



4TH INTERNATIONAL FORUM ON LONG-TERM SCENARIOS FOR THE CLEAN ENERGY TRANSITION



Consejo
Nacional
de Energía



GOBIERNO DE
EL SALVADOR

EL SALVADOR

Population: 6,325,827

Territorial extension: 21,040 Km²

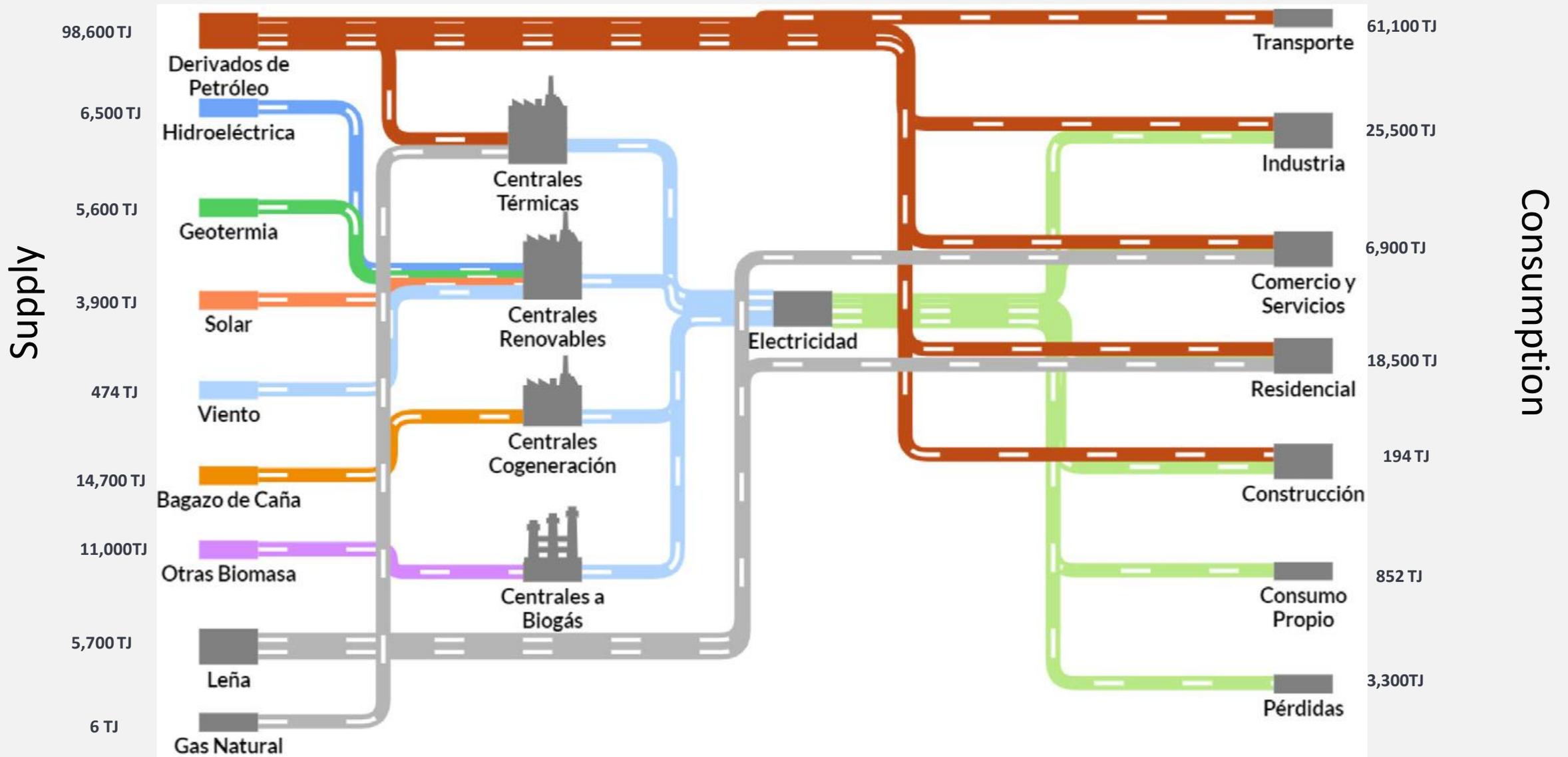
GDP: 28,736.94 billion dollars.

Electrification: 97.9%

Currency: Dollars



ENERGY BALANCE



Sankey diagram: Distribution of primary energy for uses in the different sectors of activity.

LONG-TERM VISION

"Affordable, reliable and clean energy for the future"



Modern supply and consumption



Universal and equitable access to energy



Innovation and investment attraction



Safe, reliable and quality supply



Net zero emissions

METHODOLOGY



An uncertainty factor: is a variable, economic, social, environmental, regulatory, political, hypothesis whose evolution in the future has a relevant degree of uncertainty and impact on energy planning, and will be modified in each scenario. Examples: creation of an industrial pole, construction of the Pacific train, increase in renewable generation, electric mobility, etc.

