

Supplementary material for “A Review of National Climate Policies via Existing Databases”

Supplementary Online material

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Chapter 1

Climate Policy Data Base (CPDB)

Table S1.1: CPDB, Sectors. First level of disaggregation.

Sector	
1	Agriculture and forestry
2	Buildings
3	Electricity and heat
4	General
5	Industry
6	Transport

Table S1.2: CPDB, Types.

Type	
1	Energy efficiency
2	Energy service demand reduction and resource efficiency
3	Non-energy use
4	Other low-carbon technologies and fuel switch
5	Renewables
6	Unknown

Table S1.3: CPDB, Instruments.

Category		Subcategory	Instrument
1	Economic instruments	Direct investment	Funds to sub-national governments
2	Economic instruments	Direct investment	Infrastructure investments
3	Economic instruments	Direct investment	Procurement rules
4	Economic instruments	Direct investment	RD&D funding
5	Economic instruments	Fiscal or financial incentives	CO2 taxes
6	Economic instruments	Fiscal or financial incentives	Energy and other taxes
7	Economic instruments	Fiscal or financial incentives	Feed-in tariffs or premiums
8	Economic instruments	Fiscal or financial incentives	Grants and subsidies
9	Economic instruments	Fiscal or financial incentives	Loans
10	Economic instruments	Fiscal or financial incentives	Net metering
11	Economic instruments	Fiscal or financial incentives	Tax relief
12	Economic instruments	Fiscal or financial incentives	User charges
13	Economic instruments	Fiscal or financial incentives	Tendering schemes
14	Economic instruments	Fiscal or financial incentives	Retirement premium
15	Economic instruments	Fiscal or financial incentives	User charges
16	Economic instruments	Market-based instruments	GHG emissions allowances
17	Economic instruments	Market-based instruments	GHG emission reduction crediting and offsetting mechanism
18	Economic instruments	Market-based instruments	Green certificates
19	Economic instruments	Market-based instruments	White certificates
20	Regulatory Instruments	Codes and standards	Building codes and standards
21	Regulatory Instruments	Codes and standards	Industrial air pollution standards
22	Regulatory Instruments	Codes and standards	Product standards
23	Regulatory Instruments	Codes and standards	Sectoral standards
24	Regulatory Instruments	Codes and standards	Vehicle air pollution standards
25	Regulatory Instruments	Codes and standards	Vehicle fuel-economy and emissions standards
26	Regulatory Instruments	Codes and standards	Auditing
27	Regulatory Instruments	Codes and standards	Monitoring
28	Regulatory Instruments	Codes and standards	Obligation schemes

29	Regulatory Instruments	Codes and standards	Other mandatory requirements
30	Information and education	Performance label	Comparison label
31	Information and education	Performance label	Endorsement label
32	Information and education	Performance label	Advice or aid in implementation
33	Information and education	Performance label	Information provision
34	Information and education	Performance label	Professional training and qualification
35	Policy support	NA	Institutional creation
36	Policy support	NA	Strategic planning
37	Research & Development and Deployment (RD&D)	Research programme	Technology deployment and diffusion
38	Research & Development and Deployment (RD&D)	Research programme	Technology development
39	Research & Development and Deployment (RD&D)	Research programme	Demonstration project
40	Voluntary approaches	NA	Negotiated agreements (public-private sector)
41	Voluntary approaches	NA	Public voluntary schemes
42	Voluntary approaches	NA	Unilateral commitments (private sector)
43	Barrier removal	NA	Removal of fossil fuel subsidies
44	Barrier removal	NA	Removal of split incentives
45	Barrier removal	NA	Grid access and priority for renewables
46	Climate strategy	NA	Formal & legally binding climate strategy
47	Climate strategy	NA	Political & non-binding climate strategy
48	Climate strategy	NA	Coordinating body for climate strategy
49	Target	Energy efficiency target	Formal & legally binding energy efficiency target
50	Target	Energy efficiency target	Political & non-binding energy efficiency target
51	Target	GHG reduction target	Formal & legally binding GHG reduction target
52	Target	GHG reduction target	Political & non-binding GHG reduction target
53	Target	Renewable energy target	Formal & legally binding renewable energy target
54	Target	Renewable energy target	Political & non-binding renewable energy target

Table S1.4: CPDB, Countries.

	Country
1	Afghanistan
2	Albania
3	Algeria
4	Andorra
5	Angola
6	Antigua & Barbuda
7	Argentina
8	Armenia
9	Australia
10	Austria
11	Azerbaijan
12	Bahamas
13	Bahrain
14	Bangladesh
15	Barbados
16	Belarus
17	Belgium
18	Belize
19	Benin
20	Bhutan
21	Bolivia
22	Bosnia & Herzegovina
23	Botswana
24	Brazil
25	Brunei
26	Bulgaria
27	Burkina Faso
28	Burundi
29	Cambodia
30	Cameroon
31	Canada
32	Cape Verde
33	Central African Republic
34	Chad
35	Chile
36	China

37	Colombia
38	Comoros
39	Congo - Kinshasa
40	Cook Islands
41	Costa Rica
42	Côte d'Ivoire
43	Croatia
44	Cuba
45	Cyprus
46	Czechia
47	Denmark
48	Djibouti
49	Dominica
50	Dominican Republic
51	Ecuador
52	Egypt
53	El Salvador
54	Equatorial Guinea
55	Eritrea
56	Estonia
57	Eswatini
58	Ethiopia
59	European Union
60	Fiji
61	Finland
62	France
63	French Polynesia
64	Gabon
65	Gambia
66	Georgia
67	Germany
68	Ghana
69	Greece
70	Greenland
71	Grenada
72	Guatemala
73	Guinea
74	Guinea-Bissau
75	Guyana
76	Haiti
77	Honduras
78	Hungary
79	Iceland
80	India
81	Indonesia
82	Iran
83	Iraq
84	Ireland
85	Israel
86	Italy
87	Jamaica
88	Japan
89	Jordan
90	Kazakhstan
91	Kenya
92	Kiribati
93	Kuwait
94	Kyrgyzstan
95	Laos
96	Latvia
97	Lebanon
98	Lesotho
99	Liberia
100	Libya
101	Liechtenstein
102	Lithuania
103	Luxembourg
104	Madagascar
105	Malawi
106	Malaysia
107	Maldives
108	Mali
109	Malta
110	Marshall Islands
111	Mauritania
112	Mauritius
113	Mexico

114	Micronesia (Federated States of)
115	Moldova
116	Monaco
117	Mongolia
118	Montenegro
119	Morocco
120	Mozambique
121	Myanmar (Burma)
122	Namibia
123	Nauru
124	Nepal
125	Netherlands
126	New Zealand
127	Nicaragua
128	Niger
129	Nigeria
130	Niue
131	North Korea
132	North Macedonia
133	Norway
134	Oman
135	Pakistan
136	Palau
137	Palestinian Territories
138	Panama
139	Papua New Guinea
140	Paraguay
141	Peru
142	Philippines
143	Poland
144	Portugal
145	Qatar
146	Romania
147	Russia
148	Rwanda
149	Samoa
150	San Marino
151	São Tomé & Príncipe
152	Saudi Arabia
153	Senegal
154	Serbia
155	Seychelles
156	Sierra Leone
157	Singapore
158	Slovakia
159	Slovenia
160	Solomon Islands
161	Somalia
162	South Africa
163	South Korea
164	South Sudan
165	Spain
166	Sri Lanka
167	St. Kitts & Nevis
168	St. Lucia
169	St. Vincent & Grenadines
170	Sudan
171	Suriname
172	Sweden
173	Switzerland
174	Syria
175	Tajikistan
176	Tanzania
177	Thailand
178	Timor-Leste
179	Togo
180	Tonga
181	Trinidad & Tobago
182	Tunisia
183	Turkey
184	Turkmenistan
185	Tuvalu
186	Uganda
187	Ukraine
188	United Arab Emirates
189	United Kingdom
190	United States

191	Uruguay
192	Uzbekistan
193	Vanuatu
194	Venezuela
195	Vietnam
196	Yemen
197	Zambia
198	Zimbabwe

Chapter 2

Climate Change Laws of the World (CCLW)

Table S2.1: CCLW, Sectors.

	Target
1	Adaptation
2	Agriculture
3	Buildings
4	Coastal zones
5	Cross Cutting Area
6	Disaster Risk Management (Drm)
7	Economy-wide
8	Energy
9	Environment
10	Finance
11	Health
12	Industry
13	LULUCF
14	Other
15	Public Sector
16	Residential and Commercial
17	Rural
18	Social development
19	Tourism
20	Transport
21	Urban
22	Waste
23	Water

Table S2.2: CCLW, Instruments.

