectors - High		13,538	13,358	17,727	23,310	21,919	23,800
school diploma or less (jobs)							
By education level - All sectors - Masters		1,462	1,547	2,077	2,861	2,725	2,918
or professional degree (jobs)							
By resource sector - Biomass (jobs)		0	0	0	0	0	800
By resource sector - CO2 (jobs)		0	0	0	0	0	414
By resource sector - Coal (jobs)		9,540	4,431	3,660	3,187	2,872	2,545
By resource sector - Grid (jobs)		1,781	3,819	8,462	15,816	16,344	19,155
By resource sector - Natural Gas (jobs)		7,105	5,936	4,650	3,639	2,141	1,247
By resource sector - Nuclear (jobs)		0	0	0	0	0	0
By resource sector - Oil (jobs)		6,960	6,170	5,397	3,868	2,839	1,735
By resource sector - Solar (jobs)		2,472	2,916	6,844	10,894	12,317	14,313
By resource sector - Wind (jobs)		2,956	8,109	12,949	18,516	16,204	16,877
Median wages - Annual - All (\$2019 per		54,948	55,705	55,935	56,689	57,386	57,960
job)							
On-Site or In-Plant Training - Total jobs - 1		4,850	4,991	6,734	9,081	8,574	9,252
to 4 years (jobs)							
On-Site or In-Plant Training - Total jobs - 4		1,683	1,810	2,536	3,653	3,504	3,721
to 10 years (jobs)							
On-Site or In-Plant Training - Total jobs -		4,709	4,981	6,776	9,115	8,609	9,352
None (jobs)							
On-Site or In-Plant Training - Total jobs -		213	236	335	472	449	488
Over 10 years (jobs)							
On-Site or In-Plant Training - Total jobs -		19,359	19,363	25,582	33,599	31,582	34,271
Up to 1 year (jobs)				•	-		
On-the-Job Training - All sectors - 1 to 4		6,120	6,350	8,609	11,691	11,048	11,911
years (jobs)				•	•	,	,
On-the-Job Training - All sectors - 4 to 10		1,571	1,705	2,436	3,581	3,455	3,673
years (jobs)		, -	,	,	-,	,	-,-
On-the-Job Training - All sectors - None		1,577	1,640	2,218	2,997	2,848	3,078
(jobs)		,,,,,,	.,	_,	_,	_,	-,
On-the-Job Training - All sectors - Over 10		288	315	428	555	515	558
years (jobs)							
On-the-Job Training - All sectors - Up to 1		21,258	21,372	28,271	37,096	34,853	37,866
year (jobs)		,	,0	20,2	0.,070	0 1,000	0.,000
Related work experience - All sectors - 1		11,455	11,507	15,228	20,204	19,039	20,539
to 4 years (jobs)		,	,	.0,220	20,20	.,,,,,,	20,007
Related work experience - All sectors - 4		6,894	7,194	9,684	13,032	12,283	13,252
to 10 years (jobs)		5,574	1,17=	7,004	10,002	.2,200	10,202
Related work experience - All sectors -		4,172	4,299	5,820	7,861	7,450	8,105
None (jobs)		-T,112	7,477	5,020	1,001	1,400	3,100
Related work experience - All sectors -		1,967	2,043	2,704	3,517	3,276	3,557
Over 10 years (jobs)		1,701	2,040	2,104	0,011	5,210	0,001
Related work experience - All sectors - Up		6,326	6,338	8,526	11,307	10,670	11,633
to 1 year (jobs)		0,020	0,000	0,020	11,001	10,010	11,000
Wage income - All (million \$2019)		1,693	1,748	2,347	3,170	3,026	3,309
vvage income - An (inililon \$2017)		1,073	1,140	2,341	3,110	3,020	3,307

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -		5,823	6,480				
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	32	36.2	40.9	53.4	71	81.7	85.5
Resistance (%)							
Sales of cooking units - Gas (%)	68	63.8	59.1	46.6	29	18.3	14.5
Sales of space heating units - Electric	3.31	16.5	20.2	31.4	51.9	70.8	80
Heat Pump (%)							
Sales of space heating units - Electric	3.22	7.96	8.26	9.15	10.8	12.6	13.5
Resistance (%)							
Sales of space heating units - Fossil (%)	4.12	4.72	4.38	3.31	1.62	0.515	0.135
Sales of space heating units - Gas Furnace	89.4	70.9	67.2	56.1	35.6	16.1	6.3
(%)							
Sales of water heating units - Electric	0.114	1.49	4.92	15.1	32.6	47.1	53.7
Heat Pump (%)							
Sales of water heating units - Electric	2.92	7.34	9.03	14.3	24.3	33.8	38.6
Resistance (%)							
Sales of water heating units - Gas Furnace	94.5	86.9	81.8	66.8	39.9	16.2	4.96
(%)							
Sales of water heating units - Other (%)	2.43	4.23	4.21	3.78	3.24	2.87	2.74

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.829	0.837	1.16	1.2	1.73	1.83
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)	48.6	48.8	48.2	47.6	46.4	45.3	44.7
Final energy use - Industry (PJ)	185	197	202	207	214	216	219
Final energy use - Residential (PJ)	38.4	36.2	35	33.8	32.2	30.3	28.1
Final energy use - Transportation (PJ)	151	143	129	118	110	100	89.1

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.678	0.66				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.4	63.4	66.8	75.9	88.5	96.3	99
Resistance (%)							
Sales of cooking units - Gas (%)	37.6	36.6	33.2	24.1	11.5	3.71	0.997
Sales of space heating units - Electric	20.6	29.9	33.3	43.4	60.9	75.7	82.6
Heat Pump (%)							
Sales of space heating units - Electric	18.3	21.3	20.5	17.4	12.3	8.13	6.18
Resistance (%)							
Sales of space heating units - Fossil (%)	10.8	16.9	16.2	14	10.4	7.61	6.49
Sales of space heating units - Gas (%)	50.2	31.9	30	25.2	16.5	8.57	4.78
Sales of water heating units - Electric	0	1.02	3.88	12.4	26.6	38	43.1
Heat Pump (%)							
Sales of water heating units - Electric	45	61.1	60.3	58	54.9	53.5	53.2
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	35.8	33.7	27.7	16.7	6.76	2.07
(%)							
Sales of water heating units - Other (%)	2.8	2.09	2.06	1.96	1.8	1.69	1.66

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -		0	52.1	111	373	1,179	1,716
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.06		0.211		1.17		3.29
units)							
Public EV charging plugs - L2 (1000 units)	0.164		5.06		28.1		79
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 (%)	1.8	2.17	2.1	1.68	1.1	0.568	0.242
Vehicle sales - Light-duty - EV (%)	1.61	4.08	10.6	23.8	46.1	70.5	87
Vehicle sales - Light-duty - gasoline (%)	92.6	88.6	81.6	69.2	48.7	26.4	11.6
Vehicle sales - Light-duty - hybrid (%)	3.77	4.63	5.26	4.9	3.79	2.31	1.14
Vehicle sales - Light-duty - hydrogen FC	0.113	0.387	0.34	0.265	0.191	0.108	0.05
(%)							
Vehicle sales - Light-duty - other (%)	0.113	0.117	0.108	0.095	0.069	0.038	0.018
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 sinks - Agriculture

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-518
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Aggressive							-21.1
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-539
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-273
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							-10.5
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-284
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							0
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							
Land impacted for carbon sink -							345
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							38.3
Aggressive 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 -							384
Aggressive deployment - Total (1000							
hectares)							
Land impacted for carbon sink - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							182
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							19.2
deployment - Permanent conservation							
cover (1000 hectares)							
Land impacted for carbon sink - Moderate							201
deployment - Total (1000 hectares)							