Input scenario: the evolution narrative of each uncertainty factor is defined.

Stage 1

Stage 1: Identifying uncertainty factors

- 1 growth of the economy
- 2 adoption of energy efficiency measures
- 3 reduction of firewood consumption
- 4 increased use of renewable energies
- 5 nodal energy exchange prices with other countries
- 6 electricity prices
- 7 increase in distributed generation
- 8 new, more efficient technologies
- 9 universal energy access
- 10 electrification of demand
- 11 electrification of industry
- 12 use of electric vehicles
- 13 sustainable mass mobility alternatives
- 14 entry of biofuels into the energy matrix
- 15 introduction of hydrogen
- 16 introduction of natural gas in industry
- 17 prices of natural gas imports
- 18 reduction of dependence on oil derivatives
- 19 fuel import prices
- 20 new demand centers
- 21 biofuel import prices

Stage 2

Stage 1: Identifying uncertainty factors

Importance

	Stage 1: Identifying uncertainty factors	Importance
1	growth of the economy	5
2	adoption of energy efficiency measures	5
3	electricity prices	5
4	increased use of renewable energies	4
5	nodal energy exchange prices with other countries	4
6	increase in distributed generation	4
7	new, more efficient technologies	4
8	universal energy access	4
9	electrification of demand	4
10	use of electric vehicles	4
11	sustainable mass mobility alternatives	4
12	introduction of natural gas in industry	4
13	prices of natural gas imports	4
14	reduction of dependence on oil derivatives	4
15	fuel import prices	4
16	new demand centers	4
17	reduction of firewood consumption	3
18	electrification of industry	3
19	introduction of hydrogen	3
20	biofuel import prices	3
21	entry of biofuels into the energy matrix	2

Stage 3: Definition of uncertainty factors - clustering - prioritization

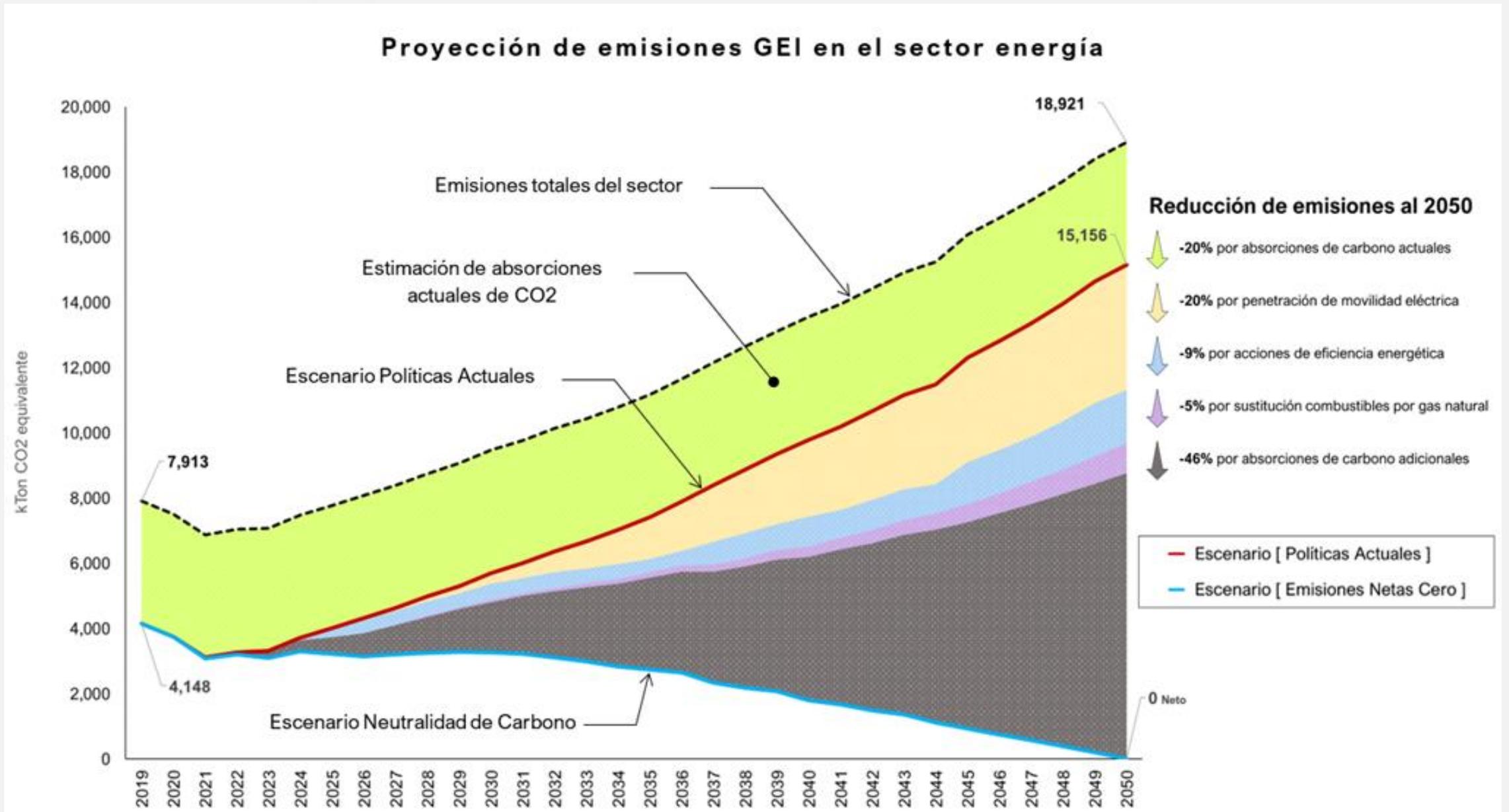
Sorted & Prioritized		
1	growth of the economy	5
2	adoption of energy efficiency measures	5
3	electricity prices	5
4	increased use of renewable energies	4
5	nodal energy exchange prices with other countries	4
6	increase in distributed generation	4
7	new, more efficient technologies	4
8	universal energy access	4
9	electrification of demand	4
10	use of electric vehicles	4
11	sustainable mass mobility alternatives	4
12	introduction of natural gas in industry	4
13	prices of natural gas imports	4
14	reduction of dependence on oil derivatives	4
15	fuel import prices	4
16	new demand centers	4
17	reduction of firewood consumption	3
18	electrification of industry	3
19	introduction of hydrogen	3
20	biofuel import prices	3
21	entry of biofuels into the energy matrix	2