	Instrument	Instrument type
1	Nature based solutions and ecosystem restoration	Direct Investment
2	Early warning systems	Direct Investment
3	Green procurement	Direct Investment
4	Provision of climate funds	Direct Investment
5	Other	Direct Investment
6	Subsidies	Economic
7	Tax incentives	Economic
8	Climate finance tools	Economic
9	Carbon pricing & emissions trading	Economic
10	Other	Economic
11	Insurance	Economic
12	Capacity building	Governance
13	Processes, plans and strategies	Governance
14	MRV	Governance
15	Subnational and citizen participation	Governance
16	Institutional mandates	Governance
17	International cooperation	Governance
18	Planning	Governance
19	Other	Governance
20	Education, training and knowledge dissemination	Information
21	Research & Development, knowledge generation	Information
22	Standards, obligations and norms	Regulation
23	Disclosure obligations	Regulation
24	Zoning & Spatial Planning	Regulation

Table S2.3: CCLW, Countries.

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1	Afghanistan
2	Albania
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9	Australia
10	Austria
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17	Belgium
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19	Benin
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23	Botswana
24	Brazil
25	Brunei
26	Bulgaria
27	Burkina Faso
28	Burundi
29	Cambodia
30	Cameroon
31	Canada
32	Cape Verde
33	Central African Republic
34	Chad
35	Chile
36	China
37	Colombia
38	Comoros
39	Congo - Brazzaville
40	Congo - Kinshasa
41	Cook Islands
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44	Croatia
45	Cuba
46	Cyprus
47	Czechia
48	Denmark
49	Djibouti
50	Dominica
51	Dominican Republic
52	Ecuador
53	Egypt
54	El Salvador
55	Equatorial Guinea
56	Eritrea
57	Estonia
58	Eswatini
59	Ethiopia
60	European Union
61	Fiji
62	Finland
63	France
64	Gabon
65	Gambia
66	Georgia
67	Germany
68	Ghana
69	Greece

70	Grenada
71	Guatemala
72	Guinea
73	Guinea-Bissau
74	Guyana
75	Haiti
76	Honduras
77	Hong Kong SAR China
78	Hungary
79	Iceland
80	India
81	Indonesia
82	Iran
83	Iraq
84	Ireland
85	Israel
86	Italy
87	Jamaica
88	Japan
89	Jordan
90	Kazakhstan
91	Kenya
92	Kiribati
93	Kuwait
94	Kyrgyzstan
95	Laos
96	Latvia
97	Lebanon
98	Lesotho
99	Liberia
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101	Liechtenstein
102	Lithuania
103	Luxembourg
104	Madagascar
105	Malawi
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108	Mali
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113	Mexico
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125	Netherlands
126	New Zealand
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128	Niger
129	Nigeria
130	Niue
131	North Korea
132	North Macedonia
133	Norway
134	Oman
135	Pakistan
136	Palau
137	Palestinian Territories
138	Panama
139	Papua New Guinea
140	Paraguay
141	Peru
142	Philippines
143	Poland
144	Portugal
145	Qatar

146	Romania
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154	Serbia
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156	Sierra Leone
157	Singapore
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163	South Korea
164	South Sudan
165	Spain
166	Sri Lanka
167	St. Kitts & Nevis
168	St. Lucia
169	St. Vincent & Grenadines
170	Sudan
171	Suriname
172	Sweden
173	Switzerland
174	Syria
175	Taiwan
176	Tajikistan
177	Tanzania
178	Thailand
179	Timor-Leste
180	Togo
181	Tonga
182	Trinidad & Tobago
183	Tunisia
184	Turkey
185	Turkmenistan
186	Tuvalu
187	Uganda
188	Ukraine
189	United Arab Emirates
190	United Kingdom
191	United States
192	Uruguay
193	Uzbekistan
194	Vanuatu
195	Venezuela
196	Vietnam
197	Yemen
198	Zambia
199	Zimbabwe

Chapter 3

EEA Database on Greenhouse Gas Policies and Measures in Europe (EEA)

Table S3.1: EEA, Sectors.

	Sector
1	Agriculture
2	Energy consumption
3	Energy supply
4	Industrial processes
5	LULUCF
6	No information
7	Other sectors
8	Transport
9	Waste management/waste

Table S3.2: EEA, Greenhouse gases.

	Greenhouse gas
1	Carbon dioxide (CO ₂)
2	Hydrofluorocarbons (HFC)
3	Methane (CH ₄)
4	Nitrogen trifluoride (NF ₃)
5	Nitrous oxide (N ₂ O)
6	No information
7	Perfluorocarbons (PFC)
8	Sulphur hexafluoride (SF ₆)

Table S3.3: EEA, Instruments.

	Instrument
1	Economic
2	Education
3	Fiscal
4	Information
5	No information
6	Other
7	Planning
8	Regulatory
9	Research
10	Voluntary/negotiated agreements

Table S3.4: EEA, Countries.

	Country
1	Austria
2	Belgium
3	Bulgaria
4	Croatia
5	Cyprus

6	Czechia
7	Denmark
8	Estonia
9	Finland
10	France
11	Germany
12	Greece
13	Hungary
14	Iceland
15	Ireland
16	Italy
17	Latvia
18	Lithuania
19	Luxembourg
20	Malta
21	Netherlands
22	Norway
23	Poland
24	Portugal
25	Romania
26	Slovakia
27	Slovenia
28	Spain
29	Sweden
30	Switzerland

Chapter 4

The IEA's Policies and Measures Database (IEA)

Table S4.1: IEA, Sectors.

	Sector
1	Accommodation and food services
2	Administration and offices
3	Agriculture
4	Agriculture, Fisheries, Forestry and Hunting
5	Air transport
6	Aluminium
7	Ammonia
8	Animal-based
9	Apartment in high-rise building
10	Apartment in low-rise building
11	Attached house
12	Biodiesel
13	Bioethanol
14	Biofuel production
15	Buildings
16	Buses - Rapid transit and intercity service
17	Buses and minibuses - Local and urban service
18	Chemical and petrochemicals
19	CO2 capture
20	CO2 transport
21	CO2 transport, utilisation and storage
22	Coal and lignite mining
23	Coal secondary products production
24	Combined heat and power
25	Construction
26	Cooling production and distribution (incl. district cooling)
27	Data centre
28	Delivery freight (Road)
29	Demand response
30	Detached house
31	Distribution
32	Domestic freight (Water)
33	Downstream
34	drilling
35	Economy-wide (Multi-sector)
36	Education
37	Electricity and heat generation
38	Electricity distribution
39	Electricity transmission
40	Existing buildings and retrofits
41	Exploration
42	Exploration, drilling, well development and extraction
43	Fisheries
44	Food and tobacco
45	Food retail
46	Forestry
47	Forestry and Hunting
48	Fossil fuel production
49	Freight transport (Air)
50	Freight transport (Rail)
51	Freight transport (Road)
52	Freight transport (Water)
53	Fuel gathering and pre-refining processing (including bitumen upgrading)
54	Fuel processing and transformation

55	Health and social activities
56	Heat and steam distribution (incl. district heating)
57	Heat and Utilities
58	Heat generation
59	Heating and Cooling
60	Hydrogen production
61	Hydrogen production and supply
62	Hydrogen storage
63	Hydrogen transportation
64	industrial and other service activities
65	Industry
66	Information & communication
67	Intercity rail
68	Intercity road freight (Road)
69	International freight (Air)
70	International freight (Water)
71	Iron and steel
72	Liquefaction
73	LNG transportation
74	Machinery
75	Manufacturing
76	Mass road transit
77	Metal ore mining
78	Methanol
79	Mining and quarrying (incl. fossil fuel extraction)
80	Multipurpose
81	Natural gas
82	Natural gas processing
83	New buildings
84	Non-ferrous metals
85	Non-metallic minerals
86	Offshore
87	Oil
88	Oil and natural gas extraction
89	Oil and natural gas secondary products production
90	Onshore - Conventional
91	Onshore - Unconventional
92	Other light manufacturing
93	Paper, pulp and printing
94	Passenger transport (Air)
95	Passenger transport (Rail)
96	Passenger transport (Road)
97	Pipeline transportation
98	Power
99	Power generation
100	Power storage
101	Power transmission and distribution
102	Power, Heat and Utilities
103	Private - Individual (Road)
104	Private transport companies (incl. taxis and VTCs)
105	Processing
106	Public administration
107	Public assembly
108	Rail transport
109	Refining
110	Regasification
111	Repair
112	Repair, industrial and other service activities
113	Residential
114	Restaurants
115	Road transport
116	Services
117	Sewerage
118	Sewerage, waste and remediation
119	SMEs
120	Storage
121	Textile and leather
122	Transmission
123	Transport
124	Transport equipment
125	Upstream
126	Urban and suburban rail
127	utilisation and storage
128	Vehicle sharing and pooling companies
129	Warehousing and support for transportation activities
130	waste and remediation

131	Water supply
132	Water transport
133	well development and extraction
134	Wholesale and retail

Table S4.2: IEA, Instruments.