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

Table 23: E- scenario - PILLAR 6: Land sink		0005	0000	0005	00/0	00/5	0050
Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate							-108
regeneration (1000 tCO2e/y)							47707
Carbon sink potential - High - All (not							-17,784
counting overlap) (1000 tC02e/y)							
Carbon sink potential - High - Avoid							-724
deforestation (1000 tC02e/y)							
Carbon sink potential - High - Extend							-6,389
rotation length (1000 tCO2e/y)							
Carbon sink potential - High - Improve							-60.6
plantations (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-4,441
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-197
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							0
cropland (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-3,114
pasture (1000 tCO2e/y)							
Carbon sink potential - High - Restore							-2,750
productivity (1000 tCO2e/y)							
Carbon sink potential - Low - Accelerate							-53.9
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,372
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Low - Avoid							-121
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-2,454
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-30.8
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,480
retention of HWP (1000 tCO2e/y)							•
Carbon sink potential - Low - Increase							-69.1
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							0
cropland (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-236
pasture (1000 tCO2e/y)							
Carbon sink potential - Low - Restore							-927
productivity (1000 tCO2e/y)							, = 1
Carbon sink potential - Mid - Accelerate							-80.7
regeneration (1000 tCO2e/y)							00.1
1 0901101 411011 (1000 10020/))							

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

2020	2025	2030	2035	2040	2045	2050
						-11,577
						-422
						-4,421
						-45.2
						-2,961
						-133
						0
						4 (75
						-1,675
						1.000
						-1,839
						17 (
						17.6
						001
						98.1
						0.050
						3,258
						00.0
						22.3
						0
						U
						18.7
						10.1
						0
						U
						00.5
						88.5
						912
						912
						4,415
						4,415
						8.8
						8.8
						92.1
						92.1
						10/0
						1,248
						44.0
						11.2
						_
						0
					2020 2025 2030 2035 2040	2020 2025 2030 2035 2040 2045

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							9.87
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							13.2
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							95.1
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							16.8
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 -							14.3
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,614
Mid - Total impacted (over 30 years) (1000							
hectares)							

Table 24: E- scenario - IMPACTS - Health

Table 24. L Scenario In Aoro Ticaren							
Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution -		442	0.447	0.442	0.404	0.296	0.027
Coal (million 2019\$)							
Monetary damages from air pollution -		54.9	34.5	13.4	5.22	1.61	0.892
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		359	343	317	271	205	134
Transportation (million 2019\$)							
Premature deaths from air pollution -		49.9	0.05	0.05	0.046	0.033	0.003
Coal (deaths)							
Premature deaths from air pollution -		6.19	3.89	1.51	0.589	0.182	0.101
Natural Gas (deaths)							
Premature deaths from air pollution -		40.4	38.6	35.7	30.5	23.1	15.1
Transportation (deaths)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -		5,826	6,488				
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	32	46	79.9	86.5	86.9	86.9	86.9
Resistance (%)							
Sales of cooking units - Gas (%)	68	54	20.1	13.5	13.1	13.1	13.1
Sales of space heating units - Electric	3.31	21.4	54	79.9	84	84.2	84.2
Heat Pump (%)							
Sales of space heating units - Electric	3.22	8.3	10.8	13.4	13.9	13.9	13.9
Resistance (%)							
Sales of space heating units - Fossil (%)	4.12	4.08	0.778	0.033	0	0	0
Sales of space heating units - Gas Furnace	89.4	66.3	34.4	6.61	2.15	1.91	1.9
(%)							
Sales of water heating units - Electric	0.114	6.44	36.5	54	56.3	56.5	56.5
Heat Pump (%)							
Sales of water heating units - Electric	2.92	9.46	24.7	38.5	40.7	40.8	40.8
Resistance (%)							
Sales of water heating units - Gas Furnace	94.5	80.1	35.8	4.81	0.265	0	0
(%)							
Sales of water heating units - Other (%)	2.43	4.02	2.96	2.7	2.7	2.7	2.7

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.954	0.978	1.95	2.08	1.75	1.83
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)	48.6	48.7	47.1	44.5	42	41	41.4
Final energy use - Industry (PJ)	185	197	201	206	212	214	218
Final energy use - Residential (PJ)	38.4	36.1	33.5	30.6	27.6	25.7	24.7
Final energy use - Transportation (PJ)	151	141	123	101	81	68.6	63.6

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.682	0.676				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.6	70.5	95	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	37.4	29.5	5.04	0.254	0	0	0
Sales of space heating units - Electric	20.6	34.6	64.3	82.8	85.4	85.5	85.5
Heat Pump (%)							
Sales of space heating units - Electric	18.3	20.1	12	6.25	5.33	5.36	5.42
Resistance (%)							
Sales of space heating units - Fossil (%)	10.8	15.7	9.07	6.34	6.05	5.96	5.93
Sales of space heating units - Gas (%)	50.2	29.6	14.6	4.64	3.25	3.16	3.14
Sales of water heating units - Electric	0	5.29	30.4	43.3	45	45.1	45.2
Heat Pump (%)							
Sales of water heating units - Electric	45	59.7	53.2	53.1	53.2	53.3	53.2
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	33	14.7	1.99	0.11	0	0
(%)							
Sales of water heating units - Other (%)	2.8	2.02	1.66	1.59	1.61	1.62	1.64

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -		326	832	1,355	2,050	2,233	2,128
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.06		0.708		3.17		5.13
units)							
Public EV charging plugs - L2 (1000 units)	0.164		17		76.1		123
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 (%)	1.78	2.02	1.35	0.436	0.079	0.013	0
Vehicle sales - Light-duty - EV (%)	3.13	12.8	42.7	80.3	96.1	99.3	100
Vehicle sales - Light-duty - gasoline (%)	91.2	80.7	52.7	18	3.49	0.596	0
Vehicle sales - Light-duty - hybrid (%)	3.66	3.99	2.95	1.12	0.268	0.057	0
Vehicle sales - Light-duty - hydrogen FC	0.112	0.353	0.222	0.07	0.014	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.112	0.109	0.073	0.026	0.005	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		0.106	0.219	7.29	6.45	15.1	0
\$2018)							
Capital invested - Wind - Base (billion		0	10.9	16.1	27.2	10.4	0.041
\$2018)							
Installed renewables - OffshoreWind -	0	0	0	0	0	0	0
Base land use assumptions (MW)							
Installed renewables - OffshoreWind -	0	0	0	0	0	0	0
Constrained land use assumptions (MW)							
Installed renewables - Solar - Base land	0	92.6	306	8,046	15,314	33,370	33,370
use assumptions (MW)							
Installed renewables - Solar -	0	883	2,143	10,378	25,183	34,723	35,150
Constrained land use assumptions (MW)							
Installed renewables - Wind - Base land	740	740	8,957	21,914	44,905	54,159	54,198
use assumptions (MW)							
Installed renewables - Wind - Constrained	1,481	1,481	54,973	95,737	95,737	95,737	126,460
land use assumptions (MW)							

