Progress towards good practice policies for reducing greenhouse gas emissions

Initial results from an analysis of the status of climate related policies in 30 countries

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Summary

This study compared recommendations for good practice climate change mitigation policies from various institutions with the current status of application of these policies by countries. In an initial attempt, a broad set of climate mitigation-related policies covering all sectors were analysed for the 30 major emitting countries that comprise 82% of global GHG emissions.

Table S1: Good practice policy matrix and coverage by analysed countries (percentage indicates the share of the 30 countries that have a policy in the respective areas)

	Changing activity	Energy efficiency	Renewables	Nuclear, CCS or fuel switch	Non-energy
General	Climate strategy (67%)				
	GHG reduction target (73%)				
	Coordinating body for climate strategy 57%)				
	Support for low-emission RD&D (47%)				
		National energy efficiency target (43%)	Renewable energy target (40%)		
Electricity and heat		Support for highly efficiency power plants (70%)	Renewable energy target for electricity sector (57%)	CCS support scheme (20%)	
		Reduction obligation schemes (7%)	Support scheme for renewables (83%)		
			Grid infrastructure development (67%)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (27%)				
	Energy and other taxes (20%) (not comprehensively addressed)				
	No fossil fuel subsidies (30%)				
Industry	Strategy for material efficiency (23%)	Support for energy efficiency in industrial production (47%)	Support schemes for renewables (33%)	CCS support scheme (27%)	Landfill methane reduction (17%)
		Energy reporting and audits (47%)	Sustainability standards for biomass use (7%)		Incentives to reduce CH_4 from oil and gas production (20%)
		Minimum energy performance and equipment standards (47%)			Incentives to reduce N_2O from industrial processes (17%)
					Incentives to reduce fluorinated gases (10%)
	Overarching carbon pricing scheme or emissions limit (23%)				
	Energy and other taxes (13%) (not comprehensively addressed)				
	No fossil fuel subsidies (10%)				
Buildings	Urban planning strategies (17%)	Incentives for low-emissions choices in heating, cooling, hot water, and cooking (60%)	Support scheme for heating and cooling (13%)		
		Minimum energy performance and equipment standards for appliances (60%)	Support scheme for hot water and cooking (13%)		
			Sustainability standards for biomass use (3%)		
	Energy and other taxes (13%) (not comprehensively addressed)				
	No fossil fuel subsidies (27%)				
Transport	Urban planning and infrastructure investment to minimize transport needs (23%)	Minimum energy/emissions performance standards or support for energy efficient for light duty vehicles (47%)	Biofuel target (23%)	Support for modal share switch (20%)	
		Minimum energy/emissions performance standards or support for energy efficient for heavy duty vehicles (47%)	Support schemes for biofuels (57%)	E-mobility programme (17%)	
			Sustainability standards for biomass use (13%)		
	Tax on fuel and/or emissions (27%) (not comprehensively addressed)				
	No fossil fuel subsidies (30%)				
Agriculture/forestry	Standards and support for sustainable agricultural practices and use of agricultural products (17%)				
	Incentives to reduce CO_2 emissions from agriculture (10%)				
	Incentives to reduce CH_4 emissions from agriculture (17%)				
	Incentives to reduce N_2O emissions from agriculture (13%)				
	Incentives to reduce deforestation and support for afforestation/reforestation (57%)				

Colour scheme: 0% 100%

From this work we draw the following **conclusions**:

- **Support for renewable electricity generation is mainstream.** Support for renewable energy receives by far the most attention by the 30 major emitters. 83% have support policies and 57% have renewable electricity generation targets. This is an indication that support for renewables is already mainstream and that the remaining countries without support are a minority.
- **Efficiency in buildings and biofuels are half covered and therefore have significant remaining potential.** Second most covered areas are minimum performance standards for appliances in buildings (60%), standards and support for efficient buildings (60%) and support for biofuels (57%) (but only 13% have sustainability standards for the biofuels). There is (1) apparently good reasons for one half of the countries to implement these policies and therefore (2) there remains significant potential for the other half of the countries to do the same.
- **Removal of fossil fuel subsidies has very high potential.** Fossil fuels subsidies are still used very frequently. The shares of countries *without* such subsidies are 30% in electricity sector, 10% in industry, 27% in buildings and 30% in transport. Removal of these subsidies in a social manner would free significant potential.
- **Overarching carbon pricing schemes are currently limited but increasing in scope.** Current coverage is low in the range of 23-27%. The EU emissions trading system is the most prominent one, but more national system are emerging such as the emission trading systems in South Korea and Kazakhstan and carbon taxes in Mexico, Japan and India.
- **Energy efficiency polices are not yet widely spread and could be significantly enhanced.** Just over 40% of the countries have national energy efficiency targets, 47% support efficiency in industry and around 47% have standards to support efficient vehicles. Hence, more than half of the countries can learn from those that already implement these measures.
- **Deforestation is currently covered by almost all countries where this is relevant.** The coverage rate of policies for reduced deforestation and enhanced afforestation/reforestation was 57%, but they are implemented in key countries such as Brazil, Indonesia and Malaysia.
- **For all areas outside of energy, except deforestation, coverage is low.** Areas with particularly low mitigation costs are only marginally covered, e.g. methane from oil and gas production (17%), waste (20%), N_2O emissions from industrial processes (17%), fluorinated gases (10%) and agriculture (10-17%).
- **Strategies and policies to fundamentally change the way we consume are underdeveloped**, **while such changes can be amongst the most cost-effective.** Such changes are currently only marginally covered by policies, such as urban planning so that less travel and heating and cooling of buildings is needed (17%), strategies for improving material efficiency (23%), E-mobility programmes (17%) and sustainable practices in agriculture (17%).
- **Overall national climate strategy and planning is quite comprehensive.** For cross-sectoral policies, it was found that two-thirds of the countries had national climate strategies and 57% had bodies coordinating the implementation of the strategy. The vast majority (73%) now has quantitative GHG reduction targets.

Based on the work we offer the following **recommendations**.

- The comparison of good practice recommendations from various institutions with the current status of implementation of policies by the 30 major emitting countries reveals the following areas as important for increasing ambition:
    - Advance national target setting and strategy development (significant improvement was made during the INDC preparation process)
    - Supporting energy efficiency in all sectors
    - Supporting renewable energy in all sectors, in particular in industry and heating and cooling of buildings
    - Removing fossil fuels subsidies

    - Supporting all areas outside of energy, in particular methane from oil and gas production, waste, N_2O emissions from industrial processes, fluorinated gases and agriculture.
- The information collected in this report and database could be used to develop country specific recommendation on how to increase ambition. The collection of information revealed once again that all countries have their very specific circumstances, which makes specific recommendations much more useful than broad, general recommendations.

The results presented in this report are a first attempt to comprehensively monitor the implementation status of policies that could be considered good practice. Any future reports would benefit from contributions and review by a larger community, including country experts. The database created for this project (www.climatepolicydatabase.org) is intended to be used and extended as an open, collaborative tool to advance the data collection of the implementation status of climate policies as a basis to track progress and develop recommendations on how to increase ambition.

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1 Introduction

1.1 Background

Raising the ambition of action against climate change is urgent. The next 10 years will prove if a transition towards a sustainable, greenhouse gas (GHG) -free society can be made in time to hold temperature increase below 2°C above preindustrial levels.

Countries already successfully implement a wide range of climate and energy policies that reduce greenhouse gas emissions. The implementation of good practice policies as they already exist today can move us significantly towards a pathway compatible with 2°C (Fekete et al. 2015; den Elzen et al. 2015).

An important prerequisite for raising the level of ambition is to know and analyse the current status of activities against climate change. This includes knowing which policies and actions countries implement to reduce greenhouse gas emissions. Further, it requires knowledge on additional policies and actions that could be implemented to raise ambition (UNFCCC 2014c; UNFCCC 2014d).

However, a comprehensive overview of climate relevant policies covering all sectors and countries is not available. Existing databases cover either only some sectors or a subset of countries.

Continuous analysis of the status of policies is more relevant than ever, since the new international agreement on climate change is likely to be based on initial offers by countries that will need to be continuously evaluated and increased in stringency in order for the 2°C goal to be met. Many of these offers do not only include overall greenhouse reduction targets, but also suggest individual actions such as the implementation of policies.

1.2 Scope and approach of the analysis

The objective of this project is to gather information on which countries are implementing good practice policies or policies from a policy menu to reduce GHG emissions. With the help of this menu and mapping, information gaps and opportunities to raise ambition are identified.