Grouped	
1 Economic growth	growth of the economy
2 Efficiency measures in the sector	adoption of energy efficiency measures new, more efficient technologies new demand centers electricity prices
3 Renewable energy penetration	increased use of renewable energies increase in distributed generation
4 Electrification of demand	
5 sustainable mobility actions	sustainable mass mobility alternatives use of electric vehicles
6 introduction of natural gas in the consumption sectors	introduction of natural gas in industry prices of natural gas imports
7 energy exchanges with other countries	nodal energy exchange prices with other countries
8 Impacts of fuels	fuel import prices reduction of dependence on oil derivatives
9 universal energy access	
10 Use of alternative fuels	introduction of hydrogen biofuel import prices

ENERGY SCENARIOS STAGE 4

Uncertainty factors	Energy Policy Scenarios			
	BAU	energy modernization	energy transition	energy decarbonization
Economic growth	normal	medium	medium	high
Efficiency measures in the sector	normal	medium	high	high+
Renewable energy penetration	normal	normal	high	high+
Electrification of demand	low	low	medium	high
sustainable mobility actions	low	medium	high	high
introduction of natural gas in the consumption sectors	no	normal	medium	medium
energy exchanges with other countries	normal	medium	high	high+
Impacts of fuels	high	high	medium	low
universal energy access	normal	normal	medium	high
Use of alternative fuels	low	low	medium	high

Carbon neutrality by 2050



Current Accounts

- REF: reference
- CP1: current policies (A)
- CP3: current policies isolated (A)
- CP2: current policies mining (A)
- C1: cp_res lighting
- C2: cp_res cooling
- C3: cp_res refrigerators
- C4: cp_res cooking
- C5: cp_res general use
- C6: cp_com lighting
- C7: cp_com cooling
- C8: cp_com motors
- C9: cp_com heat
- C10: cp_com general use
- C11: cp_ind lighting
- C12: cp_ind cooling
- C13: cp_ind motors
- C14: cp_ind heat
- C15: cp_ind general use
- C16: cp_gov_public lighting
- C17: cp_gov anda
- C18: cp_gov cooling
- C19: cp_const general
- C20: cp_misc water pumping
- C21: cp_misc hydrogen exports
- C22: cp_misc bitcoin mining
- C23: cp_transp road
- C24: cp_transp air
- C25: cp_transp electric train
- C100: cp_pwr base
- C101: cp_pwr mining