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

Item	2020	2025	2030	2035	2040	2045	2050
OffshoreWind - Base land use	0	0	0	0	0	0	0
assumptions (GWh)							
OffshoreWind - Constrained land use	0	0	0	0	0	0	0
assumptions (GWh)							
Solar - Base land use assumptions (GWh)	0	145	476	12,091	22,963	49,928	49,928
Solar - Constrained land use assumptions	0	1,379	3,378	15,726	37,677	51,985	52,648
(GWh)							
Wind - Base land use assumptions (GWh)	3,100	3,100	31,342	71,772	131,323	154,153	154,241
Wind - Constrained land use assumptions	6,201	6,201	170,493	271,188	271,188	271,188	370,654
(GWh)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							0
deployment - Corn-ethanol to energy							
grasses (1000 tC02e/y)							
Carbon sink potential - Aggressive							-518
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Aggressive							-21.1
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-539
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-273
deployment - Cropland measures (1000							
tC02e/y)							
Carbon sink potential - Moderate							-10.5
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-284
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							0
Aggressive deployment - Corn-ethanol to							_
energy grasses (1000 hectares)							
Land impacted for carbon sink -							345
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							38.3
Aggressive deployment - Permanent							00.0
conservation cover (1000 hectares)							
Land impacted for carbon sink -							384
Aggressive deployment - Total (1000							004
hectares)							
Land impacted for carbon sink - Moderate							0
deployment - Corn-ethanol to energy							U
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							182
deployment - Cropland measures (1000							102
hectares)							
Land impacted for carbon sink - Moderate							19.2
							19.2
deployment - Permanent conservation cover (1000 hectares)							
							201
Land impacted for carbon sink - Moderate							201
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							-108
regeneration (1000 tCO2e/y)							
Carbon sink potential - High - All (not							-17,784
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - High - Avoid							-724
deforestation (1000 tCO2e/y)							
Carbon sink potential - High - Extend							-6,389
rotation length (1000 tCO2e/y)							
Carbon sink potential - High - Improve							-60.6
plantations (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-4,441
retention of HWP (1000 tCO2e/y)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Increase							-197
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest cropland (1000 tCO2e/y)							0
Carbon sink potential - High - Reforest pasture (1000 tCO2e/y)							-3,114
Carbon sink potential - High - Restore productivity (1000 tC02e/y)							-2,750
Carbon sink potential - Low - Accelerate							-53.9
regeneration (1000 tCO2e/y) Carbon sink potential - Low - All (not							-5,372
counting overlap) (1000 tCO2e/y) Carbon sink potential - Low - Avoid							-121
deforestation (1000 tCO2e/y) Carbon sink potential - Low - Extend							-2,454
rotation length (1000 tCO2e/y) Carbon sink potential - Low - Improve							-30.8
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase retention of HWP (1000 tCO2e/y)		T					-1,480
Carbon sink potential - Low - Increase trees outside forests (1000 tC02e/y)							-69.1
Carbon sink potential - Low - Reforest							0
cropland (1000 tCO2e/y) Carbon sink potential - Low - Reforest							-236
pasture (1000 tC02e/y) Carbon sink potential - Low - Restore							-927
productivity (1000 tCO2e/y) Carbon sink potential - Mid - Accelerate							-80.7
regeneration (1000 tCO2e/y)							-11,577
Carbon sink potential - Mid - All (not counting overlap) (1000 tC02e/y)							
Carbon sink potential - Mid - Avoid deforestation (1000 tCO2e/y)							-422
Carbon sink potential - Mid - Extend rotation length (1000 tCO2e/y)							-4,421
Carbon sink potential - Mid - Improve plantations (1000 tC02e/y)							-45.2
Carbon sink potential - Mid - Increase							-2,961
retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase							-133
trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest							0
cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest							-1,675
pasture (1000 tCO2e/y)							
Carbon sink potential - Mid - Restore productivity (1000 tCO2e/y)							-1,839
Land impacted for carbon sink potential - High - Accelerate regeneration (1000							17.6
hectares) Land impacted for carbon sink potential -							98.1
High - Avoid deforestation (over 30 years)							70.1
(1000 hectares) Land impacted for carbon sink potential -							3,258
High - Extend rotation length (1000 hectares)							5,255
Land impacted for carbon sink potential -							22.3
High - Improve plantations (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 - High - Increase retention of HWP (1000							0
hectares)							
Land impacted for carbon sink potential -							18.7
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
High - Reforest cropland (1000 hectares) Land impacted for carbon sink potential -							88.5
High - Reforest pasture (1000 hectares)							00.5
Land impacted for carbon sink potential -							912
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							4,415
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							8.8
Low - Accelerate regeneration (1000 hectares)							
Land impacted for carbon sink potential -							92.1
Low - Avoid deforestation (over 30 years)							72.1
(1000 hectares)							
Land impacted for carbon sink potential -							1,248
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							11.2
Low - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential - Low - Increase retention of HWP (1000							0
hectares)							
Land impacted for carbon sink potential -						-	9.87
Low - Increase trees outside forests							7.0.
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							550
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000 hectares)							
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							.,,,,,
(1000 hectares)							
Land impacted for carbon sink potential -							13.2
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							95.1
Mid - Avoid deforestation (over 30 years) (1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							2,200
hectares)							
Land impacted for carbon sink potential -							16.8
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 -							14.3
Mid - Increase trees outside forests (1000							
hectares)							

Table 33: E+RE+	. cronaria -	DTII AD A.	I and cinke -	Forests	(continued)
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Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,614
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 -		442	0.447	0.442	0.404	0.296	0.027
Coal (million 2019\$)							
Monetary damages from air pollution -		52.6	36.9	19.5	11.6	3.39	0.845
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		354	313	226	124	53.7	20.3
Transportation (million 2019\$)							
Premature deaths from air pollution -		49.9	0.05	0.05	0.046	0.033	0.003
Coal (deaths)							
Premature deaths from air pollution -		5.93	4.17	2.2	1.31	0.382	0.095
Natural Gas (deaths)							
Premature deaths from air pollution -		39.8	35.2	25.4	13.9	6.04	2.28
Transportation (deaths)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -		5,826	6,488				
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	32	46	79.9	86.5	86.9	86.9	86.9
Resistance (%)							
Sales of cooking units - Gas (%)	68	54	20.1	13.5	13.1	13.1	13.1
Sales of space heating units - Electric	3.31	21.4	54	79.9	84	84.2	84.2
Heat Pump (%)							
Sales of space heating units - Electric	3.22	8.3	10.8	13.4	13.9	13.9	13.9
Resistance (%)							
Sales of space heating units - Fossil (%)	4.12	4.08	0.778	0.033	0	0	0
Sales of space heating units - Gas Furnace	89.4	66.3	34.4	6.61	2.15	1.91	1.9
(%)							
Sales of water heating units - Electric	0.114	6.44	36.5	54	56.3	56.5	56.5
Heat Pump (%)							
Sales of water heating units - Electric	2.92	9.46	24.7	38.5	40.7	40.8	40.8
Resistance (%)							
Sales of water heating units - Gas Furnace	94.5	80.1	35.8	4.81	0.265	0	0
(%)							
Sales of water heating units - Other (%)	2.43	4.02	2.96	2.7	2.7	2.7	2.7

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.954	0.978	1.95	2.08	1.75	1.83
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)	48.6	48.7	47.1	44.5	42	41	41.4

Table 37: E+RE- scenario - PILLAR 1: Efficiency/Electrification - Overview (continued)

Item	2020	2025	2030	2035	2040	2045	2050
Final energy use - Industry (PJ)	185	197	201	206	212	214	218
Final energy use - Residential (PJ)	38.4	36.1	33.5	30.6	27.6	25.7	24.7
Final energy use - Transportation (PJ)	151	141	123	101	81	68.6	63.6

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.682	0.676				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.6	70.5	95	99.7	100	100	100
Resistance (%)							
Sales of cooking units - Gas (%)	37.4	29.5	5.04	0.254	0	0	0
Sales of space heating units - Electric	20.6	34.6	64.3	82.8	85.4	85.5	85.5
Heat Pump (%)							
Sales of space heating units - Electric	18.3	20.1	12	6.25	5.33	5.36	5.42
Resistance (%)							
Sales of space heating units - Fossil (%)	10.8	15.7	9.07	6.34	6.05	5.96	5.93
Sales of space heating units - Gas (%)	50.2	29.6	14.6	4.64	3.25	3.16	3.14
Sales of water heating units - Electric	0	5.29	30.4	43.3	45	45.1	45.2
Heat Pump (%)							
Sales of water heating units - Electric	45	59.7	53.2	53.1	53.2	53.3	53.2
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	33	14.7	1.99	0.11	0	0
(%)							
Sales of water heating units - Other (%)	2.8	2.02	1.66	1.59	1.61	1.62	1.64