	Instrument
1	Accelerated depreciation
2	Artisanal and small-scale mining (ASM)
3	Associated pollutant limitations (SOx, VOCs, etc.)
4	Audits and inspections
5	Average sales / output based emission standards
6	Awards
7	Building code (Prescriptive)
8	Building codes (performance-based)
9	Building codes and standards
10	Business accelerators / Incubators
11	Business activity surveys
12	Capacity auction
13	Carbon tax
14	Climate change strategies
15	Co-funding via investment fund
16	CO2 storage liability framework
17	Codes and standards
18	Company car tax
19	Company- or facility-level
20	Comparison labels
21	Compliance requirements
22	Congestion charge
23	Consumer information
24	Contracts for difference
25	Differential tax treatment
26	Direct equity investment
27	Domestic manufacturing incentive
28	Due diligence
29	Education and training
30	Emission standards
31	Emission Trading Scheme
32	Emissions estimates
33	Endorsement labels
34	Energy / CO2 performance certification
35	Energy / CO2 performance certification: Comparison
36	Energy / CO2 performance labels
37	Energy auction
38	Energy efficiency / Fuel economy obligations
39	Energy market regulation
40	Energy storage
41	Energy trading regulations
42	Enforcement
43	Environmental impact assessment
44	Environmental standards
45	Equipment sales obligation
46	Equipment- or process-level
47	Equity
48	Excise taxes
49	Export Controls
50	Externality taxation
51	Feebate
52	Feed-in tariffs/premiums
53	fees and charges
54	Finance
55	finance and taxation
56	Flaring/venting (economic)
57	Flaring/venting (performance)
58	Flaring/venting (prescriptive)
59	Flexibility service requirements
60	Framework legislation
61	Fuel quality standards
62	Funds to sub-national governments
63	Geological surveys
64	GHG emissions liability
65	GHG taxation
66	Government provided advice

67	Grants
68	Import tax
69	Inclusivity and gender
70	Indigenous Peoples
71	Inducement prizes
72	Industrial clusters
73	Information and education
74	Information campaigns
75	Information centres
76	Innovation
77	Institutions for sustainable finance
78	Insurance
79	Intellectual property regimes
80	International collaboration
81	Investment in assets
82	Investment in start-ups
83	Investment tax incentives
84	Knowledge networks
85	Knowledge sharing
86	Knowledge sharing requirements
87	Leak detection and repair requirements
88	Loan guarantee
89	Loans (incl. concessional loans)
90	Loans / debt finance
91	Long-term low emissions development strategy (LT-LEDS)
92	Luxury tax
93	Major infrastructure plan
94	Mandatory energy management system
95	Mandatory reporting
96	Mandatory technology use
97	Market design rules
98	Matchmaking between investors and firms
99	Measurement requirements
100	Measurement, calibration, equipment requirements
101	Metering and connection requirements
102	Minerals list
103	Minerals security mechanism
104	Minimum energy performance standards
105	Monitoring
106	National climate change strategy
107	Nationally Determined Contribution
108	Negotiated agreements (public-private sector)
109	Notice requirements
110	Obligations on average types of sales / output
111	On-bill finance
112	Operational funding for institutions
113	Other pollutant liabilities
114	Other regulatory instruments
115	Parking charges
116	Payments
117	Payments and transfers
118	Payments, finance and taxation
119	Peer-to-peer trading rules
120	Per-unit emission standards
121	Performance-based payments
122	Performance-based policies
123	permits and licenses
124	Permitting processes
125	plans and framework legislation
126	Pollution liability
127	Pollution rights
128	Prescriptive requirements and standards
129	Preventative maintenance requirements
130	Price controls (incl. social tariffs)
131	Primary / Secondary education
132	Procedural requirements
133	Product certification
134	Product import or sales bans
135	Product taxation
136	Product-based MEPS
137	Professional / Vocational training and certification
138	Prohibition
139	Public disclosure requirements
140	Public information
141	Public procurement
142	Public voluntary programmes

143	Rebates
144	Recordkeeping requirements
145	Recycling
146	Regulation
147	Regulatory reform
148	Regulatory sandboxes
149	Renewable / Non-fossil energy obligations
150	Reporting
151	Resource extraction incentives
152	Resource extraction taxes and royalties
153	Resource rights
154	Rights
155	Rights, permits and licenses
156	Risk sharing facilities
157	Road usage charges
158	Safety standards
159	Scrappage scheme
160	Sectoral standards
161	Social standards
162	Standards and laws for Green Bonds
163	State-owned enterprise
164	Strategic plans
165	Strategic reserves
166	Strategic stockpile
167	Sustainable finance frameworks
168	Targets
169	Targets, plans and framework legislation
170	Tariff design
171	Tax credits and exemptions
172	Taxes
173	Taxes and charges
174	Taxes, fees and charges
175	Technology bans / phase outs
176	Technology roadmaps
177	Technology testing method
178	Third party verification
179	Time-of-use tariffs
180	Traceability
181	Transparency
182	Unilateral commitments (private sector)
183	Urban planning
184	Use / activity restrictions
185	Use and activity charges
186	Value added tax
187	Vehicle registration tax
188	Voluntary approaches
189	Voluntary reporting
190	Wholesale tariff design

Table S4.3: IEA, Topics.

	Topic
1	Air Quality
2	Carbon Capture Utilisation and Storage
3	Cities
4	Critical Minerals
5	Digitalisation
6	Electrification
7	Energy Access
8	Energy Efficiency
9	Energy Poverty
10	Energy Security
11	Energy Water Nexus
12	Just Transition
13	Methane abatement
14	People-Centred Transitions
15	Renewable Energy
16	Technology R&D and innovation

Table S4.4: IEA, Technologies.

Technology

1	2 and 3 wheelers (motorised)
2	Active transport (incl. with motorised assistance)
3	Advanced fission reactors (incl. fast neutrons)
4	Airconditioners (ACs)
5	Aircraft
6	Alkaline electrolyzers
7	Alternative propulsion (incl. hyperloop)
8	Aluminium
9	Appliances
10	ATR
11	Audiovisual
12	Autonomous and connected vehicles
13	Aviation infrastructure
14	Battery electric
15	Battery recycling
16	Battery technologies
17	Bio-based chemicals
18	Biochemical (incl. anaerobic digestion)
19	Bioenergy supply and transformation technologies
20	Biofuel
21	Biogas
22	Biogas cook stoves
23	Biomass and renewable waste
24	Biomass gasification (incl. waste)
25	Biomass heating stove
26	Biomass/biogas boilers
27	Biomass/biogas boilers (domestic)
28	Building design (incl. passive cooling and heating)
29	Building envelope technologies
30	Building-integrated PV
31	Buses and coaches
32	Cables and conductors
33	catenaries)
34	Cellulosic biomass and wood
35	Cement and concrete
36	central heating
37	Centralised AC system
38	Chemicals and plastics
39	CO ₂ Capture
40	CO ₂ capture and transport technologies
41	CO ₂ storage
42	CO ₂ transportation
43	CO ₂ utilisation in cement and concrete
44	Coal
45	Coal boilers (domestic)
46	Coal boilers (Industrial)
47	Coal cook stoves
48	Coal gasification (excl. UCG)
49	Coal heating stove
50	Combined heat and power (CHP)
51	Combustion-based power generation
52	Commercial vehicles
53	Compact fluorescent lamp
54	Compressors
55	Computer
56	Container vessels
57	Cooking
58	cooling and climate control technologies
59	Cooling fans
60	Cultivation and harvesting of biomass
61	Demand response (digital)
62	Diesel
63	Diesel gensets
64	Digital technologies and systems
65	Digital twinning and simulation
66	Direct air capture (DAC)
67	Direct reduced iron (incl. hydrogen-based)
68	Dishwashers
69	Distributed ledgers (blockchain)
70	Distributed PV
71	District cooling
72	District heating
73	Domestic and building-scale boilers
74	Domestic heating stoves
75	Draught sealing
76	Drilling