The analysis focuses on climate change mitigation-related policies in 30 major emitting countries[1], covering 82% of global GHG emissions in 2012 based on the EDGAR database (EU Joint Research Centre & PBL Netherlands Environmental Assessment Agency 2014, see Table 1)[2].

For the definition of "good practice policies", this reports adapts that proposed by Fekete et al. (2015):

"Good practice policies are climate and energy policies that have been - or are being - implemented in various countries, have proven their feasibility and generally agreed in the literature to contribute directly or indirectly to significant deviation from business-as-usual GHG emissions development in specific (sub-) sectors, while possibly generating co-benefits that contribute to meeting (other) national development goals."

The report first establishes a package of such "good practice policies". Such a policy package provides a menu of policies for policy makers to choose from, and offers a comprehensive structure for the study of current climate action in specific countries or regions. This package covers all sectors and types of policies, where policies could potentially lead to emissions reductions. Emission reductions are required in all sectors to get on a pathway compatible with 2°C. Accordingly, the package does not specifically focus on areas with a high share of emissions. The areas may not be relevant for all countries to the same extent (e.g. forestry policies usually do not matter to desert states). The research then checks whether the target countries currently have implemented policies in the different areas. Here, we focus on the *existence* of the policy instruments, not on the *effectiveness, ambition, or other criteria* one might apply to determine the quality of a policy. The scope of this study thus analyses the

[1] European Union (EU) is considered as a single country.
[2] Includes emissions from land use, land use change and forestry (LULUCF)

completeness of a policy package in comparison to good practice, rather than trying to say whether individual policies are implemented in a way to constitute good practice.

Table 1 Countries analysed in this study and the percentage of global GHG emissions incl. LULUCF covered by each of these countries in 2012 (emissions levels extracted from Edgar database (EU Joint Research Centre & PBL Netherlands Environmental Assessment Agency 2014))

Country	%	Country	%	Country	%
Argentina	0.71	Iraq	0.29	Saudi Arabia	1.0
Australia	1.4	Japan	2.8	South Africa	0.84
Brazil	5.6	Kazakhstan	0.68	Thailand	0.82
Canada	1.9	South Korea	1.2	Turkey	0.83
China	23	Kuwait	0.19	Ukraine	0.76
Egypt	0.55	Malaysia	0.52	United Arab Emirates	0.38
European Union	8.7	Mexico	1.2	United States	12
India	5.6	Nigeria	0.56	Uzbekistan	0.33
Indonesia	1.5	Pakistan	0.69	Venezuela	0.53
Iran	1.0	Russian Federation	5.2	Vietnam	0.58

This study focused on policy measures that are already implemented. The online database www.climatepolicydatabase.org/ was developed and used to collect the data for this project (see Annex for further detail). The online database gathered policy information from 14 publicly accessible databases, complemented with UNFCCC reports (National Communications, Biennial Reports and Biennial Update Reports) and other publicly available documents. With regard to future energy and climate mitigation targets, this study also included those provided in their intended nationally determined contributions (INDCs).

1.3 Methodological limitations

This is one of the first studies to develop a comprehensive database on mitigation-related policies that cover all sectors and most of global GHG emissions. There are a number of limitations regarding our methodological approach, which are to be addressed in future research.

First, the policy coverage (e.g. sectors as well as the latest reporting year) and the depth of information for each policy are not equal across countries in the databases compiled in this study. The policy coverage may be better for countries that are well documented or studied. We filled gaps whenever possible based on the information provided in, e.g. National Communications, Biennial Reports and Biennial Update Reports submitted to the UNFCCC as well as other studies from national governments, international organizations and research institutes.

Second, as described earlier in the report, this report neither analyses the ambition level nor the effectiveness of the policies that have been implemented to date. Therefore, a country with higher number of policies in one area than others should not necessarily be considered to be performing better or having higher ambition in terms of GHG emissions reductions. The emphasis here is on the gaps where no policies exist, which is an unambiguous indication that more could be done.

Third, the lack of policy coverage in some of the 30 countries may be due to the fact that specific policy areas are more or less relevant for individual countries. For example, deforestation and afforestation policies may not be needed for desert states. Most of the policy areas covered in the good practice table are relevant for all countries. Future work will need to address the differentiated relevance of the areas for the countries.

Fourth, moreover, policy coverage results for the 30 countries may be underestimated for some areas because we only consider *national* policies here and in some countries significant policies are implemented at *subnational* levels. For example, urban planning strategies could be led by cities without initiative or guidance by the national governments.

2 Preparation of a good practice policy menu

The first step in this study was to compile a good practice policy menu for climate change mitigation. Such a menu could be a valuable tool for policy makers in defining policies for climate action. Furthermore, this good practice policy package provides an easy-to-use framework of policies that could be employed for future analysis at a country or regional level, as undertaken in this study (see next chapters). This section describes how a good practice policy menu was prepared for the analysis. The following step in the analysis, i.e. checking whether the target countries currently have implemented policies in the different areas, as well as the development of database structure and data categorization are described in Annex.

The good practice policy menu (presented in Table 2) was developed based on the definition of "good practice policies" presented in Section 1 by performing an extensive literature review on climate change mitigation policies, and was structured along segments of sectors and policy areas, as identified in the Climate Action Tracker assessment methodology (Höhne et al. 2011).

A balance between simple and manageable, yet comprehensive, was sought for the compilation of the policy menu. Policies that were recurrently identified as good practice or of high mitigation potential in the literature were categorized into broader types (described with bullet points in Table 2**Error! Reference source not found.**) of policy instruments pertaining to specific sector versus policy area segments. In many areas the good practice includes different types of policies as options. This means that we do not make a judgement on the type of policy instrument specifically used, but rather analyse whether a country is taking good practice action in a given policy segment. The following sections in this chapter provide a more detailed description of the policy menu, formulated per policy sectors.

Information on good practices in climate mitigation policies was gathered from the following sources:

- Policy menus of the UNFCCC technical papers (UNFCCC 2014a; UNFCCC 2014c; UNFCCC 2014b; UNFCCC 2014d)
- Policies proposed in the chapters of the IPCC Fifth Assessment Report (IPCC 2014)
- Best-practice policies proposed in the UNEP Emissions Gap Report 2013 (UNEP 2013)
- UN-Energy report on policies for industrial energy efficiency (UN Energy 2009)
- World Energy Outlook Special Report on Energy and Climate (IEA 2015)
- IEA 25 energy efficiency policy recommendations (IEA 2011)
- Climate Action Tracker country assessment methodology (Höhne et al. 2011)
- NewClimate, PBL and IIASA - Impact of good practice policies report (Fekete et al. 2015)
- McKinsey & Company Pathways to a low-carbon economy (McKinsey & Company 2009)
- The New Climate Economy Report (The New Climate Economy 2014)
- IEA special report "Redrawing the Energy-Climate Map" (IEA 2013)
- BigEE guide on energy efficiency in buildings (BigEE 2015)

2.1. Structure of the policy menu

This section was structured according to sectors considered in the good practice policy menu and provides an overview of the package and how it was developed based on the literature.

General

On the overarching level, for instance, we list as good practice when a country has an overall climate strategy supported by a designated coordinating body (IPCC 2014). National strategies have a higher chance of being implemented if they are coordinated by an institution created for this purpose. Furthermore, setting GHG emission targets, national energy efficiency targets and national renewable energy targets are crucial in guiding the development of effective policies, in accordance with the longer term goals, and in providing clear signals across

all sectors (IEA 2015). We did not count sector-based strategies that lack clear targets or concrete plans for implementation as good practice, as they were dimmed unlikely to trigger significant changes in the policy sectors.

Finally, efforts to support low-carbon Research, Development and Deployment (RD&D) are needed to prepare for a long term transition to a low-carbon economy (UNFCCC, 2014a, The New Climate Economy, 2014). The good practice matrix includes this aspect as an overarching, cross-sectoral theme, covering all policy area.

Electricity and heat

The electricity and heat sector provides a high potential for mitigation not only through improvements in the efficient use of fuels, but also through a possible transition to zero emissions energy production.