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -		326	832	1,355	2,050	2,233	2,128
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.06		0.708		3.17		5.13
units)							
Public EV charging plugs - L2 (1000 units)	0.164		17		76.1		123
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 (%)	1.78	2.02	1.35	0.436	0.079	0.013	0
Vehicle sales - Light-duty - EV (%)	3.13	12.8	42.7	80.3	96.1	99.3	100
Vehicle sales - Light-duty - gasoline (%)	91.2	80.7	52.7	18	3.49	0.596	0
Vehicle sales - Light-duty - hybrid (%)	3.66	3.99	2.95	1.12	0.268	0.057	0
Vehicle sales - Light-duty - hydrogen FC	0.112	0.353	0.222	0.07	0.014	0.002	0
(%)							
Vehicle sales - Light-duty - other (%)	0.112	0.109	0.073	0.026	0.005	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 - Wind - Base (billion		1.11	3.75	0	0.593	0.045	0.132
\$2018)							
Capital invested - Wind - Constrained		2.36	8.13	0	1.61	0.493	0.71
(billion \$2018)							
Installed renewables - OffshoreWind -	0	0	0	0	0	0	0
Base land use assumptions (MW)							
Installed renewables - OffshoreWind -	0	0	0	0	0	0	0
Constrained land use assumptions (MW)							
Installed renewables - Solar - Base land	0	0	0	0	0	0	0
use assumptions (MW)							
Installed renewables - Solar -	0	0	0	0	0	0	0
Constrained land use assumptions (MW)							
Installed renewables - Wind - Base land	740	1,496	4,313	4,313	4,815	4,855	4,979
use assumptions (MW)							
Installed renewables - Wind - Constrained	740	2,348	8,454	8,454	9,820	10,260	10,930
land use assumptions (MW)							

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

Item	2020	2025	2030	2035	2040	2045	2050
OffshoreWind - Base land use	0	0	0	0	0	0	0
assumptions (GWh)							
OffshoreWind - Constrained land use	0	0	0	0	0	0	0
assumptions (GWh)							
Solar - Base land use assumptions (GWh)	0	0	0	0	0	0	0
Solar - Constrained land use assumptions	0	0	0	0	0	0	0
(GWh)							
Wind - Base land use assumptions (GWh)	3,100	5,923	15,857	15,857	17,577	17,724	18,139
Wind - Constrained land use assumptions	3,100	8,876	29,562	29,562	33,982	35,386	37,512
(GWh)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Aggressive							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-518
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Aggressive							-21.1
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-539
deployment - Total (1000 tCO2e/y)							
Carbon sink potential - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Moderate							-273
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							-10.5
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate							-284
deployment - Total (1000 tCO2e/y)							
Land impacted for carbon sink -							0
Aggressive deployment - Corn-ethanol to							
energy grasses (1000 hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink -							345
Aggressive deployment - Cropland							
measures (1000 hectares)							
Land impacted for carbon sink -							38.3
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							384
Aggressive deployment - Total (1000							
hectares)							
Land impacted for carbon sink - Moderate							0
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							182
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							19.2
deployment - Permanent conservation							
cover (1000 hectares)							
Land impacted for carbon sink - Moderate							201
deployment - Total (1000 hectares)							

Table 43: 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)							-108
Carbon sink potential - High - All (not							-17,784
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - High - Avoid							-724
deforestation (1000 tCO2e/y)							
Carbon sink potential - High - Extend							-6,389
rotation length (1000 tCO2e/y)							
Carbon sink potential - High - Improve							-60.6
plantations (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-4,441
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - High - Increase							-197
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							0
cropland (1000 tCO2e/y)							
Carbon sink potential - High - Reforest							-3,114
pasture (1000 tC02e/y)							
Carbon sink potential - High - Restore							-2,750
productivity (1000 tCO2e/y)							
Carbon sink potential - Low - Accelerate							-53.9
regeneration (1000 tCO2e/y)							
Carbon sink potential - Low - All (not							-5,372
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Low - Avoid							-121
deforestation (1000 tCO2e/y)							
Carbon sink potential - Low - Extend							-2,454
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-30.8
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,480
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-69.1
trees outside forests (1000 tC02e/y)							
Carbon sink potential - Low - Reforest							0
cropland (1000 tCO2e/y)							

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

Item Caphan sink notantial Law Potanest	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Low - Reforest							-23
pasture (1000 tC02e/y)							
Carbon sink potential - Low - Restore							-92
productivity (1000 tC02e/y)							
Carbon sink potential - Mid - Accelerate							-80.
regeneration (1000 tCO2e/y)							
Carbon sink potential - Mid - All (not							-11,57
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Mid - Avoid							-42
deforestation (1000 tCO2e/y)							
Carbon sink potential - Mid - Extend							-4,42
rotation length (1000 tCO2e/y)							
Carbon sink potential - Mid - Improve							-45.
plantations (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-2,96
retention of HWP (1000 tCO2e/y)							2,70
Carbon sink potential - Mid - Increase							-133
trees outside forests (1000 tC02e/y)							-100
Carbon sink potential - Mid - Reforest							(
							(
cropland (1000 tCO2e/y)							1 (7)
Carbon sink potential - Mid - Reforest							-1,67
pasture (1000 tC02e/y)							
Carbon sink potential - Mid - Restore							-1,839
productivity (1000 tCO2e/y)							
Land impacted for carbon sink potential -							17.0
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							98.
High - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							3,258
High - Extend rotation length (1000							0,20
hectares)							
Land impacted for carbon sink potential -							22.3
High - Improve plantations (1000							22.0
hectares)							
Land impacted for carbon sink potential -							(
							(
High - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							18.
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							(
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							88.
High - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							91:
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							4,41
High - Total impacted (over 30 years)							→,→1
(1000 hectares)							0.4
Land impacted for carbon sink potential -							8.8
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							92.
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,248
Low - Extend rotation length (1000							
hectares)							

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 -							11.2
Low - Improve plantations (1000							
hectares)							
Land impacted for carbon sink potential -							0
Low - Increase retention of HWP (1000 hectares)							
-							9.87
Land impacted for carbon sink potential - Low - Increase trees outside forests							9.87
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							U
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							10.0
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000							002
hectares)							
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							.,
(1000 hectares)							
Land impacted for carbon sink potential -							13.2
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							95.1
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							16.8
Mid - Improve plantations (1000 hectares)							
Land impacted for carbon sink potential -							0
Mid - Increase retention of HWP (1000							
hectares)							1/ 0
Land impacted for carbon sink potential -							14.3
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							111
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares) Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							1,111
hectares)							
Land impacted for carbon sink potential -						+	3,614
Mid - Total impacted (over 30 years) (1000							3,014
hectares)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution -		442	0.447	0.442	0.404	0.296	0.027
Coal (million 2019\$)							
Monetary damages from air pollution -		61.9	42.7	60.6	43.8	15.3	4.49
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		354	313	226	124	53.7	20.3
Transportation (million 2019\$)							
Premature deaths from air pollution -		49.9	0.05	0.05	0.046	0.033	0.003
Coal (deaths)							
Premature deaths from air pollution -		6.99	4.83	6.84	4.94	1.73	0.506
Natural Gas (deaths)							
Premature deaths from air pollution -		39.8	35.2	25.4	13.9	6.04	2.28
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)		5,823	6,480				
Sales of cooking units - Electric Resistance (%)	32	36.2	40.9	53.4	71	81.7	85.5
Sales of cooking units - Gas (%)	68	63.8	59.1	46.6	29	18.3	14.5
Sales of space heating units - Electric Heat Pump (%)	3.31	16.5	20.2	31.4	51.9	70.8	80
Sales of space heating units - Electric Resistance (%)	3.22	7.96	8.26	9.15	10.8	12.6	13.5
Sales of space heating units - Fossil (%)	4.12	4.72	4.38	3.31	1.62	0.515	0.135
Sales of space heating units - Gas Furnace (%)	89.4	70.9	67.2	56.1	35.6	16.1	6.3
Sales of water heating units - Electric Heat Pump (%)	0.114	1.49	4.92	15.1	32.6	47.1	53.7
Sales of water heating units - Electric Resistance (%)	2.92	7.34	9.03	14.3	24.3	33.8	38.6
Sales of water heating units - Gas Furnace (%)	94.5	86.9	81.8	66.8	39.9	16.2	4.96
Sales of water heating units - Other (%)	2.43	4.23	4.21	3.78	3.24	2.87	2.74