77	Drive train or engine
78	Dryers
79	ductwork)
80	Electric air-source heat pumps
81	Electric charging infrastructure
82	Electric chillers
83	Electric cookers (incl. ovens and hobs)
84	Electric ground-source heat pumps
85	Electric heaters
86	Electric resistance heaters
87	Electricity generation and CHP technologies
88	Energy management systems
89	Energy storage technologies
90	Engines
91	Enhanced oil recovery
92	Exterior lighting (incl. street)
93	External power supplies
94	Fabrication/construction strategies (incl. reducing material losses)
95	Fermentation
96	Floating PV
97	Floor insulation
98	Freezers
99	Freight trains
100	Fuel cell
101	Fuel cells
102	Fuel oil
103	Fuel transformation
104	Fuel transformation, transportation and above-ground storage technologies
105	Fuel transport vessels
106	Gas and CCGTs
107	Gas boilers (domestic)
108	Gas boilers (Industrial)
109	Gas cook stoves
110	Gas engines
111	Gas heating stove
112	Gas instantaneous (domestic)
113	Gas storage (domestic)
114	Gas-fired heat pumps
115	Gasification
116	Geological processes and technologies
117	Geothermal
118	Geothermal electricity
119	Halogen
120	Heat pumps
121	Heating
122	Heating and cooling distribution (radiators
123	Heating and cooling distribution (radiators, central heating, ductwork)
124	Heating, cooling and climate control technologies
125	Heavy trucks
126	High efficiency windows
127	High-intensity discharge lamps
128	High-speed trains
129	Hybrid
130	Hydraulic fracturing
131	Hydrogen
132	Hydrogen and CO/CO2-based chemicals
133	Hydrogen and other alternative fuels
134	Hydrogen electrolysis technologies
135	Hydrogen refuelling stations
136	Hydropower (excl. pumped hydro)
137	Hydropower run of river
138	Hydrotreatment
139	Hydrogen fuel cells
140	Incandescent
141	Industrial-scale boilers
142	Industry sector-specific processes and technologies
143	Instantaneous electric resistance water heaters
144	Insulation
145	Intercity rail
146	Internal combustion engine (ICE)
147	Iron and steel
148	Kerosene
149	Large cars, SUVs, passenger / pickup trucks and light duty vehicles
150	Large-scale (Commercial and Utility) PV
151	Light emitting diode (LED)
152	Light producing technologies

153	Light trains and metro
154	Lighting controls (incl. smart lighting)
155	Lighting technologies
156	Lightweighting, design, manufacturing
157	Linear fluorescents
158	Liquid and gas products refuelling (incl. biofuels)
159	Lithium-ion batteries
160	LNG Vessels
161	LPG/LNG
162	Manufacturing technologies and systems
163	Marine energy
164	Materials use and efficiency technologies
165	Mechanical ventilation and humidification
166	Medium duty vehicles, small trucks and minibuses
167	Metals recycling techniques
168	Methane pyrolysis
169	Methane reformation (incl. SMR)
170	Methane reformation (incl. SMR, ATR, POx)
171	Mining technologies
172	Modern solid biomass stoves
173	monitoring and controls
174	Motor-driven systems
175	Motors
176	Natural gas fuel cells
177	Non-motorised transport and micro-mobility infrastructure (incl. cycling, bike sharing, walk- ing)
178	Non-renewable waste
179	Nuclear
180	Nuclear fusion reactors
181	Nuclear waste management and decommissioning
182	Ocean (incl. wave, thermal and salinity gradient)
183	Offgrid solar PV
184	Office equipment
185	Oil
186	Oil boilers (domestic)
187	Oil cook stoves (incl. LPG)
188	Ore electrolysis
189	Other batteries
190	Other biogases
191	Other cooking
192	Other cooling technologies (incl. solar)
193	Other digital technologies and systems
194	Other envelope technologies
195	Other fenestration
196	Other fuel transport vessels
197	Other general liquid and gas-related technologies
198	Other geological processes (e.g. for finding, producing or storing oil and gas)
199	Other heat pumps
200	Other heating technologies (incl. electromagnetic and plasma)
201	Other IT
202	Other lithium-based batteries
203	Other plugloads
204	Other transmission and distribution technologies
205	Other transport infrastructure
206	Other wind (incl. airborne)
207	Passive ventilation
208	PEM electrolyzers
209	Petroleum
210	Photovoltaic technologies
211	Pipelines (incl. compressor stations)
212	Plastics recycling techniques
213	Plug loads
214	Plug-in hybrid
215	Portable room ACs
216	Power transformation and distribution technologies
217	POx)
218	Private chargers
219	Process heat systems
220	Public fast chargers
221	Public slow chargers
222	Pulp and paper
223	Pumped storage
224	Pumps
225	PV installation types
226	Rail infrastructure
227	Rail vehicles

228	Recycling and end-of-life
229	Recycling of cement and concrete
230	Recycling of other materials
231	Reduced emission completion
232	Refrigerators (incl. combined refrigerators-freezers)
233	Refrigerators and freezers
234	Refuelling and charging infrastructure
235	Road infrastructure (incl. road surfacing)
236	Road infrastructure (incl. road surfacing, catenaries)
237	Road vehicles
238	Roof insulation
239	Sensors
240	Sensors, monitoring and controls
241	Shading
242	Small and medium cars
243	Small electronic devices
244	Small modular reactors
245	Smart meters
246	SOEC electrolyzers
247	Software and automation
248	Solar
249	Solar cook stoves
250	Solar PV
251	Solar thermal electricity
252	Solar thermal heaters
253	Solid biomass stoves
254	Space
255	Space cooling
256	Space, water and process heating technologies
257	Split system ACs
258	Standby power
259	Steam systems
260	Storage (excl. geological storage)
261	Storage electric resistance water heaters
262	Synthetic fuel production
263	Technologies for production of gaseous biofuels
264	Technologies for production of liquid biofuels
265	Television
266	Thermal storage
267	Thermochemical
268	Thermochemical transformation
269	Thermostats
270	Thin-film PV
271	Tidal energy
272	Traditional biomass cookstoves
273	Transformers and substations
274	Transport technologies
275	transportation and above-ground storage technologies
276	Use phase strategies (incl. extending lifetime)
277	Vapour recovery units
278	Vehicle type
279	Vessels
280	Wall insulation
281	Washing machines
282	Washing machines and dryers
283	water and process heating technologies
284	Well completion
285	Wind
286	Wind offshore
287	Wind onshore
288	Window-mounted ACs

Table S4.5: IEA, Countries.

	Country
1	Albania
2	Algeria
3	Angola
4	Antigua and Barbuda
5	Argentina
6	Armenia
7	Australia
8	Austria
9	Azerbaijan

10	Bahrain
11	Bangladesh
12	Barbados
13	Belarus
14	Belgium
15	Belize
16	Bolivarian Republic of Venezuela
17	Bosnia and Herzegovina
18	Botswana
19	Brazil
20	Brunei Darussalam
21	Bulgaria
22	Burkina Faso
23	Burundi
24	Cambodia
25	Cameroon
26	Canada
27	Chile
28	Chinese Taipei
29	Colombia
30	Costa Rica
31	Cote D'ivoire
32	Croatia
33	Cuba
34	Cyprus
35	Czech Republic
36	Democratic Republic of the Congo
37	Denmark
38	Dominican Republic
39	Ecuador
40	Egypt
41	El Salvador
42	Equatorial Guinea
43	Estonia
44	Ethiopia
45	European Union
46	Fiji
47	Finland
48	France
49	Gabon
50	Georgia
51	Germany
52	Ghana
53	Greece
54	Greenland
55	Guatemala
56	Guyana
57	Honduras
58	Hungary
59	Iceland
60	India
61	Indonesia
62	Iraq
63	Ireland
64	Islamic Republic of Iran
65	Israel
66	Italy
67	Jamaica
68	Japan
69	Jordan
70	Kazakhstan
71	Kenya
72	Kiribati
73	Korea
74	Kuwait
75	Kyrgyzstan
76	Lao People's Democratic Republic
77	Latvia
78	Lebanon
79	Lesotho
80	Libya
81	Lithuania
82	Luxembourg
83	Madagascar
84	Malawi
85	Malaysia

86	Maldives
87	Mali
88	Malta
89	Marshall Islands
90	Mauritania
91	Mauritius
92	Mexico
93	Micronesia (Federated States of)
94	Mongolia
95	Montenegro
96	Morocco
97	Mozambique
98	Myanmar
99	Namibia
100	Nauru
101	Nepal
102	Netherlands
103	New Caledonia
104	New Zealand
105	Nicaragua
106	Nigeria
107	Niue
108	Norway
109	Oman
110	Pakistan
111	Panama
112	Paraguay
113	People's Republic of China
114	Peru
115	Philippines
116	Plurinational State of Bolivia
117	Poland
118	Portugal
119	Qatar
120	Republic of Moldova
121	Republic of the Congo
122	Romania
123	Russian Federation
124	Rwanda
125	Saint Lucia
126	Saint Vincent and the Grenadines
127	Samoa
128	Saudi Arabia
129	Senegal
130	Serbia
131	Seychelles
132	Sierra Leone
133	Singapore
134	Slovak Republic
135	Slovenia
136	Solomon Islands
137	South Africa
138	South Sudan
139	Spain
140	Sri Lanka
141	Suriname
142	Sweden
143	Switzerland
144	Syrian Arab Republic
145	Thailand
146	Tunisia
147	Turkiye
148	Turkmenistan
149	Uganda
150	Ukraine
151	United Arab Emirates
152	United Kingdom
153	United Republic of Tanzania
154	United States
155	Unknown
156	Uruguay
157	Uzbekistan
158	Vanuatu
159	Vatican City
160	Viet Nam
161	Yemen

162	Zambia
163	Zimbabwe

Chapter 5

OECD Climate Actions and Policies Measurement Framework (CAPMF)

Table S5.1: OECD, Actions and policies, Level 4.