- C102: cp_pwr isolated
- MO1: modernization base (A)
- MO2: modernization mining (A)
- MO3: modernization isolated (A)
- MO4: modernization base plus E (A)
- MO5: modernization plus EB (A)
- MO6: modernization plus EN (A)
- MO7: modernization plus EBN (A)
- MO8: modernization plus B (A)
- MO9: modernization plus BN (A)
- MO10: modernization plus N (A)
- M1: mo_res_efficient lighting
- M2: mo_res_efficient cooling
- M3: mo_res_efficient refrigerators
- M4: mo_res_efficient cooking
- M6: mo_res_general use
- M7: mo_com_lighting
- M8: mo_com_efficient cooling
- M9: mo_com_motors
- M10: mo_com_replace natural gas
- M11: mo_com_efficient refrigerators
- M12: mo_ind_lighting
- M13: mo_ind_cooling
- M14: mo_ind_motors
- M15: mo_ind_efficient motors
- M16: mo_ind_replace natural gas
- M17: mo_ind_general use
- M18: mo_gov_efficient public lighting
- M19: mo_gov_anda
- M20: mo_gov_efficient cooling
- M21: mo_const_general
- M22: mo_misc_water pumping

Results will be calculated for checked scenarios
Uncheck to reduce calculation time

- M23: mo_misc_hydrogen exports
- M24: mo_misc_bitcoin mining demand
- M25: mo_transp_electric vehicles
- M26: mo_transp_hydrogen vehicles
- M27: mo_transp_ethanol
- M28: mo_transp_biodiesel
- M29: mo_transp_natural gas
- M30: mo_transp_electric train
- M31: mo_transp_air
- M100: mo_pwr base
- M101: mo_pwr mining
- M102: mo_pwr isolated
- TR1: transition base (A)
- TR2: transition mining (A)
- TR3: transition isolated (A)
- TR4: transition base plus E (A)
- TR5: transition base plus EB (A)
- TR6: transition base plus EN (A)
- TR7: transition base plus EBN (A)
- TR8: transition base plus B (A)
- TR9: transition base plus BN (A)
- TR10: transition base plus N (A)
- T1: tr_res_efficient lighting
- T2: tr_res_efficient cooling
- T3: tr_res_efficient refrigerators
- T4: tr_res_efficient cooking
- T6: tr_res_general use
- T7: tr_com_lighting
- T8: tr_com_efficient cooling
- T9: tr_com_motors
- T10: tr_com_replace natural gas
- T11: tr_com_efficient refrigerators

Results will be calculated for checked scenarios
Uncheck to reduce calculation time

- T11: tr_com_efficient refrigerators
- T12: tr_ind_lighting
- T13: tr_ind_cooling
- T14: tr_ind_motors
- T15: tr_ind_efficient motors
- T16: tr_ind_replace natural gas
- T17: tr_ind_general use
- T18: tr_gov_efficient public lighting
- T19: tr_gov_anda
- T20: tr_gov_efficient cooling
- T21: tr_const_general
- T22: tr_misc_water pumping
- T23: tr_misc_hydrogen exports
- T24: tr_misc_bitcoin mining demand
- T25: tr_transp_electric vehicles
- T26: tr_transp_hydrogen vehicles
- T27: tr_transp_ethanol
- T28: tr_transp_biodiesel
- T29: tr_transp_natural gas
- T30: tr_transp_electric train
- T31: tr_transp_air
- T100: tr_pwr base
- T101: tr_pwr mining
- T102: tr_pwr isolated
- ZA1: net zero A base (A)
- ZA2: net zero A ccs (A)
- ZA3: net zero A mining (A)
- ZA4: net zero A mining ccs (A)
- ZA5: net zero A isolated (A)
- ZA6: net zero A isolated ccs (A)
- ZB1: net zero B base (A)
- ZB2: net zero B ccs (A)

Results will be calculated for checked scenarios
Uncheck to reduce calculation time

- Z26: nz_transp_hydrogen vehicles
- Z27: nz_transp_ethanol
- Z28: nz_transp_biodiesel
- Z29: nz_transp_natural gas
- Z30: nz_transp_electric train
- Z31: nz_transp_air
- Z40: nz_pwr_za base
- Z41: nz_pwr_za ccs
- Z42: nz_pwr_za mining
- Z43: nz_pwr_za mining ccs
- Z44: nz_pwr_za isolated
- Z45: nz_pwr_za isolated ccs
- Z46: nz_pwr_zb base
- Z47: nz_pwr_zb ccs
- Z48: nz_pwr_zb mining
- Z49: nz_pwr_zb mining ccs
- Z50: nz_pwr_zb isolated
- Z51: nz_pwr_zb isolated ccs
- Z52: nz_pwr_zc base
- Z53: nz_pwr_zc ccs
- Z54: nz_pwr_zc minig
- Z55: nz_pwr_zc mining ccs
- Z56: nz_pwr_zc isolated
- Z57: nz_pwr_zc isolated ccs
- F1: forestry 15 percent
- F2: forestry 25 percent
- F3: forestry 50 percent
- F4: forestry 100 percent
- F5: forestry 200 percent
- F6: forestry 250 percent
- F7: forestry 300 percent
- F8: forestry target nzb ccs

Results will be calculated for checked scenarios
Uncheck to reduce calculation time



National
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Council



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