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.829	0.837	1.16	1.2	1.73	1.83
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)	48.6	48.8	48.2	47.6	46.4	45.3	44.7		
Final energy use - Industry (PJ)	185	197	202	207	214	216	219		
Final energy use - Residential (PJ)	38.4	36.2	35	33.8	32.2	30.3	28.1		
Final energy use - Transportation (PJ)	151	143	129	118	110	100	89.1		

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.678	0.66				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.4	63.4	66.8	75.9	88.5	96.3	99
Resistance (%)							
Sales of cooking units - Gas (%)	37.6	36.6	33.2	24.1	11.5	3.71	0.997
Sales of space heating units - Electric	20.6	29.9	33.3	43.4	60.9	75.7	82.6
Heat Pump (%)							
Sales of space heating units - Electric	18.3	21.3	20.5	17.4	12.3	8.13	6.18
Resistance (%)							
Sales of space heating units - Fossil (%)	10.8	16.9	16.2	14	10.4	7.61	6.49
Sales of space heating units - Gas (%)	50.2	31.9	30	25.2	16.5	8.57	4.78
Sales of water heating units - Electric	0	1.02	3.88	12.4	26.6	38	43.1
Heat Pump (%)							
Sales of water heating units - Electric	45	61.1	60.3	58	54.9	53.5	53.2
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	35.8	33.7	27.7	16.7	6.76	2.07
(%)							
Sales of water heating units - Other (%)	2.8	2.09	2.06	1.96	1.8	1.69	1.66

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

Item	2020	2025	2030	2035	2040	2045	2050
Light-duty vehicle capital costs -		0	52.1	111	373	1,179	1,716
Cumulative 5-yr (million \$2018)							
Public EV charging plugs - DC Fast (1000	0.06		0.211		1.17		3.29
units)							
Public EV charging plugs - L2 (1000 units)	0.164		5.06		28.1		79
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 (%)	1.8	2.17	2.1	1.68	1.1	0.568	0.242
Vehicle sales - Light-duty - EV (%)	1.61	4.08	10.6	23.8	46.1	70.5	87
Vehicle sales - Light-duty - gasoline (%)	92.6	88.6	81.6	69.2	48.7	26.4	11.6
Vehicle sales - Light-duty - hybrid (%)	3.77	4.63	5.26	4.9	3.79	2.31	1.14
Vehicle sales - Light-duty - hydrogen FC	0.113	0.387	0.34	0.265	0.191	0.108	0.05
(%)							
Vehicle sales - Light-duty - other (%)	0.113	0.117	0.108	0.095	0.069	0.038	0.018
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	0

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	0
Conversion capital investment -		0	0	0	0	0	0
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	0	0
(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

Table 52: E-B+ scenario - PILLAR 3: Clean fuels - Bioenergy (continued)

Item	2020	2025	2030	2035	2040	2045	2050
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 53: E-B+ scenario - PILLAR 4: CCUS - CO2 capture

Item	2020	2025	2030	2035	2040	2045	2050
Annual - All (MMT)		0	0	0	0	0	3.53
Annual - BECCS (MMT)		0	0	0	0	0	0
Annual - Cement and lime (MMT)		0	0	0	0	0	3.53
Annual - NGCC (MMT)		0	0	0	0	0	0
Cumulative - All (MMT)		0	0	0	0	0	3.53
Cumulative - BECCS (MMT)		0	0	0	0	0	0
Cumulative - Cement and lime (MMT)		0	0	0	0	0	3.53
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	0	0	0	0	30.7
Cumulative investment - All (million \$2018)		0	0	0	0	0	36
Cumulative investment - Spur (million \$2018)		0	0	0	0	0	36
Cumulative investment - Trunk (million \$2018)		0	0	0	0	0	0
Spur (km)		0	0	0	0	0	30.7
Trunk (km)		0	0	0	0	0	0

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							-17
deployment - Corn-ethanol to energy							
grasses (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-509
deployment - Cropland measures (1000							
tCO2e/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							-20.7
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Aggressive							-546
deployment - Total (1000 tCO2e/y)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - Moderate							-17
deployment - Corn-ethanol to energy							
grasses (1000 tC02e/y)							
Carbon sink potential - Moderate							-268
deployment - Cropland measures (1000							
tCO2e/y)							
Carbon sink potential - Moderate							(
deployment - Cropland to woody energy							
crops (1000 tCO2e/y)							
Carbon sink potential - Moderate							(
deployment - Pasture to energy crops							
(1000 tC02e/y)							
Carbon sink potential - Moderate							-10.4
deployment - Permanent conservation							
cover (1000 tCO2e/y)							
Carbon sink potential - Moderate		+					-290
deployment - Total (1000 tCO2e/y)							270
Land impacted for carbon sink -	+	+					6.53
Aggressive deployment - Corn-ethanol to							0.00
energy grasses (1000 hectares)							
Land impacted for carbon sink -		+					838
Aggressive deployment - Cropland							030
measures (1000 hectares)							
•							0.05
Land impacted for carbon sink -							0.05
Aggressive deployment - Cropland to							
woody energy crops (1000 hectares)							111
Land impacted for carbon sink -							110
Aggressive deployment - Pasture to							
energy crops (1000 hectares)							
Land impacted for carbon sink -							37.
Aggressive deployment - Permanent							
conservation cover (1000 hectares)							
Land impacted for carbon sink -							993
Aggressive deployment - Total (1000							
hectares)							
Land impacted for carbon sink - Moderate		T				T	6.53
deployment - Corn-ethanol to energy							
grasses (1000 hectares)							
Land impacted for carbon sink - Moderate							17'
deployment - Cropland measures (1000							
hectares)							
Land impacted for carbon sink - Moderate							0.05
deployment - Cropland to woody energy							
crops (1000 hectares)							
Land impacted for carbon sink - Moderate							110
deployment - Pasture to energy crops							
(1000 hectares)							
Land impacted for carbon sink - Moderate		+					18.
deployment - Permanent conservation							.5.0
cover (1000 hectares)							
							314
Land impacted for carbon sink - Moderate	1				1	1	317

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

Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential - High - Accelerate regeneration (1000 tCO2e/y)							-108
Carbon sink potential - High - All (not							-17,784
counting overlap) (1000 tCO2e/y)							,
Carbon sink potential - High - Avoid							-724
deforestation (1000 tCO2e/y)							