In this sector, good practice policy addressing energy efficiency include fiscal or financial incentives and sectoral standards to support highly efficient power plants and to ensure the phase out inefficient power plants (UNFCCC 2014a; UNFCCC 2014c; The New Climate Economy 2014; IEA 2015; Höhne et al. 2011; Somanathan E. et al. 2014). Additionally, a particularly innovative regulatory instrument is the energy reduction obligation schemes, where the electricity producers have to ensure energy savings internally, or to offset by supporting energy efficiency improvements in other companies or sectors (Höhne et al., 2011). Policies that tackle electricity demand are considered in the demand sectors - industry, buildings and transport.

The development of renewable sources of energy is essential for the transition to a highly decarbonized economy, replacing fossil fuels that are currently widely used for energy production in the electricity and heat sector. Achievable renewable energy targets for this sector can send clear policy signals and encourage investments (UNFCCC, 2014c, Fekete et al., 2015). Furthermore, support schemes for renewables in general were grouped together and include a wide variety of policy options such as green certificates, feed in tariffs, obligation schemes, loans, and others (UNFCCC, 2014a, UNFCCC, 2014c IEA, 2015, Höhne et al., 2011, IPCC, 2014b). Measures for the development of the electricity grid and provision of access priority for renewables have to be included to allow high shares of renewable electricity in the system (UNFCCC, 2014c, Höhne et al., 2011). Implementing sustainability of biomass use is also considered good practice for this area of climate policy (Höhne et al., 2011).

UNFCCC (2014b, 2014d) describes carbon capture and storage (CCS) as a mitigation instrument of high potential, essential for a transition to net-zero emissions. CCS development can be supported through fiscal or financial incentives, as well as direct investments in specific infrastructure (UNFCCC, 2014d, McKinsey&Company, 2009, Höhne et al., 2011).

Finally, it is good practice to include overarching measures in this sector such as carbon pricing schemes and/or emission limits, energy taxes (UNFCCC, 2014a, The New Climate Economy, 2014). Furthermore, exclusion of all fossil fuel subsidies are essential in encouraging energy savings and paving the way to a transition to cleaner technologies (UNFCCC, 2014a, The New Climate Economy, 2014, IEA, 2015).

Industry

For a low-carbon economy it is important that all materials are used highly efficiently. Reducing emissions in industrial production can be achieved, for instance, by a change in materials used or applied processes (Höhne et al., 2011, IPCC, 2014b).

The use of renewable energy in industry can be encouraged or imposed through a variety of instruments, including fiscal or financial incentives, green certificates or obligation schemes (BigEE, 2015, Höhne et al., 2011). Industrial producers could, for instance, be encouraged to switch from use of fossil fuel combustion to biomass combustion (McKinsey & Company 2009), although for efficient emissions reductions, sustainable standards for biomass use should be implemented (IPCC, 2014b).

CCS is particularly important in industry sections where alternatives are not available. It can also be supported in many ways, including financial incentives and direct investments (UNFCCC, 2014b, UNFCCC, 2014d, McKinsey & Company, 2009, Höhne et al., 2011).

Table 2: Good practice policy menu

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	• Climate strategy • GHG reduction target • Coordinating body for climate strategy • Support for low-emission RD&D				
		• National energy efficiency target	• National renewable energy target		
Electricity and heat		• Support for highly efficiency power plants (including codes and standards and fiscal/financial incentives • Energy reduction obligation schemes	• Renewable energy target for electricity sector • Support scheme for renewables (including green certificates, fiscal/financial incentives, obligation schemes, net metering or direct investment) • Grid infrastructure development • Sustainability standards for biomass use	• CCS support schemes, including fiscal/financial incentives and infrastructure investment	
	• Overarching carbon pricing scheme or emissions limit • Energy and other taxes • No fossil fuel subsidies				
Industry	• Strategy for material efficiency (including product standards and other requirements)	• Support for energy efficiency in industrial production (including voluntary approaches, fiscal/financial incentives, obligation schemes or white certificates) • Energy reporting and audits • Minimum energy performance and equipment standards	• Support schemes for renewables (including fiscal/financial incentives, green certificates, obligation schemes) • Sustainability standards for biomass use	• CCS support schemes (including fiscal/financial incentives and infrastructure investment)	• Landfill methane reduction • Incentives to reduce CH_4 from oil and gas production • Incentives to reduce N_2O from industrial processes • Incentives to reduce fluorinated gases
	• Overarching carbon pricing scheme or emissions limit • Energy and other taxes • No fossil fuel subsidies				
Buildings	• Urban planning strategies (including infrastructure investments)	• Building codes and standards and fiscal/financial incentives for low-emissions choices in heating, cooling, hot water, and cooking • Minimum energy performance and equipment standards for appliances	• Support schemes for heating and cooling • Support schemes for hot water and cooking • Sustainability standards for biomass use		
	• Energy and other taxes • No fossil fuel subsidies				
Transport	• Urban planning and infrastructure investment to minimize transport needs	• Minimum energy/emissions performance standards or support for energy efficient light duty vehicles • Minimum energy/emissions performance standards or support for energy efficient heavy duty vehicles	• Biofuel target • Support schemes for biofuels (including fiscal/financial incentives and obligation schemes) • Sustainability standards for biomass use	• Support for modal share switch • E-mobility programmes	
	• Tax on fuel and/or emissions • No fossil fuel subsidies				
Agriculture forestry	• Standards and support for sustainable agricultural practices and use of agricultural products • Incentives to reduce CO_2 emissions from agriculture • Incentives to reduce CH_4 emissions from agriculture • Incentives to reduce N_2O emissions from agriculture • Incentives to reduce deforestation, and enhance afforestation and reforestation				

Not related to energy are policies addressing landfills emissions, CH_4 and CO_2 from oil and gas production (given high importance by IEA, 2015), N_2O from industrial processes (e.g. fertilizer production) and fluorinated gases (UNFCCC, 2014a, 2014d, McKinsey&Company, 2009, Fekete et al., 2015, IEA, 2015, Höhne et al., 2011, IPCC, 2014b). These are all areas where emissions can be significant and where policy solutions exist. Reducing non-energy emissions from industry can be done through, for instance, recovery (capture and use), improved infrastructure to limit leakage (especially in the case of methane), filters, integrated waste management, and reduced methane flaring (McKinsey&Company, 2009, UNFCCC, 2014d). Given the importance of this sector and the large number of possible measures, any policy addressing non-energy emissions was considered good practice.

Finally, it is good practice to include overarching measures in this sector such as carbon pricing schemes and/or tradable emission limits and energy taxes (UNFCCC, 2014a, UN Energy, 2009, The New Climate Economy, 2014, Höhne et al., 2011). Removal of fossil fuel subsidies is highly important to discourage inefficient energy consumption in the industry sector (UNFCCC, 2014a, The New Climate Economy, 2014, IEA, 2015, IEA, 2011)

Buildings

Deep decarbonisation requires urban planning that is compatible with limited energy use and transport needs and having such a strategy is considered good practice (UNFCCC, 2014d, BigEE, 2015, The New Climate Economy, 2014, Höhne et al., 2011). Urban strategies can cover aspects such as retrofitting old buildings, promotion of compact cities, improving infrastructure that promotes energy efficiency and use of renewable energy (e.g. improve accessibility to renewable sources of energy; renewable or energy efficient street lighting), energy efficient (city/district) spatial planning (BigEE, 2015).

For energy efficiency in buildings, three different aspects need to be tackled: heating and cooling, hot water and cooking, and appliances. The main policy categories that can be implemented to address the first two aspects are building codes and standards (including individual building components), and fiscal or financial incentives to support energy efficiency in both existing and planned buildings (UNFCCC, 2014a, BigEE, 2015 UNFCCC, 2014c, Fekete et al., 2015, UNEP, 2013, IEA, 2011, Höhne et al., 2011). Additionally, appliances play an important role in saving energy efficiency in the buildings sector, requiring regulation of standards (including phase out of inefficient light bulbs) as good practice measure (BigEE, 2015, McKinsey & Company, 2009, Fekete et al., 2015, UNEP, 2013, IEA, 2011, Höhne et al., 2011). Although performance labels for appliances are also mentioned in the literature as good practice, they were excluded from the good practice policy menu due to their limited effect on mitigation.

Support schemes for heating and cooling, as well as for hot water (e.g. solar heating) and cooking (e.g. biomass) from renewables is considered good practice (UNFCCC, 2014a, McKinsey & Company, 2009, Höhne et al., 2011). Furthermore, when biomass is used, its sustainable management must be considered (Höhne et al., 2011). Taking into account both renewable and energy efficiency in buildings, the aim is to reach net-zero energy consumption in this sector (IEA, 2011).