	Climate actions and policies
1	Air Emission Standards - Nox
2	Air Emission Standards - Pm
3	Air Emission Standards - Sox
4	Aviation emissions price
5	Ban of fossil-fuel heating systems, Gas - date
6	Ban of fossil-fuel heating systems, Gas - legal status
7	Ban of fossil-fuel heating systems, Oil - date
8	Ban of fossil-fuel heating systems, Oil - legal status
9	Ban on the construction of coal power plants - date
10	Ban on the construction of coal power plants - legal status
11	Ban on the sales of new vehicles with combustion engines - date
12	Ban on the sales of new vehicles with combustion engines - legal status
13	Banning governments' export credits for new unabated coal power plants - date
14	Banning governments' export credits for new unabated coal power plants - legal status
15	Banning public finance for fossil fuel infrastructure abroad - date
16	Banning public finance for fossil fuel infrastructure abroad -legal status
17	Bans on fossil fuel extraction - date
18	Bans on fossil fuel extraction - legal status
19	Building energy codes - non-residential buildings
20	Building energy codes - residential buildings
21	CORSIA
22	Carbon Tax - Buildings
23	Carbon Tax - Electricity
24	Carbon Tax - Industry
25	Carbon Tax - Transport
26	Congestion Charges
27	ETS Buildings - coverage GHG
28	ETS Buildings - price
29	ETS Electricity - coverage GHG
30	ETS Electricity - price
31	ETS Industry - coverage GHG
32	ETS Industry - price
33	ETS Transport - coverage GHG
34	ETS Transport - price
35	Energy Efficiency Mandates
36	Evaluation of Biennial Reports and Biennial Update Reports
37	Excise taxes on LPG - commercial buildings
38	Excise taxes on LPG - residential buildings
39	Excise taxes on coal - Electricity
40	Excise taxes on coal - Industry
41	Excise taxes on coal - commercial buildings
42	Excise taxes on coal - residential buildings
43	Excise taxes on diesel - Industry
44	Excise taxes on diesel - Transport
45	Excise taxes on diesel - commercial buildings
46	Excise taxes on diesel - residential buildings
47	Excise taxes on gasoline - Transport
48	Excise taxes on natural gas - Electricity
49	Excise taxes on natural gas - Industry
50	Excise taxes on natural gas - commercial buildings

51	Excise taxes on natural gas - residential buildings
52	FFS reform for fossil fuel production
53	Feed in tariffs for solar PV - duration
54	Feed in tariffs for solar PV - price
55	Feed in tariffs for wind - duration
56	Feed in tariffs for wind - price
57	Financing mechanisms for energy efficiency - Industry
58	Financing mechanisms for energy efficiency - commercial buildings
59	Financing mechanisms for energy efficiency - residential buildings
60	GHG emissions reporting and accounting - GHG inventories Annex I
61	Independent climate advisory body - annual funding
62	Independent climate advisory body - establishment
63	Independent climate advisory body - establishment by law
64	Independent climate advisory body - number of council's members
65	Independent climate advisory body - number of secretariat's members
66	MEPS for electric motors
67	MEPS for heavy duty vehicles
68	MEPS for passenger vehicles
69	MEPS of appliances - Air Conditioner
70	MEPS of appliances - Freezer
71	MEPS of appliances - Lighting
72	MEPS of appliances - Refrigerator
73	Mandatory energy labels for appliances - Air Conditioner
74	Mandatory energy labels for appliances - Freezer
75	Mandatory energy labels for appliances - Lighting
76	Mandatory energy labels for appliances - Refrigerator
77	Mandatory energy labels for passenger vehicles
78	Maritime emissions price
79	Methane abatement policies
80	NDCs - GHG scope
81	NDCs - sectoral scope
82	NDCs - separate target for LULUCF
83	NDCs - single/multi year
84	NDCs - target specificity
85	NDCs - target type
86	Net Zero Targets - GHG scope
87	Net Zero Targets - sectoral scope
88	Net Zero Targets - status
89	Net Zero Targets - target year
90	Participation in international climate agreements - Kigali Amendment
91	Participation in international climate agreements - Kyoto Protocol
92	Participation in international climate agreements - Montreal Amendment
93	Participation in international climate agreements - Montreal Protocol
94	Participation in international climate agreements - Paris Agreement
95	Participation in international climate agreements - UNFCCC convention
96	Participation in international climate initiatives
97	Phase out of existing coal power plants - date
98	Phase out of existing coal power plants - legal status
99	Phase out of fossil fuel extraction - date
100	Phase out of fossil fuel extraction - legal status
101	Phase out of fossil-fuel heating systems, Gas - date
102	Phase out of fossil-fuel heating systems, Gas - legal status
103	Phase out of fossil-fuel heating systems, Oil - date
104	Phase out of fossil-fuel heating systems, Oil - legal status
105	Phase out on the sales of new vehicles with combustion engines - date
106	Phase out on the sales of new vehicles with combustion engines - legal status
107	Planning Renewables Expansion
108	RD&D expenditure - Carbon Capture and Storage
109	RD&D expenditure - Energy Efficiency
110	RD&D expenditure - Hydrogen
111	RD&D expenditure - Nuclear
112	RD&D expenditure - Other storage
113	RD&D expenditure - Renewable energy
114	RPS with tradeable renewable energy certificates
115	Reform of Fossil Fuel Subsidies - Buildings
116	Reform of Fossil Fuel Subsidies - Electricity
117	Reform of Fossil Fuel Subsidies - Industrie
118	Reform of Fossil Fuel Subsidies - Transport
119	Renewable energy auctions for solar PV - duration
120	Renewable energy auctions for solar PV - price
121	Renewable energy auctions for wind - duration
122	Renewable energy auctions for wind - price
123	Reporting of GHG emissions under SEEA Air emissions accounts
124	Share of rail on total surface transport public expenditure
125	Speed limits on motorways
126	Submission of Biennial Reports / Biennial Update Reports (BR/BUR)

127	Submission of GHG inventories
128	Submission of Long-term low emissions development strategies (LT-LEDS)
129	Submission of National Communication
130	Submission of Nationally Determined Contribution

Table S5.2: OECD, Actions and policies, Level 3.

Climate actions and policies	
1	Air emission standards
2	Ban and phase out of fossil fuel heating systems
3	Ban and phase out of passengers cars with ICE
4	Ban and phase out on the construction of coal-fired power plants
5	Banning governments' export credits for new unabated coal power plants
6	Banning public finance for fossil fuel infrastructure abroad
7	Bans and phase out on fossil fuel extraction
8	Building energy codes
9	Carbon Tax - Electricity
10	Carbon Tax - Industry
11	Carbon tax - Buildings
12	Carbon tax - Transport
13	Climate advisory body
14	Congestion charges
15	ETS - Buildings
16	ETS - Electricity
17	ETS - Industry
18	ETS - Transport
19	Energy efficiency mandates
20	Evaluation of Biennial Reports and Biennial Update Reports
21	Feed-In-Tariffs
22	Financing mechanisms available - Buildings
23	Financing mechanisms available - Industry
24	Fossil Fuel Subsidies - Electricity
25	Fossil Fuel Subsidies - Industry
26	Fossil Fuel Subsidies Producer Support
27	Fossil fuels excise taxes - Buildings
28	Fossil fuels excise taxes - Electricity
29	Fossil fuels excise taxes - Industry
30	Fossil fuels excise taxes - Transport
31	Fossil fuels subsidies - Buildings
32	Fossil fuels subsidies - Transport
33	GHG emissions reporting and accounting
34	Labels for vehicles
35	MEPS Transport
36	MEPS for electric motors
37	MEPS of appliances
38	Mandatory energy labels for appliances
39	Methane abatement policies
40	Nationally Determined Contributions
41	Net Zero Targets
42	Participation in international climate initiatives
43	Planning for renewables expansion
44	Pricing of emissions from international aviation and maritime transport
45	RD&D expenditure - Carbon Capture and Storage
46	RD&D expenditure - Energy Efficiency
47	RD&D expenditure - Hydrogen
48	RD&D expenditure - Nuclear
49	RD&D expenditure - Other storage
50	RD&D expenditure - Renewable energy
51	Ratification of key international climate treaties
52	Renewable energy auctions
53	Renewable energy certificates
54	Share of rail on total surface transport public expenditure
55	Speed limits on motorways
56	Submission of key UNFCCC documents

Table S5.3: OECD, Actions and policies, Level 2.

Climate actions and policies	
1	Buildings - Market-based instruments
2	Buildings - Non market-based instruments
3	Climate governance
4	Electricity - Market-based instruments

5	Electricity - Non market-based instruments
6	Fossil fuel production policies
7	GHG emission targets
8	GHG emissions data and reporting
9	Industry - Market-based instruments
10	Industry - Non market-based instruments
11	International cooperation
12	International public finance
13	Public RD&D expenditure
14	Transport - Market-based instruments
15	Transport - Non market-based instruments

Table S5.4: OECD, Actions and policies, Level 1.