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

Item Carbon sink potential - High - Extend	2020	2025	2030	2035	2040	2045	2050 -6,389
rotation length (1000 tC02e/y)							-0,309
Carbon sink potential - High - Improve							-60.6
plantations (1000 tCO2e/y)							-00.0
Carbon sink potential - High - Increase							-4,441
retention of HWP (1000 tCO2e/y)							-4,441
Carbon sink potential - High - Increase							-197
trees outside forests (1000 tC02e/y)							-171
Carbon sink potential - High - Reforest							0
cropland (1000 tCO2e/y)							U
Carbon sink potential - High - Reforest							-3,114
pasture (1000 tCO2e/y)							-3,114
Carbon sink potential - High - Restore							-2,750
productivity (1000 tCO2e/y)							-2,130
Carbon sink potential - Low - Accelerate							-53.9
regeneration (1000 tCO2e/y)							-55.9
Carbon sink potential - Low - All (not							-5,372
							-5,312
counting overlap) (1000 tC02e/y)							101
Carbon sink potential - Low - Avoid							-121
deforestation (1000 tC02e/y)							0.454
Carbon sink potential - Low - Extend							-2,454
rotation length (1000 tCO2e/y)							
Carbon sink potential - Low - Improve							-30.8
plantations (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-1,480
retention of HWP (1000 tCO2e/y)							
Carbon sink potential - Low - Increase							-69.1
trees outside forests (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							0
cropland (1000 tCO2e/y)							
Carbon sink potential - Low - Reforest							-236
pasture (1000 tCO2e/y)							
Carbon sink potential - Low - Restore							-927
productivity (1000 tCO2e/y)							
Carbon sink potential - Mid - Accelerate							-80.7
regeneration (1000 tCO2e/y)							
Carbon sink potential - Mid - All (not							-11,577
counting overlap) (1000 tCO2e/y)							
Carbon sink potential - Mid - Avoid							-422
deforestation (1000 tCO2e/y)							
Carbon sink potential - Mid - Extend							-4,421
rotation length (1000 tCO2e/y)							
Carbon sink potential - Mid - Improve							-45.2
plantations (1000 tCO2e/y)							
Carbon sink potential - Mid - Increase							-2,961
retention of HWP (1000 tCO2e/y)							, -
Carbon sink potential - Mid - Increase							-133
trees outside forests (1000 tC02e/y)							
Carbon sink potential - Mid - Reforest							0
cropland (1000 tCO2e/y)							·
Carbon sink potential - Mid - Reforest							-1,675
pasture (1000 tC02e/y)							1,010
Carbon sink potential - Mid - Restore							-1,839
productivity (1000 tCO2e/y)							1,007
Land impacted for carbon sink potential -							17.6
High - Accelerate regeneration (1000							11.0
hectares)							
-							98.1
Land impacted for carbon sink potential -							98.I
High - Avoid deforestation (over 30 years)							

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

Thomas Th			-	2035	0070	00/5	0050
Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							3,258
High - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							22.3
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 -							18.7
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
High - Reforest cropland (1000 hectares)							Ū
Land impacted for carbon sink potential -							88.5
·							00.5
High - Reforest pasture (1000 hectares)							040
Land impacted for carbon sink potential -							912
High - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							4,415
High - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							8.8
Low - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							92.1
Low - Avoid deforestation (over 30 years)							72.1
(1000 hectares)							
							1 0 / 0
Land impacted for carbon sink potential -							1,248
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							11.2
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 -							9.87
Low - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							U
							15.0
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							13.2
Mid - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							95.1
							95.1
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							16.8
Mid - Improve plantations (1000 hectares)							
		I					

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
Mid - Increase retention of HWP (1000							
hectares)							
Land impacted for carbon sink potential -							14.3
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,614
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 -		442	0.447	0.442	0.404	0.296	0.027
Coal (million 2019\$)							
Monetary damages from air pollution -		56.7	32.5	16.8	10.2	4.97	1.57
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		359	343	317	271	205	134
Transportation (million 2019\$)							
Premature deaths from air pollution -		49.9	0.05	0.05	0.046	0.033	0.003
Coal (deaths)							
Premature deaths from air pollution -		6.4	3.67	1.9	1.15	0.561	0.178
Natural Gas (deaths)							
Premature deaths from air pollution -		40.4	38.6	35.7	30.5	23.1	15.1
Transportation (deaths)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Commercial HVAC investment in 2020s -		5,743	5,973				
Cumulative 5-yr (million \$2018)							
Sales of cooking units - Electric	32	34.3	34.3	34.3	34.4	34.3	34.3
Resistance (%)							
Sales of cooking units - Gas (%)	68	65.7	65.7	65.7	65.6	65.7	65.7
Sales of space heating units - Electric	3.31	21.2	47.1	68.4	72	72.3	72.3
Heat Pump (%)							
Sales of space heating units - Electric	3.22	8.68	12.7	19.9	24.9	25.7	25.8
Resistance (%)							
Sales of space heating units - Fossil (%)	4.12	4.58	3.35	1.41	0.205	0.017	0
Sales of space heating units - Gas Furnace	89.4	65.6	36.9	10.2	2.94	1.96	1.9
(%)							
Sales of water heating units - Electric	0.114	0.273	0.269	0.271	0.272	0.271	0.272
Heat Pump (%)							
Sales of water heating units - Electric	2.92	6.72	6.66	6.66	6.69	6.67	6.68
Resistance (%)							
Sales of water heating units - Gas Furnace	94.5	88.7	88.7	88.7	88.7	88.7	88.7
(%)							
Sales of water heating units - Other (%)	2.43	4.27	4.39	4.32	4.36	4.39	4.37

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

Item	2020	2025	2030	2035	2040	2045	2050
Electricity distribution capital invested -		0.92	0.94	1.05	1.08	1.2	1.24
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)	48.6	49.4	49.9	50.1	50.6	52.1	55
Final energy use - Industry (PJ)	186	200	210	215	221	226	233
Final energy use - Residential (PJ)	38.4	36.3	35.7	35.7	36	36.8	37.6
Final energy use - Transportation (PJ)	151	143	130	122	122	126	130

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

Item	2020	2025	2030	2035	2040	2045	2050
Residential HVAC investment in 2020s vs.		0.676	0.631				
REF - Cumulative 5-yr (billion \$2018)							
Sales of cooking units - Electric	62.1	62.1	62.1	62.1	62.1	62.1	62.1
Resistance (%)							
Sales of cooking units - Gas (%)	37.9	37.9	37.9	37.9	37.9	37.9	37.9
Sales of space heating units - Electric	19.1	38.2	38.9	39.9	40.6	41.6	42.9
Heat Pump (%)							
Sales of space heating units - Electric	18.7	19	18.9	18.2	17.3	16.5	15
Resistance (%)							
Sales of space heating units - Fossil (%)	11	14.2	11.6	10.1	9.89	9.86	9.99
Sales of space heating units - Gas (%)	51.1	28.6	30.6	31.9	32.2	32.1	32
Sales of water heating units - Electric	0	0	0	0	0	0	0
Heat Pump (%)							
Sales of water heating units - Electric	45	61.3	61.3	61	60.7	60.7	60.4
Resistance (%)							
Sales of water heating units - Gas Furnace	52.2	36.6	36.6	36.8	37.1	37.2	37.3
(%)							
Sales of water heating units - Other (%)	2.8	2.1	2.11	2.14	2.17	2.19	2.21

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 (%)	1.79	2.17	2.23	2.07	1.87	1.75	1.66
Vehicle sales - Light-duty - EV (%)	2.78	4.6	5.28	6.43	7.88	9.28	10.4
Vehicle sales - Light-duty - gasoline (%)	91.5	88.2	86.4	84.9	83	81	79.4
Vehicle sales - Light-duty - hybrid (%)	3.67	4.56	5.61	6.19	6.81	7.49	8.11
Vehicle sales - Light-duty - hydrogen FC (%)	0.112	0.385	0.36	0.323	0.323	0.325	0.336
Vehicle sales - Light-duty - other (%)	0.113	0.116	0.114	0.114	0.114	0.114	0.117
Vehicle sales - Medium-duty - diesel (%)	65.2	63.5	61.6	59.6	58	56.5	55.2
Vehicle sales - Medium-duty - EV (%)	0.027	0.105	0.329	0.671	0.895	0.973	0.993
Vehicle sales - Medium-duty - gasoline (%)	34	35.5	37	38.5	39.7	40.8	41.7
Vehicle sales - Medium-duty - hybrid (%)	0.365	0.427	0.496	0.577	0.674	0.793	0.929
Vehicle sales - Medium-duty - hydrogen FC (%)	0.175	0.208	0.242	0.285	0.339	0.409	0.487
Vehicle sales - Medium-duty - other (%)	0.255	0.271	0.298	0.345	0.42	0.528	0.671