Energy and emissions taxes are good practice, as they act as incentives for energy savings and energy efficiency improvements (BigEE, 2015). In addition, energy use subsidies should not exist as they create incentives for wasteful consumption (UNFCCC, 2014a, BigEE, 2015, The New Climate Economy, 2014, IEA, 2015).

Transport

Urban planning strategies to support the reduction in emissions from transport are considered good practice (UNFCCC, 2014d, Höhne et al., 2011). Such strategies could be ensuring investment in well-connected and frequent public transport options in areas of high population density, or investing in infrastructure for better connectivity and traffic fluidisation (UNEP, 2013).

On efficiency, vehicle fuel efficiency and emissions standards or fiscal/financial incentives for light and heavy duty vehicles have proven very effective and are widely implemented (UNFCCC, 2014a, UNFCCC, 2014c, McKinsey & Company, 2009, Fekete et al., 2015, UNEP, 2013, IEA, 2011, Höhne et al., 2011).

Biofuels can be supported by targets and specific support policies (e.g. tax relief, mandatory blending), but are only effective in reducing overall greenhouse gas emissions if they are produced in a sustainable manner (McKinsey & Company, 2009, Höhne et al., 2011).

Furthermore, good practice policies in the transport sector encourage modal share shift programmes, supporting low-carbon means of transport. Especially important is the support for hybrid and electro mobility (shift from internal combustion engines to electric cars) which can be incentivised through fiscal or financial incentives (McKinsey&Company, 2009, Fekete et al., 2015, Höhne et al., 2011). Moving to a net-zero economy requires the transition of means of transport to low- or zero- carbon engines.

Overarching good practice policies that reduce emissions from cars are fuel or carbon taxes, which lead to energy savings, modal share shift, and incentives to invest in highly efficient or zero-carbon vehicles (UNFCCC, 2014a). Removal of fossil fuels subsidies impact on the same aspects as carbon and fuel taxes (The New Climate Economy, 2014, IEA, 2015).

Agriculture

Standards and support for sustainable agricultural practices and use of agricultural products in general are necessary to incentivise a transition in the agriculture sector. In addition, incentives for the subsectors are necessary, including CO_2 emissions from agricultural soils, CH_4 emissions from animals, and N_2O emissions from animals and soils. Policies addressing the inefficient use of nitrogen fertilizers, improved livestock production management, and land-use management (e.g. no-tillage practices), as well as a general increase in agricultural productivity accompanied by reductions in food loss and waste are considered good practice (UNFCCC, 2014d, The New Climate Economy, 2014, McKinsey & Company, 2009, UNEP, 2013, Höhne et al., 2011, IPCC, 2014b).

Finally, incentives to reduce deforestation and encourage good forestry management (including afforestation and reforestation) are necessary in countries where this is a large source of emissions. Possible policy approaches could be, for instance, regulatory measures (command-and-control instruments), protection of areas of forests, a or economic instruments (e.g. grants or subsidies to protect forest) (UNFCCC, 2014a, 2014d, The New Climate Economy, 2014, McKinsey & Company, 2009, Fekete et al., 2015, IPCC, 2014b).

Given the importance of the agricultural and forestry sector in reducing emissions and creating carbon sinks, and the various available approaches of good management in this area, for the individual sub-sectors (CO_2, CH_4, N_2O, Forestry) any policy or measure was considered good practice.

3 State of coverage of climate policies in major emitting countries

3.1 Coverage of policy areas and sectors

The 30 countries analysed in the report currently have a total number of approximately 1100 policies related to climate change mitigation in implementation. The number of policies per country varies significantly (comparison in section 3.4). Also in terms of coverage of sectors and policy areas, large differences exist. **Error! Reference source not found.** illustrates the coverage of good practice policies in the 30 countries.

3.1.1 General

With regard to cross-sectoral policies, **Error! Reference source not found.** shows that two-thirds of the countries have general climate strategies and 57% have coordinating bodies to implement the strategy. These figures are higher than those reported for nearly all United Nations member states as of 2012 (about 40%) reported in Dubash et al. (2013). This is partly because the 30 countries analysed in this report has a higher share of Annex I countries, which already had climate strategies and their coordinating bodies from the first commitment period of the Kyoto Protocol.

There were number of cross-sectoral policies with high coverage rates. 73% of the 30 countries have GHG reduction targets. INDCs have been submitted by 25 countries[3] as of 24 November, 2015, of which three countries[4] did not provide quantitative GHG reduction targets. The coverage rates for low-emission RD&D support policies, energy efficiency targets and renewable energy targets were found to be lower at 47%, 43%, and 40%, respectively.

3.1.2 Electricity and heat

A high coverage rate was observed for various renewable electricity support schemes (83%). Moreover, more than half of the countries (57%) have set renewable electricity targets and 70% implemented some sort of measures to promote high efficiency fossil fuel-fired power plants. By contrast, only 20% of the countries analysed already have CCS support schemes implemented.

By contrast, only a limited number have implemented energy reduction obligation schemes and no country has developed sustainability standards for biomass use in the electricity and heat sector. The absence of sustainability standards may partly be explained by the uncertain role and potential of biomass use in the power sector due to transportation and storage issues as well as competition with its use for other purposes (IRENA 2013). In addition, only 20% of the countries have energy and other taxes imposed and most countries (70%) have their fossil fuel consumption subsidized.

3.1.3 Industry

The results show that the coverage rates of policies in the industrial sector are in the 40% range for energy efficiency-related measures and below 35% for other policy areas. One of the reasons for low coverage rates for renewable energy support is that only a small number of industrial subsectors, which are not always major sectors in the 30 countries analysed, have high renewable energy potential (IRENA 2013). These subsectors include cement (mainly biomass), chemical and petrochemical (biomass and renewable heat) and iron and steel (biomass and renewable power) (IRENA 2013).

The coverage rates for policy measures to reduce non-energy emissions were particularly low, ranging at 20% or lower. Only 10% of the countries have removed their fossil fuel consumption subsidized. It is interesting to note that the coverage for CCS support schemes were higher in the industry (27%) than in the electricity and heat

[3] Kuwait, Malaysia, Nigeria, Uzbekistan and Venezuela have not submitted their INDCs as of 24 November 2015.
[4] Egypt, Pakistan and United Arab Emirates.

sector (20%). One possible explanation is that some of the oil producers among the 30 countries analysed are interested in CCS for enhanced oil recovery.

Table 3: Good practice policy matrix and coverage by analysed countries (percentage indicates the share of the 30 countries that have a policy in the respective areas)

	Changing activity	Energy efficiency	Renewables	Nuclear, CCS or fuel switch	Non-energy
General	Climate strategy (67%)				
	GHG reduction target (73%)				
	Coordinating body for climate strategy 57%)				
	Support for low-emission RD&D (47%)				
		National energy efficiency target (43%)	Renewable energy target (40%)		
Electricity and heat		Support for highly efficiency power plants (70%)	Renewable energy target for electricity sector (57%)	CCS support scheme (20%)	
		Reduction obligation schemes (7%)	Support scheme for renewables (83%)		
			Grid infrastructure development (67%)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (27%)				
	Energy and other taxes (20%) (not comprehensively addressed)				
	No fossil fuel subsidies (30%)				
Industry	Strategy for material efficiency (23%)	Support for energy efficiency in industrial production (47%)	Support schemes for renewables (33%)	CCS support scheme (27%)	Landfill methane reduction (17%)
		Energy reporting and audits (47%)	Sustainability standards for biomass use (7%)		Incentives to reduce CH_4 from oil and gas production (20%)
		Minimum energy performance and equipment standards (47%)			Incentives to reduce N_2O from industrial processes (17%)
					Incentives to reduce fluorinated gases (10%)
	Overarching carbon pricing scheme or emissions limit (23%)				
	Energy and other taxes (13%) (not comprehensively addressed)				
	No fossil fuel subsidies (10%)				
Buildings	Urban planning strategies (17%)	Incentives for low-emissions choices in heating, cooling, hot water, and cooking (60%)	Support scheme for heating and cooling (13%)		
		Minimum energy performance and equipment standards for appliances (60%)	Support scheme for hot water and cooking (13%)		
			Sustainability standards for biomass use (3%)		
	Energy and other taxes (13%) (not comprehensively addressed)				
	No fossil fuel subsidies (27%)				
Transport	Urban planning and infrastructure investment to minimize transport needs (23%)	Minimum energy/emissions performance standards or support for energy efficient for light duty vehicles (47%)	Biofuel target (23%)	Support for modal share switch (20%)	
		Minimum energy/emissions performance standards or support for energy efficient for heavy duty vehicles (47%)	Support schemes for biofuels (57%)	E-mobility programme (17%)	
			Sustainability standards for biomass use (13%)		
	Tax on fuel and/or emissions (27%) (not comprehensively addressed)				
	No fossil fuel subsidies (30%)				
Agriculture/forestry	Standards and support for sustainable agricultural practices and use of agricultural products (17%)				
	Incentives to reduce CO_2 emissions from agriculture (10%)				
	Incentives to reduce CH_4 emissions from agriculture (17%)				
	Incentives to reduce N_2O emissions from agriculture (13%)				
	Incentives to reduce deforestation and support for afforestation/reforestation (57%)				