Climate actions and policies	
1	Cross-sectoral policies
2	International policies
3	Sectoral policies

Table S5.5: OECD, Countries.

Country	
1	Argentina
2	Australia
3	Austria
4	Belgium
5	Brazil
6	Bulgaria
7	Canada
8	Chile
9	China
10	Colombia
11	Costa Rica
12	Croatia
13	Czechia
14	Denmark
15	Estonia
16	European Union
17	Finland
18	France
19	Germany
20	Greece
21	Hungary
22	Iceland
23	India
24	Indonesia
25	Ireland
26	Israel
27	Italy
28	Japan
29	Latvia
30	Lithuania
31	Luxembourg
32	Malta
33	Mexico
34	Netherlands
35	New Zealand
36	Norway
37	Peru
38	Poland
39	Portugal
40	Romania
41	Russia
42	Saudi Arabia
43	Slovakia
44	Slovenia
45	South Africa
46	South Korea
47	Spain
48	Sweden
49	Switzerland
50	Turkey

51	United Kingdom
52	United States

Chapter 6

Climate Policy Portfolio Dataset (CLIMAPP)

Table S6.1: CLIMAPP, Targets.

	Purpose	Sector	Target
1	Climate adaptation	Agriculture and forestry	Forest fire (e.g., emergency and prevention plans)
2	Climate adaptation	Agriculture and forestry	Fruit and vegetable cultivation adapted to global warming & extreme weather events such as cold, drought and wetness (e.g., less loss of irrigation of agricultural land due to water scarcity in hot periods, site-adapted planting, adapted plant breeding)
3	Climate adaptation	Agriculture and forestry	Human consumer behavior (e.g., animal product-free lifestyle)
4	Climate adaptation	Agriculture and forestry	Livestock farming (e.g., reduced animal husbandry, heat stress of animals, adaptation to climatic diseases such as bluetongue disease, adapted animal breeding, reduced fishing industry and increase selectivity of nets & replenishment plans)
5	Climate adaptation	Agriculture and forestry	Pest control (heat-loving harmful organisms, e.g., bark beetle, nun, cockchafer)
6	Climate adaptation	Agriculture and forestry	Preservation of wetlands for the compensation of heavy rain events
7	Climate adaptation	Agriculture and forestry	Reafforestation
8	Climate adaptation	Climate-resistant planning and building	Civil protection (protection of the population and especially of marginalized groups)
9	Climate adaptation	Climate-resistant planning and building	Construction projects prepared for accidents caused by extreme weather events such as floods, landslides and avalanches
10	Climate adaptation	Climate-resistant planning and building	Flooding-proof construction of buildings and infrastructure (e.g., sewers, backflow flaps for building connections, spatial provision plans, switching to other materials in road construction)
11	Climate adaptation	Climate-resistant planning and building	Location-adapted building
12	Climate adaptation	Climate-resistant planning and building	Sealing of surfaces through settlement and traffic areas
13	Climate adaptation	Climate-resistant planning and building	Urban development management (e.g., fresh air corridors, extensive green spaces or other cold islands in metropolitan areas, thermal insulation in public facilities, solar cooling)
14	Climate adaptation	Ecosystem management and biodiversity	Distribution and reproduction of species (e.g., extinction of species due to limited adaptability)
15	Climate adaptation	Ecosystem management and biodiversity	Forest conversion (e.g., reduction of pure stands, location-specific & low-risk mixed forest stands)
16	Climate adaptation	Ecosystem management and biodiversity	Habitats (e.g., transformation of food webs and competitive situations, establishment of larger alternative habitats and biotope networks to enable animal species to adapt)
17	Climate adaptation	Ecosystem management and biodiversity	Invasive species
18	Climate adaptation	Ecosystem management and biodiversity	Renaturation
19	Climate adaptation	Energy, industry and technology	Alarm systems and emergency plans (e.g., flood, overheating of technical systems)
20	Climate adaptation	Energy, industry and technology	Cable route protection against heavy weather events
21	Climate adaptation	Energy, industry and technology	Drainage of rainwater in central systems of the industry and energy sector
22	Climate adaptation	Energy, industry and technology	Emergency water connections (e.g., for power plants)
23	Climate adaptation	Energy, industry and technology	Safety systems (e.g., to prevent pollutants from escaping in the event of floods or storms)
24	Climate adaptation	Water management	Construction projects near waters

25	Climate adaptation	Water management	Flood (river course management, coastal defense, dyke construction and renovation, drainages)
26	Climate adaptation	Water management	Gray water, roof drainage water and process water (e.g., for technical and industrial purposes)
27	Climate adaptation	Water management	Groundwater and rainwater (e.g., purification after floods)
28	Climate adaptation	Water management	Storage and retention basins
29	Climate change	Agriculture	Carbon dioxide (CO ₂) emissions due to agricultural conversion of natural landscapes (e.g., peat extraction)
30	Climate change	Agriculture	Forests (e.g., re- or deforestation for agricultural, constructional usage or carbon storages)
31	Climate change	Agriculture	Livestock farming (e.g., mass animal husbandry, production & supply chains, use of natural landscapes as fodder cultivated areas or pastures)
32	Climate change	Agriculture	Methane (CH ₄) emissions from agricultural production processes (e.g., ruminant digestion and manure management)
33	Climate change	Agriculture	Nitrous oxide (N ₂ O) emissions from agricultural production processes (e.g., grassland ploughing, manure management leguminous plant cultivation and peat extraction)
34	Climate change	Agriculture	Organic farming (e.g., carbon sequestration due to hummus promotion, natural manure management and smaller livestock)
35	Climate change	Energy	Biomass energy
36	Climate change	Energy	Carbon dioxide (CO ₂) emissions from combustion plants for heating systems and energy needs
37	Climate change	Energy	Carbon dioxide (CO ₂) emissions from waste incineration plants
38	Climate change	Energy	Carbon monoxide (CO) emissions from combustion plants for heating systems and energy needs
39	Climate change	Energy	Electricity and heat grid systems
40	Climate change	Energy	Energy saving and energy efficiency measures (e.g., in building concepts)
41	Climate change	Energy	Fracking
42	Climate change	Energy	Geothermal energy
43	Climate change	Energy	Hydropower
44	Climate change	Energy	Methane (CH ₄) emissions from landfill gas of waste from homes, businesses and sewage plants
45	Climate change	Energy	Natural gases (mine gas, sewage gas, landfill gas and biogas)
46	Climate change	Energy	Nitrogen oxide (NO _x), dinitrogen trioxide (N ₂ O ₃), dinitrogen tetroxide (N ₂ O ₄), dinitrogen pentoxide (N ₂ O ₅) and nitrous oxide (N ₂ O) emissions from combustion plants for heating systems and energy needs
47	Climate change	Energy	Photovoltaic and solar energy
48	Climate change	Energy	Storage systems for energy, heat and cold
49	Climate change	Energy	Sulfur hexafluoride (SF ₆) emissions (e.g., from electrical equipment for energy transmission and energy distribution in the medium-voltage range and high-voltage range)
50	Climate change	Energy	Wind energy
51	Climate change	Geoengineering	Carbon storage and capture (Bioenergy)
52	Climate change	Geoengineering	Increase in surface and cloud albedo
53	Climate change	Geoengineering	Marine geoengineering
54	Climate change	Geoengineering	Other geoengineering measures (e.g., space-based approaches)
55	Climate change	Geoengineering	Solar radiation management
56	Climate change	Industry	Alternative fuels for the industry
57	Climate change	Industry	Carbon dioxide (CO ₂) emissions from industrial combustion plants (coal, heating oil, diesel, petrol, liquid gas, natural gas & firewood)
58	Climate change	Industry	Carbon monoxide (CO) emissions from industrial combustion plants (coal, heating oil, diesel, petrol, liquid gas, natural gas & firewood)
59	Climate change	Industry	Fluorocarbon (FKW/HFKW) and Chlorofluorocarbon (FCKW/HFCKW) emissions (refrigerants, aluminium industry, cleaning agents/electrical industry, plastics production, fire retardants)
60	Climate change	Industry	Methane emissions from industrial processes (e.g., extraction and distribution of fossil fuels)
61	Climate change	Industry	Nitrogen oxide (NO _x), dinitrogen trioxide (N ₂ O ₃), dinitrogen tetroxide (N ₂ O ₄), dinitrogen pentoxide (N ₂ O ₅) and nitrous oxide (N ₂ O) emissions from industrial combustion plants
62	Climate change	Industry	Nitrogen trifluoride (NF ₃) emissions (e.g., semiconductor, liquid crystal display and solar industry)
63	Climate change	Industry	Process emissions from industrial production (metal-, chemical-, pulp-/paper-, glass-, cement-, limestone- and mineral industry – mostly measured in CO ₂ equivalents)
64	Climate change	Industry	Sulfur hexafluoride (SF ₆) emissions (electrical industry, semiconductor industry, aluminium and magnesium industry)
65	Climate change	Transport	Alternative fuels for (passenger) vehicles, heavy duty vehicles and aviation activities
66	Climate change	Transport	Carbon dioxide (CO ₂) emissions from aviation activities