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

Carbon sink potential High - Accelerate regeneration (1000 t002e/v) Carbon sink potential High - All (not counting overlap) (1000 t002e/v) Carbon sink potential - High - All (not counting overlap) (1000 t002e/v) Carbon sink potential - High - Avoid deforestation (1000 t002e/v) Carbon sink potential - High - Extend rotation length (1000 t002e/v) Carbon sink potential - High - Improve plantations (1000 t002e/v) Carbon sink potential - High - Improve plantations (1000 t002e/v) Carbon sink potential - High - Increase retention of HwY (1000 t002e/v) Carbon sink potential - High - Increase retention of HwY (1000 t002e/v) Carbon sink potential - High - Increase retending to the reset of the sink potential - High - Reforest creptan (1000 t002e/v) Carbon sink potential - High - Reforest recopland (1000 t002e/v) Carbon sink potential - High - Reforest pasture (1000 t002e/v) Carbon sink potential - High - Reforest pasture (1000 t002e/v) Carbon sink potential - High - Restore productivity (1000 t002e/v) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/v) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/v) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/v) Carbon sink potential - Low - Audit (1000 t002e/v) Carbon sink potential - Low - Audit (1000 t002e/v) Carbon sink potential - Low - Audit (1000 t002e/v) Carbon sink potential - Low - February (1000 t002e/v) Carbon sink potential - Low - Improve plantations (1000 t002e/v) Carbon sink potential - Low - Improve plantations (1000 t002e/v) Carbon sink potential - Low - Reforest recension sink potential - Hid - Reforest recension sink potential - Hid - Ref	The second of th			0000	0005	00/0	00/5	0050
regeneration (1000 t002e/y) Carbon sink potential - High - All (not counting overlap) (1000 t002e/y) Carbon sink potential - High - Asoid deforestation (1000 t002e/y) Carbon sink potential - High - Asoid deforestation (1000 t002e/y) Carbon sink potential - High - Extend rotation length (1000 t002e/y) Carbon sink potential - High - Improve plantations (1000 t002e/y) Carbon sink potential - High - Improve plantations (1000 t002e/y) Carbon sink potential - High - Increase retention of HWP (1000 t002e/y) Carbon sink potential - High - Increase trees outside forests (1000 t002e/y) Carbon sink potential - High - Reforest corpolata (1000 t002e/y) Carbon sink potential - High - Reforest corpolata (1000 t002e/y) Carbon sink potential - High - Reforest pasture (1000 t002e/y) Carbon sink potential - Hogh - Reforest pasture (1000 t002e/y) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/y) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/y) Carbon sink potential - Low - Accelerate regeneration (1000 t002e/y) Carbon sink potential - Low - All (not counting overlap) (1000 t002e/y) Carbon sink potential - Low - Avoid deforestation (1000 t002e/y) Carbon sink potential - Low - Avoid deforestation (1000 t002e/y) Carbon sink potential - Low - Improve plantations (1000 t002e/y) Carbon sink potential - Low - Improve plantations (1000 t002e/y) Carbon sink potential - Low - Improve plantations (1000 t002e/y) Carbon sink potential - Low - Improve plantations (1000 t002e/y) Carbon sink potential - Low - Increase retention of HWP (1000 t002e/y) Carbon sink potential - Low - Reforest pasture (1000 t002e/y) Carbon sink potential - Low - Reforest pasture (1000 t002e/y) Carbon sink potential - Low - Reforest pasture (1000 t002e/y) Carbon sink potential - Hid - Accelerate regeneration (1000 t002e/y) Carbon sink potential - Hid - Accelerate regeneration (1000 t002e/y) Carbon sink potential - Hid - Febrest podential - Hid - Low - Reforest pasture (1000 t002e/y) Carbon sink potential - Hid - Febrest podential -	Item	2020	2025	2030	2035	2040	2045	2050
Carbon sink potential +ligh - All (not counting overlap) [1000 t0026/y] Carbon sink potential - ligh - Avoid deforestation (1000 t0026/y) Carbon sink potential - ligh - Extend cross sink potential - ligh - Improve plantations (1000 t0026/y) Carbon sink potential - ligh - Improve plantations (1000 t0026/y) Carbon sink potential - ligh - Improve plantations (1000 t0026/y) Carbon sink potential - ligh - Increase retention of HWP (1000 t0026/y) Carbon sink potential - ligh - Increase retention of HWP (1000 t0026/y) Carbon sink potential - ligh - Reforest cross and sink potential - ligh - Reforest cross and sink potential - ligh - Reforest productively (1000 t0026/y) Carbon sink potential - ligh - Restore productivity (1000 t0026/y) Carbon sink potential - ligh - Restore productivity (1000 t0026/y) Carbon sink potential - Low - Accelerate respense retend (1000 t0026/y) Carbon sink potential - Low - Accelerate respense retend (1000 t0026/y) Carbon sink potential - Low - Accelerate respense retend (1000 t0026/y) Carbon sink potential - Low - All (not Coarbon sink potential - Low - Nord deforestation (1000 t0026/y) Carbon sink potential - Low - Restore respense retention (1000 t0026/y) Carbon sink potential - Low - Restore respense retention of HWP (1000 t0026/y) Carbon sink potential - Low - Restore retending overlap (1000 t0026/y) Carbon sink potential - Low - Reforest respense retending overlap (1000 t0026/y) Carbon sink potential - Low - Reforest respense retending overlap (1000 t0026/y) Carbon sink potential - Low - Reforest respense retending overlap (1000 t0026/y) Carbon sink potential - Index - Reforest respense retending overlap (1000 t0026/y) Carbon sink potential - Index - Reforest respense retendin								-108
Carbon sink potential - High - Event	• , , ,							
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Carbon sink potential - High - Extend rotation length (1000 tCD2e/y) Carbon sink potential - High - Improve plantations (1000 tCD2e/y) Carbon sink potential - High - Improve plantations (1000 tCD2e/y) Carbon sink potential - High - Increase retertion of HWP (1000 tCD2e/y) Carbon sink potential - High - Increase trees outside forests (1000 tCD2e/y) Carbon sink potential - High - Reforest corporate trees outside forests (1000 tCD2e/y) Carbon sink potential - High - Reforest corporate trees outside forests (1000 tCD2e/y) Carbon sink potential - High - Reforest responsibility (1000 tCD2e/y) Carbon sink potential - High - Restore productivity (1000 tCD2e/y) Carbon sink potential - Low - Accelerate regeneration (1000 tCD2e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tCD2e/y) Carbon sink potential - Low - All (not counting overlap) (1000 tCD2e/y) Carbon sink potential - Low - Extend rotation length (1000 tCD2e/y) Carbon sink potential - Low - Extend rotation length (1000 tCD2e/y) Carbon sink potential - Low - Improve plantations (1000 tCD2e/y) Carbon sink potential - Low - Improve plantations (1000 tCD2e/y) Carbon sink potential - Low - Improve plantations (1000 tCD2e/y) Carbon sink potential - Low - Improve plantations (1000 tCD2e/y) Carbon sink potential - Low - Improve plantations (1000 tCD2e/y) Carbon sink potential - Low - Reforest repolated (1000 tCD2e/y) Carbon sink potential - Low - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Low - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Low - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Mid - All (not counting overlap) (1000 tCD2e/y) Carbon sink potential - Mid - All (not counting overlap) (1000 tCD2e/y) Carbon sink potential - Mid - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Mid - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Mid - Reforest repolation (1000 tCD2e/y) Carbon sink potential - Mid - Reforest repolation (1000	deforestation (1000 tC02e/y)							
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Carbon sink potential - High - Reforest -3,11 pasture (1000 tC02e/y) -2,75 Carbon sink potential - High - Restore -2,75 productivity (1000 tC02e/y) -2,75 Carbon sink potential - Low - Accelerate -3,31 respensation (1000 tC02e/y) -3,33 Carbon sink potential - Low - All (not -5,37 counting overlap) (1000 tC02e/y) -3,30 Carbon sink potential - Low - All (not -5,37 counting overlap) (1000 tC02e/y) -2,45 Carbon sink potential - Low - All (not -2,45 rotation length (1000 tC02e/y) -2,45 Carbon sink potential - Low - Estend -2,45 rotation length (1000 tC02e/y) -3,30 carbon sink potential - Low - Improve -3,30 palnations (1000 tC02e/y) -3,30 carbon sink potential - Low - Improve -4,48 retention of HWP (1000 tC02e/y) -4,99 Carbon sink potential - Low - Increase -6,99 trees outside forests (1000 tC02e/y) -6,99 Carbon sink potential - Low - Reforest -6,99 carbon sink potential - Low - Reforest -2,23 pasture (1000 tC02e/y) -3,20 Carbon sink potential - Low - Restore -9,20 productivity (1000 tC02e/y) -3,20 Carbon sink potential - Low - Restore -9,20 productivity (1000 tC02e/y) -3,20 Carbon sink potential - Low - Restore -9,20 carbon sink potential - Mid - All carbon sink potential - Mid - Restore -9,20 carbon sink potential - Mid - Restore -1,67 carbon sink potential - Mid - Restore -1,67 carbon sink								
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Carbon sink potential - Low - Alf (not counting overlap) (1000 tCO2e/y) -1/2 -1/	•							-55.9
Carbon sink potential - Low - Avoid deforestation (1000 tC02e/v) Carbon sink potential - Low - Extend -2,45 Totation length (1000 tC02e/v) Carbon sink potential - Low - Improve plantations (1000 tC02e/v) -30. Carbon sink potential - Low - Improve plantations (1000 tC02e/v) -30.								
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 -69 trees outside forests (1000 tCO2e/y) Carbon sink potential - Low - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Low - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Low - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Low - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Low - Reforest rorpland (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 (Inot counting overlap) (1000 tCO2e/y) Carbon sink potential - Mid - All (Inot 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 - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest rorpland (1000 tCO2e/y)	•							-5,372
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Carbon sink potential - Low - Extend rotation length (1000 tCO2e/y)								-121
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 soutside 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 - Restore 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 - 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 - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y)	deforestation (1000 tCO2e/y)							
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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 - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y)	pasture (1000 tCO2e/y)							
Description 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) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase -13 trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest -1,67 carbon sink potential - Mid - Restore -1,83								-927
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 - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest ropland (1000 tC02e/y)	•							
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 - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest -1,67 pasture (1000 tCO2e/y) Carbon sink potential - Mid - Restore -1,83								-80.7
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 - Mid - Increase resolution of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest - 1,67 pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore - 1,83								-00.1
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 - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83							\longrightarrow	11 577
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 - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Mid - Restore -1,67								-11,577
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 - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,67	. , ,							
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 - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,67	•							-422
rotation length (1000 tCO2e/y) Carbon sink potential - Mid - Improve plantations (1000 tCO2e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Mid - Restore -1,83	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 - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,67								-4,421
Carbon sink potential - Mid - Improve plantations (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,67	rotation length (1000 tCO2e/y)							
plantations (1000 tC02e/y) Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83	Carbon sink potential - Mid - Improve							-45.2
Carbon sink potential - Mid - Increase retention of HWP (1000 tC02e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,67								
retention of HWP (1000 tCO2e/y) Carbon sink potential - Mid - Increase trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Mid - Restore -1,83							+	-2,961
Carbon sink potential - Mid - Increase trees outside forests (1000 tC02e/y) Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore								-2,701
trees outside forests (1000 tCO2e/y) Carbon sink potential - Mid - Reforest cropland (1000 tCO2e/y) Carbon sink potential - Mid - Reforest pasture (1000 tCO2e/y) Carbon sink potential - Mid - Restore -1,83							\longrightarrow	100
Carbon sink potential - Mid - Reforest cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83								-133
cropland (1000 tC02e/y) Carbon sink potential - Mid - Reforest -1,67 pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83								
Carbon sink potential - Mid - Reforest -1,67 pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83	•							0
pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83								
pasture (1000 tC02e/y) Carbon sink potential - Mid - Restore -1,83	Carbon sink potential - Mid - Reforest							-1,675
Carbon sink potential - Mid - Restore -1,83	· ·							•
								-1,839
p. 64451(1666-16620/1)								1,507
	p. Gadetivity (1000 t0026/y)							