Colour scheme: 0% 100%

3.1.4 Buildings

For the building sector, the coverage rates for energy efficiency-related measures were found to be 60% but those for renewables, which mainly concerns renewable heat, were found to be below 15%. The low coverage for renewable heat-related policies may partly be because the availability of economically affordable renewable heat varies largely across countries and regions. Energy taxes in the building sector was not comprehensively addressed, but it should be noted that the energy end-users such as the building sector often bears the taxes imposed to the electricity and heat sector and other energy transformation sectors. Fossil fuel subsidies are observed in more than 70% of the countries.

3.1.5 Transport

The coverage rates were generally below 40% in the transport sector. The coverage rates were particularly low (less than 25%) for urban planning-related policies which could minimize transport needs and policies that lead directly or indirectly to fuel switch in the sector. The exception was the coverage rate for biofuel support schemes which are implemented in more than half of the 30 countries (57%). However, **Error! Reference source not found.** also shows that the sustainability standards for biofuels exist only for 13% of the countries analysed. The results suggest that most of the countries promoting biofuels without assurance that the biofuels they are consuming are sustainable.

It should be noted that urban transport infrastructure projects and policies are often implemented by regional or city governments and thus not reported to the policy databases surveyed in this report. Therefore, the results obtained in this study may be underestimating the coverage rate for urban planning-related policies. The same can be said for modal share switch policies and E-mobility programmes.

3.1.6 Agriculture and forestry

Error! Reference source not found. shows that most countries only focus on the reduction of deforestation and enhanced afforestation and reforestation (57%). When the countries with little forest are excluded[5], the coverage rate for forestry-related policies is close to 70%. Policies for deforestation, afforestation and reforestation are implemented in key countries such as Brazil, Indonesia and Malaysia. Most countries have not implemented policies to reduce GHG emissions from the agricultural sector partly because the sectoral GHG emissions are small compared to other sectors.

3.2 Number of policies per policy areas and sectors

The predominating areas of policies related to climate change mitigation in the 30 countries are energy efficiency and renewable energy. Other areas of measures, such as switching to less carbon intensity fuels (“Nuclear or CCS or fuel switch”), changing activity patterns or measures to reduce non-energy related emissions are less common (compare left part of Figure 1). In terms of sectors, the results show that most policies exist in the power sector, followed by buildings and transport. Industry and agriculture and forestry appear to be the least regulated sectors (compare right part of Figure 1).

Interesting to note is that there are many policies covering more than one type of policy area (“Multiple areas/cross-cutting”), as well as many covering more than one sector (“Multiple sectors/cross-cutting”). This reflects the nature of climate change mitigation, which is a multifaceted issue and often requires an integrated approach over various sectors and aspects to be most efficient and effective. Moreover, some cross-cutting policy measures address climate change mitigation as co-benefits in addition to the main objectives of, e.g. strengthened energy security or efficient urban transport.

[5] Egypt, Iraq, Kuwait, Saudi Arabia and United Arab Emirates.

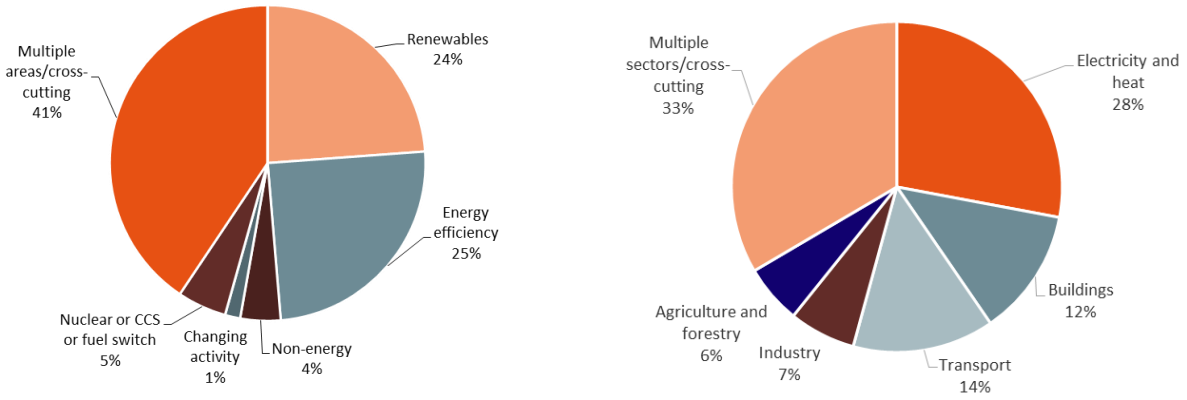


Figure 1: Distribution by policy type area (left) and sector (right)

3.3 Comparison of energy efficiency and renewable energy policies

This section focuses on the policy areas which are most targeted in the 30 countries – energy efficiency and renewable energy. It provides some insights on how policies support the reduction of GHG emissions in these two areas, and highlights major differences in the approaches.

The data gathered for the 30 countries shows that the predominating instruments to increase energy efficiency are on information provision such as product performance labels, which this study did not consider as part of good practice policy menu. Other prevalent policy instruments are mainly regulatory ones including fuel economy and emissions standards for vehicles as well as building codes and standards. Fewer policies exist that focus on financial support for energy efficiency measures. Regulatory approaches can be effective where there are market failures or barriers for energy-efficient technologies. A considerable amount of literature indicates that energy efficiency regulations have been implemented at negative costs for building, transport and industrial sectors (Somanathan E. et al. 2014).

This is very different in the area of renewable energy, where financial or fiscal support schemes such as tax reliefs, feed-in tariffs or premiums, loans, and grants and subsidies are more commonly implemented (compare Figure 2). Here the main barrier (at least in the past) was the relatively higher cost of renewables, which had to be compensated through financial support. With the costs of renewables decreasing considerably, we may see a change in trend in the future.

Countries implement most measures for energy efficiency in the building sector, followed by transport (left side of Figure 3). A smaller share (8%) of the policies targets the industrial sector. About 20% of the energy efficiency policies target more than one sector (marked as “Multiple sectors/cross-cutting”).

For renewable energy, the picture again is very different: an overwhelming majority of the policies (74%) focuses on the electricity and heat sector (right side of Figure 3). This reflects the increasing number of support schemes for renewable electricity, which is also reported by the REN21 report (REN21 2015). Policies to increase the share of renewable fuel in the end use sectors are less common. The transport sector achieves the highest coverage amongst those: 9% of all RE policies in the 30 countries aim at increasing the share of biofuels for transportation. Although there is some support for non-electricity related renewable energy in buildings, the coverage of policies addressing this area is less than 1%.