67	Climate change	Transport	Carbon dioxide (CO ₂) emissions from heavy duty vehicles
68	Climate change	Transport	Carbon dioxide (CO ₂) emissions from passenger vehicles
69	Climate change	Transport	Electric mobility
70	Climate change	Transport	Local public transport
71	Climate change	Transport	Nitrogen oxide (NO _x) (nitric oxide (NO) & nitrogen dioxide (NO ₂)), dinitrogen trioxide (N ₂ O ₃), dinitrogen tetroxide (N ₂ O ₄) dinitrogen pentoxide (N ₂ O ₅) and nitrous oxide (N ₂ O) emissions from road transport, air traffic and shipping
72	Climate change	Transport	Ozone (O ₃) emissions as a result of nitrogen oxide (NO _x) emissions from air traffic
73	Climate change	Transport	Rail freight transport

Table S6.2: CLIMAPP, Instruments.

	Instrument	Instrument type
1	Other	
2	Data collection / Monitoring program	Informational
3	Information-based instrument	Informational
4	Voluntary instrument	Informational
5	Liability scheme	Market-based
6	Subsidy / Tax reduction	Market-based
7	Tax / Levy	Market-based
8	Obligatory standard	Regulation
9	Permits	Regulation
10	Prohibition / Ban	Regulation
11	Technological prescription	Regulation
12	Planning instrument	Strategic/Developmental
13	Research and development (R&D)	Strategic/Developmental
14	Public investment	Strategic/Developmental

Table S6.3: CLIMAPP, Sectors.

	Sector
1	Agriculture
2	Agriculture and forestry
3	Climate-resistant planning and building
4	Ecosystem management and biodiversity
5	Energy
6	Energy, industry and technology
7	Geoengineering
8	Industry
9	Transport
10	Water management

Table S6.4: CLIMAPP, Countries.

	Country
1	Australia
2	Belgium
3	Canada
4	Finland
5	Germany
6	Greece
7	Ireland
8	Italy
9	Japan
10	New Zealand
11	Norway
12	Portugal
13	Sweden

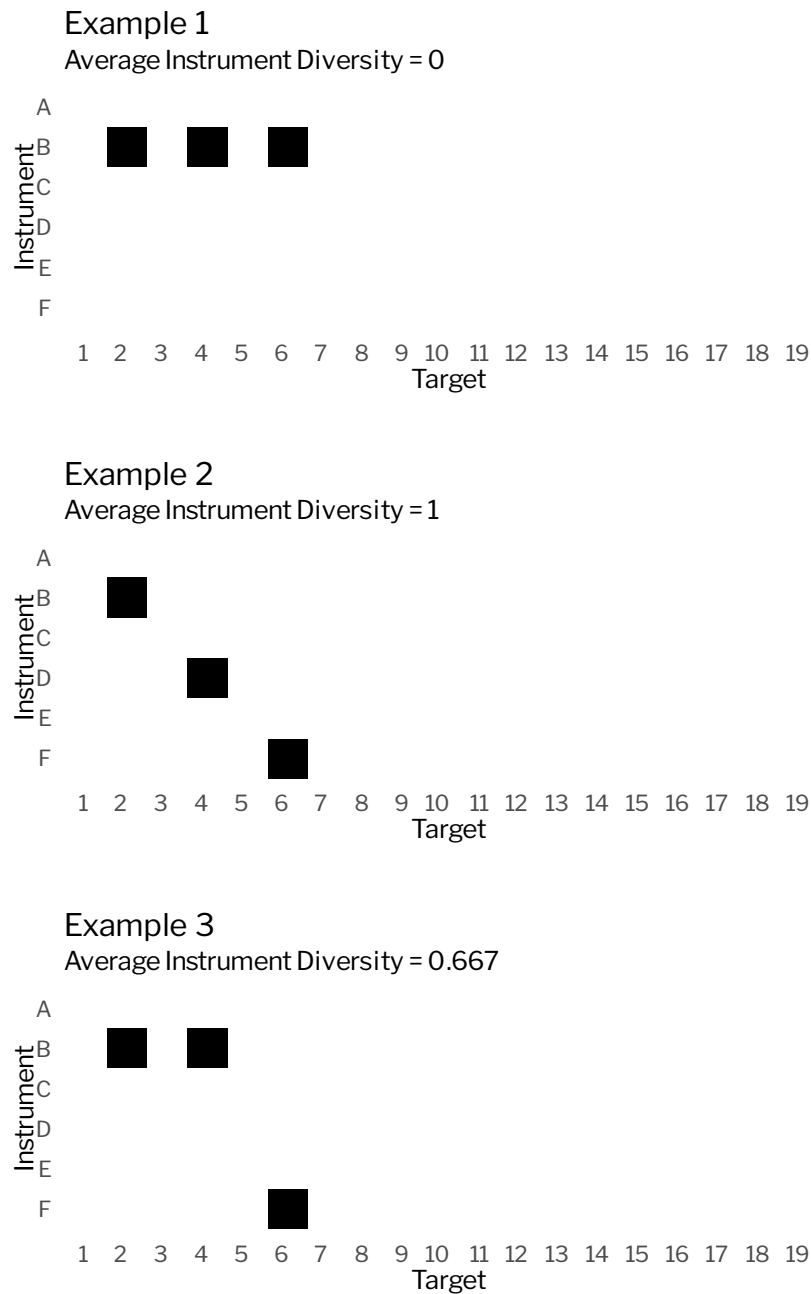
Chapter 7

Average Instrument Diversity (AID)

A policy portfolio consists of two dimensions: policy targets (horizontal axis) and policy instruments (vertical axis). In this context, the intuition behind Average Instrument Diversity (AID) is that the metric reflects the likelihood that when selecting policies for different targets, they will employ distinct instruments.

Formally, the AID is calculated using a formula that accounts for the diversity in instruments across the various policy targets: $\text{for all } t=1..T, \forall i=1..I \sum_{c=1}^C \frac{c_{t,i} = c_{t,i}}{C}$, where T are the targets covered by at least one policy instrument, I are the instruments addressing at least one policy target, and C are the entirety of target-instrument-constellations.

Figure S7.1: Example policy portfolios with different AID.



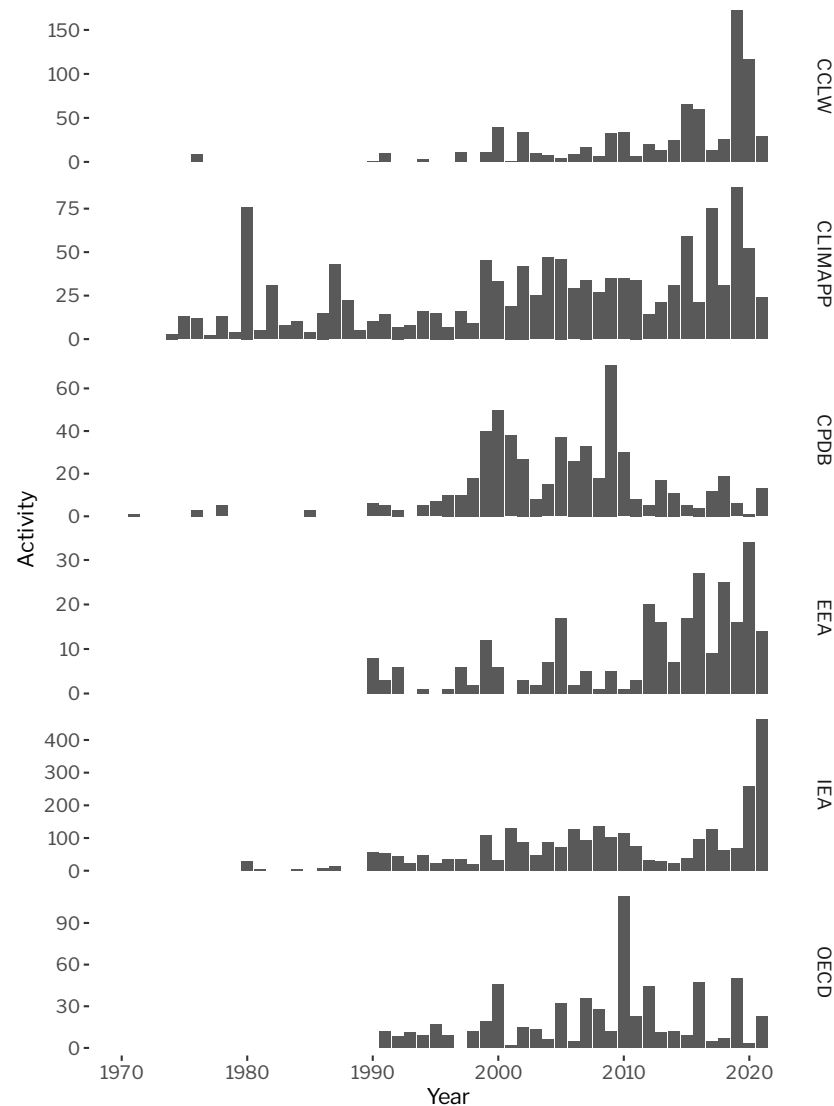
Legend: The figures depict three hypothetical policy scenarios. In the first example, the same instrument is applied to all targets. Consequently, the AID is zero, indicating no diversity in instrument selection. In the second example, each of the three targets is addressed by a unique instrument, so the AID is 1, reflecting maximum instrument diversity. In the third example, two targets are addressed using the same instrument, while a different instrument is applied to the third target. This setup results in an AID value that demonstrates a value of 0.667. Obviously, this is a simplified examples and more policy targets and instruments and thus “nuances” exist in practice.