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

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							17.6
High - Accelerate regeneration (1000							
hectares)							
Land impacted for carbon sink potential -							98.1
High - Avoid deforestation (over 30 years)							
(1000 hectares) Land impacted for carbon sink potential -							3,258
High - Extend rotation length (1000							3,230
hectares)							
Land impacted for carbon sink potential -							22.3
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 -							18.7
High - Increase trees outside forests							
(1000 hectares)							
Land impacted for carbon sink potential -							0
High - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							88.5
High - Reforest pasture (1000 hectares)							010
Land impacted for carbon sink potential -							912
High - Restore productivity (1000 hectares)							
Land impacted for carbon sink potential -							4,415
High - Total impacted (over 30 years)							4,410
(1000 hectares)							
Land impacted for carbon sink potential -		+					8.8
Low - Accelerate regeneration (1000							0.0
hectares)							
Land impacted for carbon sink potential -							92.1
Low - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							1,248
Low - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							11.2
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 -		+					9.87
Low - Increase trees outside forests							7.01
(1000 hectares)							
Land impacted for carbon sink potential -							0
Low - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							15.3
Low - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							552
Low - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							1,937
Low - Total impacted (over 30 years)							
(1000 hectares)							10.0
Land impacted for carbon sink potential - Mid - Accelerate regeneration (1000							13.2
MIN - ACCERTALE FEUELIEFALIUM HUUU							

<u>Table 64: REF scenario - PILLAR 6: Land sinks - Forests (continued)</u>

Item	2020	2025	2030	2035	2040	2045	2050
Land impacted for carbon sink potential -							95.1
Mid - Avoid deforestation (over 30 years)							
(1000 hectares)							
Land impacted for carbon sink potential -							2,253
Mid - Extend rotation length (1000							
hectares)							
Land impacted for carbon sink potential -							16.8
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 -							14.3
Mid - Increase trees outside forests (1000							
hectares)							
Land impacted for carbon sink potential -							0
Mid - Reforest cropland (1000 hectares)							
Land impacted for carbon sink potential -							111
Mid - Reforest pasture (1000 hectares)							
Land impacted for carbon sink potential -							1,111
Mid - Restore productivity (1000							
hectares)							
Land impacted for carbon sink potential -							3,614
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	-5.21		-10.5				-9.4
uptake (Mt CO2e/y)							
Business-as-usual carbon sink - Retained	-1.21		-2.17				-2.26
in Hardwood Products (Mt CO2e/y)							
Business-as-usual carbon sink - Total (Mt	-6.42		-12.7				-11.7
CO2e/y)							

Table 66: REF scenario - IMPACTS - Health

Item	2020	2025	2030	2035	2040	2045	2050
Monetary damages from air pollution -		1,199	729	661	629	609	564
Coal (million 2019\$)							
Monetary damages from air pollution -		47.2	55.2	60.9	58.5	60.2	53.9
Natural Gas (million 2019\$)							
Monetary damages from air pollution -		359	348	338	329	321	313
Transportation (million 2019\$)							
Premature deaths from air pollution -		135	82.3	74.7	71	68.8	63.8
Coal (deaths)							
Premature deaths from air pollution -		5.33	6.23	6.87	6.6	6.8	6.09
Natural Gas (deaths)							
Premature deaths from air pollution -		40.4	39.1	38	37	36.1	35.2
Transportation (deaths)							