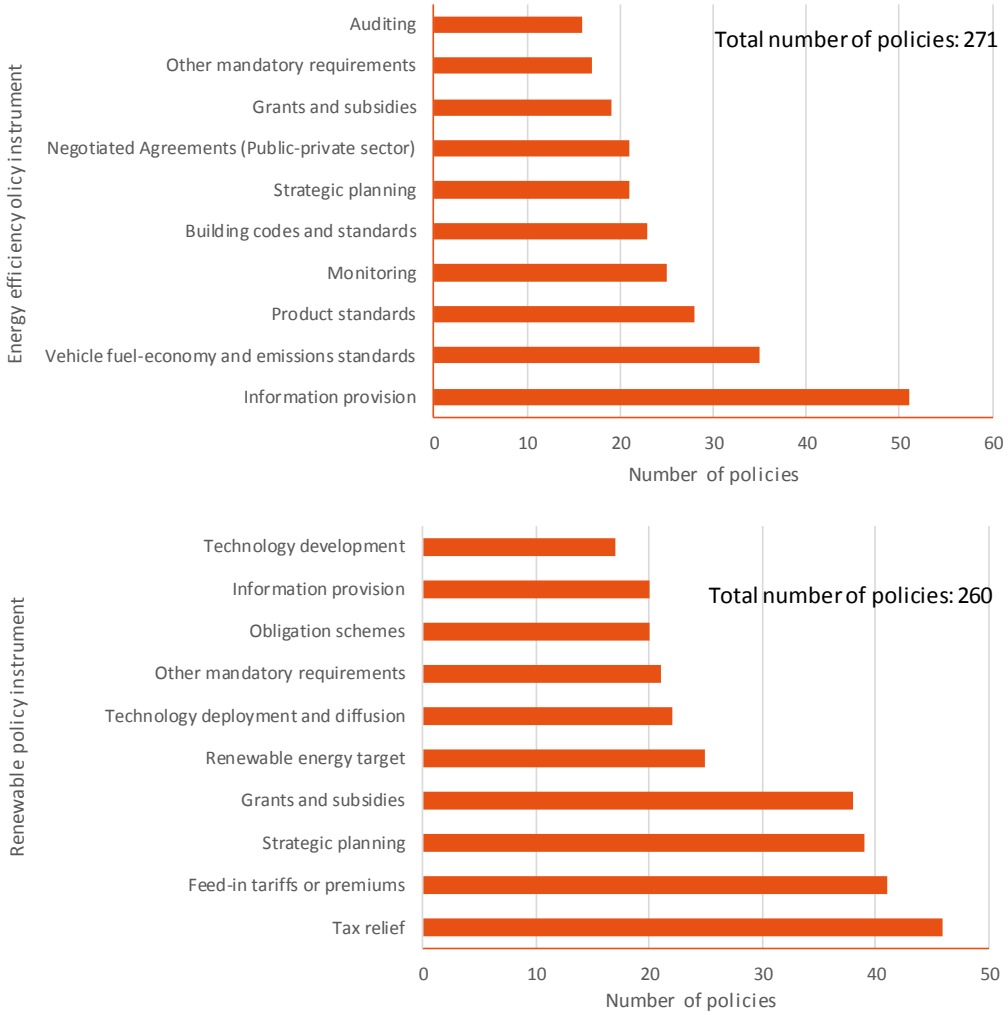


Figure 2: Top ten policy instruments for energy efficiency (top) and renewable energy (bottom). Note: the graphs only reflect policies that exclusively address energy efficiency or renewable energy.

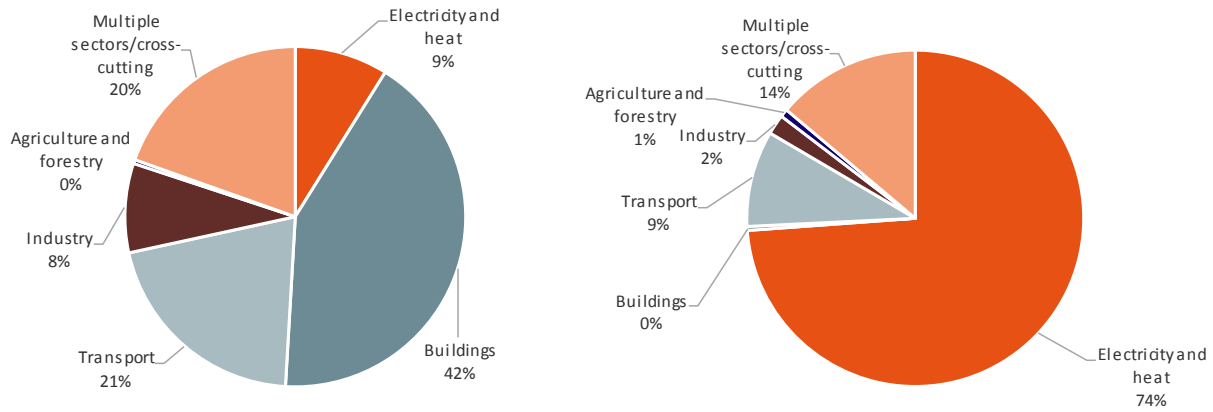


Figure 3: Distribution of sectors targeted with energy efficiency policies (left) and renewable energy policies (right)

3.4 Distribution of policies over countries

Of the 30 countries, all have at least one climate policy measure implemented. The number of policies per country nevertheless varies significantly (see Figure 4).

The top-five countries in terms of number of climate policies are the United States of America (USA), European Union (EU (28)), Japan, China, and South Korea. Examples for countries where very few climate policies were found are Venezuela, Uzbekistan, Saudi Arabia, Kuwait, Kazakhstan, and Iraq. Factors that seem to influence the number of policies in the countries are their degree of economic development (countries with higher per capita GDP have more climate policies), as well as availability of natural resources (more fossil fuel reserves correlate with fewer climate policies) and the political regime.

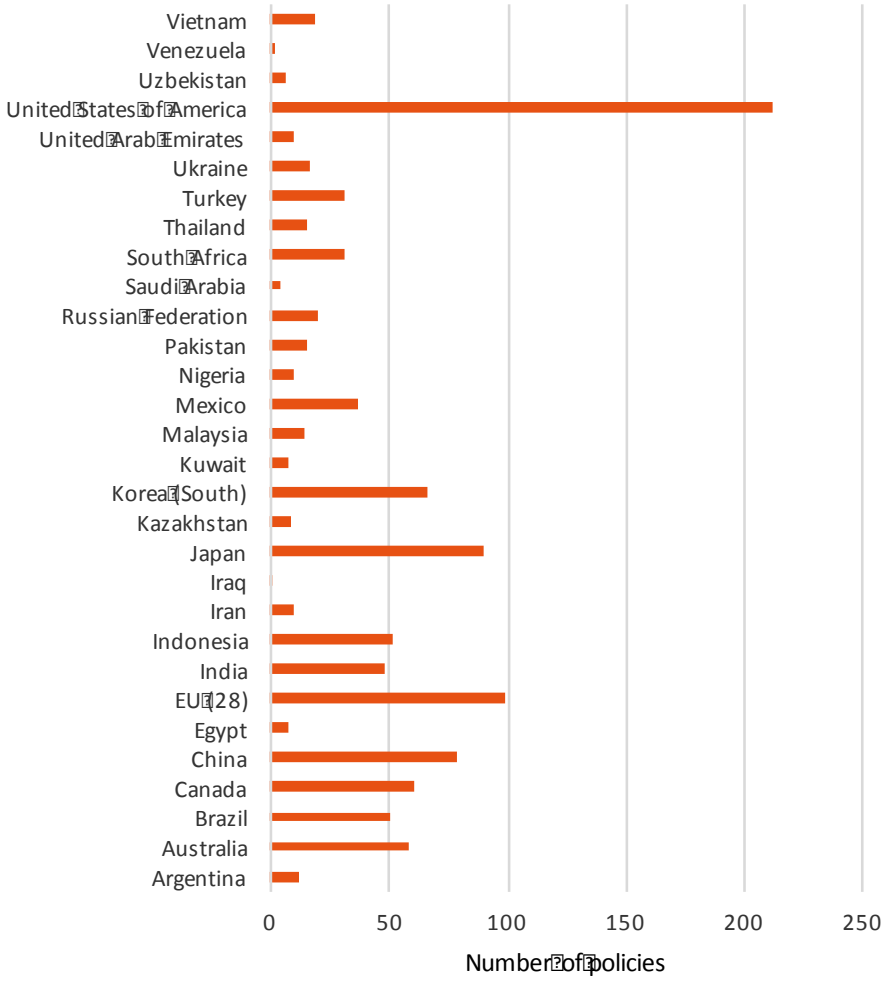


Figure 4: Total number of implemented national-level climate policies in analysed countries

4 Conclusions, recommendations and way forward

This study gathered information on which countries are implementing good practice policies from a policy menu to reduce greenhouse gas (GHG) emissions. 30 major emitting countries that comprise 82% of global GHG emissions were analysed.