Chapter 8

Robustness

A Activity

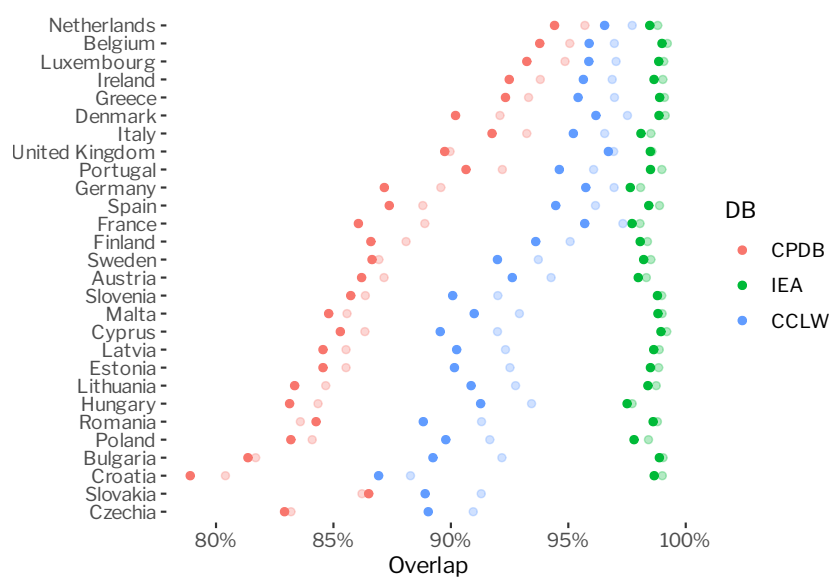
Figure S8.1: Policy activity



Legend: Similar to Figure 1 in the article, but only with countries shared across databases. The figure displays each dataset's temporal trend of policy activity, i.e., the adoption of new climate policies over time, focusing on the joint country sample across the datasets.

B EU coverage

Figure S8.2: EU coverage overlap.



Legend: Similar to Figure 4 in the article, but including a comparison with the EU activity until 2018 (more transparent dots). The figure depicts the EU coverage overlap of different data sets, taking the year 2018 as the upper time limit for policies included in the EU portfolio.

Chapter 9

Webscrapping: IEA

For the web scrapping of the IEA database, we first downloaded the table of policies, which contains multiple entries for up to 268 pages. Within each page, there are the URLs of the individual policies. We scrapped each of the individual policies to obtain the paths to the elements in the metadata of the policies. The script took 144 minutes, and the content takes 2.2 Gb of data once compressed. The following code in R provides the full webscrapping procedure.

```
1  #!/usr/bin/Rscript
2
3  # 06/02/2024
4
5  # Webscrapping for the IEA database on policies and measures
6
7
8  library(dplyr)
9  library(tidyr)
10 library(stringr)
11 library(rvest)
12 library(httr)
13
14
15 # 240208 144 minutes
16
17
18 # CAUTION !!!!!!!!!!!!!!!!!!!!!!!
19 # Manually set, by observation, the number of total pages
20 pages <- 1:269
21
22
23
24
25
26
27
28 #####
29 # Define a function to clean multiple topics, instruments and targets
30 clean.tit <- function(v) {
31   # Remove 'Remove filter' options
32   vr <- str_replace_all(v, "Remove Filter", ";")
33   # All newlines removed
34   vr <- str_replace_all(vr, "\\n +", "")
35   vr <- str_replace_all(vr, "\\n", "")
36   # Last semicolon gets removed
37   vr <- str_replace(vr, ";$", "")
38   # And all splitted into a vector
39   value <- unlist(str_split(vr, ";"))
40   return(value)
41 }
42 #####
43
44
45
46
47
48
49
50 #####
51 # Download the table that is seen in the HTML code
52 root <- "https://www.iea.org"
53 post.root <- paste0(root, "/policies?page=")
54
55
```

```

56 D.urls <- NULL
57
58 for (page in pages) {
59   print(paste0("Processing page ", page, "/", max(pages)))
60   url <- paste0(post.root, page)
61   #url <- "https://www.iea.org/policies?q=isiri%2010636"
62   content.page.html <- url %>%
63     httr::GET() %>%
64     read_html()
65   urls <- content.page.html %>%
66     html_node(xpath = "/html/body/div[5]/div/main/div[2]/section/div/div/div[2]/div/ul") %>%
67     html_nodes("li") %>%
68     html_nodes("a") %>%
69     html_attr("href")
70   D.urls <- bind_rows(D.urls, tibble(url = paste0(root, urls)))
71 }
72
73 D.urls <- mutate(D.urls, id = 1:n(), .before = 1)
74
75 #save(D.urls, file = "tmp.RData")
76
77
78
79
80
81 #####
82 # Enter into each of the links
83 # and get the secondary data that includes targets and instruments
84
85 # D: stores the metadata of the policies
86 # D.content: stores the text that appears in the webpages
87 # D.pi: stores the multiple entries of topics, instruments and targets
88
89 D <- D.content <- D.pi <- NULL
90
91 for (i in 1:dim(D.urls)[1]) {
92   #for (i in 1:40) {
93     print(paste0("Processing policy ", i, "/", dim(D.urls)[1]))
94     url.policy <- D.urls$url[i]
95     # Get the html code
96     content.policy.page <- url.policy %>%
97       httr::GET() %>%
98       read_html()
99     # Get the title of the policy, country, year, status and jurisdiction
100     policy <- content.policy.page %>%
101       html_node(xpath = "/html/body/div[5]/div/main/div[1]/header/h1") %>%
102       html_text()
103     country <- content.policy.page %>%
104       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/aside/ul/li[1]/span[2]") %>%
105       html_text()
106     year <- content.policy.page %>%
107       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/aside/ul/li[2]/span[2]") %>%
108       html_text()
109     status <- content.policy.page %>%
110       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/aside/ul/li[3]/span[2]") %>%
111       html_text()
112     jurisdiction <- content.policy.page %>%
113       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/aside/ul/li[4]/span[2]") %>%
114       html_text()
115     content <- content.policy.page %>%
116       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/div/div/div/div/div/div") %>%
117       html_text()
118     D <- bind_rows(D, tibble(
119       id = D.urls$id[i],
120       Policy = policy, Country = country, Year = year,
121       Status = status, Jurisdiction = jurisdiction,
122       url = D.urls$url[i]))
123     D.content <- bind_rows(D.content, tibble(id = D.urls$id, content = content))
124     # Get the topics, instruments and targets by position
125     topics <- content.policy.page %>%
126       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/div/div/div/div/div/div/div[1]/ul") %>%
127       html_text()
128     instruments <-
129       content.policy.page %>%
130       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/div/div/div/div/div/div/div[2]/ul") %>%
131       html_text()
132     targets <- content.policy.page %>%
133       html_node(xpath = "/html/body/div[5]/div/main/section/div/div/div/div/div/div/div/div/div[3]/ul") %>%
134       html_text()

```

```

135 # Create a tibble with multiple entries
136 D.pi <- bind_rows(D.pi,
137   tibble(id = D$id[i], Variable = "Topic", value = clean.tit(topics)),
138   tibble(id = D$id[i], Variable = "Instrument", value = clean.tit(instruments)),
139   tibble(id = D$id[i], Variable = "Target", value = clean.tit(targets)) )
140 }
141
142
143 D <- D %>%
144   mutate(Country = factor(Country),
145          Year = as.integer(Year),
146          Status = factor(Status),
147          Jurisdiction = factor(Jurisdiction))
148
149
150
151
152
153 #####
154
155
156
157 save(D, D.pi, file = "data-iea-webscrapped.RData")
158 save(D.content, file = "data-iea-webscrapped-content.RData")

```