We draw the following **conclusions**:

- **Support for renewable electricity generation is mainstream.** Support for renewable energy receives by far the most attention by the 30 major emitters. 83% have support policies and 57% have renewable electricity generation targets. This is an indication that support for renewables is already mainstream and that the remaining countries without support are a minority.
- **Efficiency in buildings and biofuels are half covered and therefore have significant remaining potential.** Second most covered areas are minimum performance standards for appliances in buildings (60%), standards and support for efficient buildings (60%) and support for biofuels (57%) (but only 13% have sustainability standards for the biofuels). There is (1) apparently good reasons for one half of the countries to implement these policies and therefore (2) there remains significant potential for the other half of the countries to do the same.
- **Removal of fossil fuel subsidies has very high potential.** Fossil fuels subsidies are still used very frequently. The shares of countries *without* such subsidies are 30% in electricity sector, 10% in industry, 27% in buildings and 30% in transport. Removal of these subsidies in a social manner would free significant potential.
- **Overarching carbon pricing schemes are currently limited but increasing in scope.** Current coverage is low in the range of 23-27%. The EU emissions trading system is the most prominent one, but more national system are emerging such as the emission trading systems in South Korea and Kazakhstan and carbon taxes in Mexico, Japan and India.
- **Energy efficiency polices are not yet widely spread and could be significantly enhanced.** Just over 40% of the countries have national energy efficiency targets, 47% support efficiency in industry and around 47% have standards to support efficient vehicles. Hence, more than half of the countries can learn from those that already implement these measures.
- **Deforestation is currently covered by almost all countries where this is relevant.** The coverage rate of policies for reduced deforestation and enhanced afforestation/reforestation was 57%, but they are implemented in key countries such as Brazil, Indonesia and Malaysia.
- **For all areas outside of energy, except deforestation, coverage is low.** Areas with particularly low mitigation costs are only marginally covered, e.g. methane from oil and gas production (17%), waste (20%), N_2O emissions from industrial processes (17%), fluorinated gases (10%) and agriculture (10-17%).
- **Strategies and policies to fundamentally change the way we consume are underdeveloped**, **while such changes can be amongst the most cost-effective.** Such changes are currently only marginally covered by policies, such as urban planning so that less travel and heating and cooling of buildings is needed (17%), strategies for improving material efficiency (23%), E-mobility programmes (17%) and sustainable practices in agriculture (17%).
- **Overall national climate strategy and planning is quite comprehensive.** For cross-sectoral policies, it was found that two-thirds of the countries had national climate strategies and 57% had bodies coordinating the implementation of the strategy. The vast majority (73%) now has quantitative GHG reduction targets.

The results obtained in this report strongly indicate that there is still significant emissions reduction potential in the 30 countries assessed by applying the four measures, that the IEA (2013) recommends, because they could help keep the door open to achieve the 2 °C target at no net economic cost:

1. **"Adopting specific energy efficiency measures":** We see in this report that good practice energy efficiency measures are taken at maximum by half of the 30 countries. While energy performance standards from appliances are best covered (63%), measures for vehicles, industry and buildings could be significantly enhanced.
2. **"Limiting the construction and use of the least-efficient coal-fired power plants":** A few countries implement measures dedicated to limit inefficient coal fired power plants (e.g. China), but most have general regulation for the power sector, not specific to coal fired power plants. The only country that has plans to phasing out coal-fired power plants to date is the United Kingdom[6] (not individually covered in this study as part of the EU).
3. **"Minimising CH_4 emissions from upstream oil and gas production":** Significant potential is untapped, as only 13% of the covered countries have policies in this area. This source of emissions is only relevant for countries with fossil fuel production, which at least 80% of the countries covered here.
4. **"Accelerating the (partial) phase-out of subsidies to fossil-fuel consumption":** Fossil fuel subsidies are still very frequent, the share of countries without subsidies is 20 to 40% depending on the sector.

Based on the work we offer the following **recommendations**.

- The comparison of good practice recommendations from various institutions with the current status of implementation of policies by the 30 major emitting countries reveals the following areas as important for increasing ambition
    - Advance national target setting and strategy development (significant improvement was made during the INDC preparation process)
    - Supporting energy efficiency in all sectors
    - Supporting renewable energy in all sectors, in particular in industry and heating and cooling of buildings
    - Removing fossil fuels subsidies
    - Supporting all areas outside of energy, in particular methane from oil and gas production, waste, N_2O emissions from industrial processes, fluorinated gases and agriculture.
- The information collected in this report and database should be used to develop country specific recommendation on how to increase ambition. The collection of information revealed once again that all countries have their very specific circumstances, which makes specific recommendations much more useful than broad, general recommendations.

Future work could address the limitations of this initial study:

- Review of the information by country experts to ensure equal information depth.
- Assessment of the ambition level and the effectiveness of the policies that have been implemented to date.
- Include the fact that specific policy areas are more or less relevant for individual countries, due to their different emission profile.
- Consider also policies that are implemented at *subnational* levels.

The database created for this project (www.climatepolicydatabase.org) is intended to be used and extended as a collaborative tool to advance the data collection of the implementation status of climate policies as a basis to develop recommendations on how to increase ambition.

[6] http://www.bbc.com/news/business-34851718

5 Country factsheets

In this study, 30 of the highest GHG emitters were selected and their implemented climate policies were identified in order to determine their coverage of the good practice policy menu. These 30 countries collectively account for 82% of global emissions in 2012 (EU Joint Research Centre & PBL Netherlands Environmental Assessment Agency 2014).

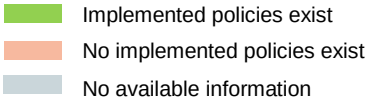
In the following sections, the results of the good practice policy analysis per country are presented. The country factsheets cover the following information:

- Table coverage of the good practice policy menu (implemented policies per policy area and sector)
- Brief overview of the coverage of sectors and policy areas
- Examples of policies implemented in the given country
- Areas that lack policy coverage and recommendations for future climate action

It is important to note that policy packages can appear in more than one cell of the good practice policy menu of each country. This is often the case when policy packages contain measures that tackle multiple policy areas and/or sectors. The country tables showing coverage of the good practice policy menu only reflect implemented policies that were categorised as good practice according to the policy menu, and do not include all implemented climate policies in a country.

The information collected here is an initial attempt to cover the complex policy landscape of the countries.

The numbers given in each matrix cell represent the number of policies/measures that the country implemented for that specific policy area. The colour code of the good practice policies matrix is as follows:



5.1 Argentina

The policies in Argentina, which is a major gas and petroleum producer in South America,[7] are mostly centred around the electricity and heat sector, generally showing a strong preference for renewables. For instance, two important measures are the Renewable Energy Generation Program (GENREN, 2010) addressing the electricity sector, and the Biofuel Promotion Law (2008) concerning the use of biofuels in transport. No policy implemented policies were found for the industry and agriculture and forestry sectors, and policy areas other than renewables are generally neglected. However, it is also important to note that Argentina has a climate strategy (Estrategia Nacional en Cambio Climatico, 2012) and a coordinating body that can further support climate action.

Table 4 Coverage of the good practice policy menu in Argentina

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	**Climate strategy (1)**				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants	**Renewable energy target (3)**	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (4)**		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	**Biofuel target (1)**	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	**Support for biofuels (2)**	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

[7] https://www.eia.gov/beta/international/analysis.cfm?iso=ARG

5.2 Australia

Australia is a major coal and liquefied natural gas exporting country.[8] Australia has a broadly distributed coverage of policies, addressing most sectors and policy areas. An important policy of multi-sectoral impact is the Greenhouse and Energy Minimum Standards Act (2012), while the Emissions Reduction Fund (2014) acts as a support scheme across sectors and policy areas. The transport sector currently has the least policy coverage and requires further improvement to incorporate more policy areas. Perhaps the main source of concern regarding Australia's climate action is the lack of an implemented climate strategy to guide the implementation and development of current and future policies and measures.

Table 5 Coverage of the good practice policy menu in Australia

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target (1)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D (2)				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target (1)	CCS support scheme (1)	
		Reduction obligation schemes	Support scheme for renewables (2)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (4)	Support for renewables (2)	CCS support scheme (1)	Landfill methane
		Energy reporting and audits (1)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (2)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (2)	Support for heating and cooling (1)		
		MEPS for appliances (3)	Support for hot water and cooking (1)		
			Sustainability standards for biomass		
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels (1)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (2)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture (2)				
	Incentives to reduce CH4 emissions from agriculture (2)				
	Incentives to reduce N2O emissions from agriculture (2)				
	Incentives to reduce deforestation (2)				

[8] https://www.eia.gov/beta/international/analysis.cfm?iso=AUS

5.3 Brazil

Brazil has policies in all sectors and policy areas, with greater focus on electricity and heat generation from renewables and forest protection. One of the incentives that Brazil implemented to support renewable energy production is a tendering scheme (Brazil Renewable Energy Auctions, since 2007). The Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm) is amongst the important measures Brazil has taken for forest protection. Further climate action could address policy areas that are not currently tackles, such as agricultural emissions, minimum standards in industry, and an overarching carbon pricing.

Table 6 Coverage of the good practice policy menu in Brazil

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (2)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (4)				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants (1)	Renewable energy target (2)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (8)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (2)	Support for renewables (1)	CCS support scheme (1)	Landfill methane (1)
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry (1)
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (1)	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles (3)	Biofuel target (1)	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (1)	Support for biofuels (3)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture (2)				
	Incentives to reduce CH4 emissions from agriculture (1)				
	Incentives to reduce N2O emissions from agriculture (1)				
	Incentives to reduce deforestation (10)				

5.4 Canada

Canada's policies spread across all sectors, with no clear preference for a specific sector. The Canadian Environmental Protection Act set minimum performance standards in the industry sector since 1999. Emissions standards in transport are also regulated for both light duty and heavy duty vehicles. An example is the Heavy-duty Vehicle and Engine GHG Emissions Regulations (2014). However, given Canada's GHG emissions levels, more policies would have to be set in place, with a focus on policy areas that are currently not addressed. Canada's climate strategy and the recently announced INDC target could act as support for future action.

Table 7 Coverage of the good practice policy menu in Canada

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	**Climate strategy (1)**				
	GHG reduction target (2)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D (7)				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants (2)	Renewable energy target	**CCS support scheme (1)**	
		Reduction obligation schemes	**Support scheme for renewables (4)**		
			Grid infrastructure development (2)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	**Material/process (1)**	Industrial production efficiency	**Support for renewables (1)**	**CCS support scheme (1)**	**Landfill methane (1)**
		Energy reporting and audits (2)	Sustainability standards for biomass		**CH4 – oil and gas (2)**
		MEPS for equipment (3)			**N2O from industry (1)**
					Fluorinated gases (1)
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	**MEPS or fiscal/financial incentives (4)**	Support for heating and cooling		
		MEPS for appliances (3)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	**MEPS or support for energy efficient light duty vehicles (2)**	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (4)	**Support for biofuels (4)**	E-mobility	
			Sustainability standards for biomass (1)		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	**Standards and support for sustainable agricultural practices and use of agricultural products (2)**				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.5 China

China's climate policies cover all sectors, but a higher preference for renewables in the electricity and heat sector can be observed. Examples from this category are the Renewable Energy Electricity Feed-in Tariffs (2012). In addition to supporting renewables, China takes measures towards phasing out highly inefficient power plants, through policies such as Retirement of Inefficient Plants (2007). Policy areas that currently lack or have few policies are the agricultural sector (non-forestry) and the non-energy emissions of the industry sector. Future climate action in China could consider covering these areas, as well as the options of implementing a carbon pricing scheme. China is currently planning the implementation of a nationwide emissions trading scheme from 2016 (planned policies are not counted in the table below).

Table 8 Coverage of the good practice policy menu in China

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
		National energy efficiency target (3)	Renewable energy target (2)		
Electricity and heat		Highly efficiency power plants (4)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (20)		
			Grid infrastructure development (3)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process (3)	Industrial production efficiency (4)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (3)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (5)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (4)	Support for heating and cooling		
		MEPS for appliances (2)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles (7)	Biofuel target	Modal share shift (2)	
		MEPS or support for energy efficient heavy duty vehicles (3)	Support for biofuels (1)	E-mobility (3)	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products (1)				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (4)				

5.6 Egypt

Egypt's policies mostly focus on the electricity and heat sector. Two important policies addressing this sector are Egypt's Strategy for Energy Supply and Use (2007) and the New National Renewable Energy Strategy (2008). Future GHG mitigation measures should address uncovered sectors. Furthermore, the implementation of an overarching climate strategy to set a roadmap for climate action could be a good starting point for further action.

Table 9 Coverage of the good practice policy menu in Egypt

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
		National energy efficiency target (1)	Renewable energy target		
Electricity and heat		**Highly efficiency power plants (2)**	**Renewable energy target (1)**	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (5)**		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	**Support for renewables (1)**	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.7 European Union

The European Union (EU) has a well-balanced coverage of policies across all sectors and areas. One important instrument regulating both industry and electricity and heat production is the EU Emissions Trading System (EU ETS) implemented since 2003. EU climate action is currently guided by the 2020 Climate and Energy Package, a climate strategy that sets targets for GHG emissions reductions, energy efficiency, and the share of renewables by 2020. Following this framework is the 2030 framework, setting new targets and strategies. However, there are still areas that lack policies and should be addressed through future climate action. Examples of such policy areas are E-mobility (electric cars), grid infrastructure and renewables in the buildings sector.

Table 10 Coverage of the good practice policy menu in the European Union

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (2)				
	GHG reduction target (3)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D (3)				
		National energy efficiency target (3)	Renewable energy target (2)		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target	CCS support scheme (1)	
		Reduction obligation schemes	Support scheme for renewables (2)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (3)	Support for renewables (1)	CCS support scheme (1)	Landfill methane (1)
		Energy reporting and audits (2)	Sustainability standards for biomass (1)		CH4 – oil and gas (1)
		MEPS for equipment (2)			N2O from industry (2)
					Fluorinated gases (3)
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (3)	Support for heating and cooling		
		MEPS for appliances (3)	Support for hot water and cooking		
			Sustainability standards for biomass (1)		
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Transport	Urban planning and investment (2)	MEPS or support for energy efficient light duty vehicles (4)	Biofuel target (1)	Modal share shift (2)	
		MEPS or support for energy efficient heavy duty vehicles (3)	Support for biofuels	E-mobility	
			Sustainability standards for biomass (1)		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture (1)				
	Incentives to reduce CH4 emissions from agriculture (1)				
	Incentives to reduce N2O emissions from agriculture (1)				
	Incentives to reduce deforestation (5)				

5.8 India

India has implemented policies across all sectors, but shows a clear preference for electricity and heat production from renewables. Two examples of policies in this area are the Tariff Policy (2006) and the Integrated Energy Policy (2006), using both fiscal/financial incentives and regulatory measures. India recently set new and ambitious capacity targets for renewables, and an INDC in the form of emissions intensity target. Future climate action in India could cover the agriculture sector and other areas that are currently lacking regulations (e.g. industrial non-energy related gases) and consider the removal of fossil fuel subsidies.

Table 11 Coverage of the good practice policy menu in India

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target (1)	Renewable energy target		
Electricity and heat		Highly efficiency power plants (1)	Renewable energy target (3)	CCS support scheme	
		Reduction obligation schemes (1)	Support scheme for renewables (15)		
			Grid infrastructure development (3)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (4)	Support for renewables (2)	CCS support scheme	Landfill methane
		Energy reporting and audits (2)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning (2)	MEPS or fiscal/financial incentives (2)	Support for heating and cooling (1)		
		MEPS for appliances (1)	Support for hot water and cooking (1)		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment (1)	MEPS or support for energy efficient light duty vehicles (2)	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (2)	Support for biofuels (3)	E-mobility (1)	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (3)				

5.9 Indonesia

Indonesia currently has implemented policies across all sectors, with a clear preference for the area of electricity and heat production from renewables. Examples of policies in this area are the Green Energy Policy (2004) and the New Geothermal Law (2014), providing fiscal/financial incentives for the use of renewables, such as tendering schemes. Incentives to reduce deforestation are important, as this is the largest source of emissions in Indonesia. The existence of the National Action Plan Addressing Climate Change (2008) is an important support for the country climate action. However, many policy areas are still not tackled in Indonesia, offering the country numerous opportunities for more ambitious future climate mitigation.

Table 12 Coverage of the good practice policy menu in Indonesia

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target (1)	Renewable energy target (2)		
Electricity and heat		Highly efficiency power plants (1)	Renewable energy target (2)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (10)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process (1)	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (1)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (1)	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target (1)	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels (2)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products (1)				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (7)				

5.10 Iran

Iran, a major oil producer, has climate policies only in the electricity and heat sector of the good practice policies package. Renewable Portfolio Standards (2012) and the Annual Budget Law (2014) support and regulate energy efficiency and the use of renewables in the industry and electricity and heat sectors. Further climate policy development in Iran could consider the transport and buildings sectors, as well as the other currently unregulated policy areas. Developing a comprehensive climate strategy would help guide future climate policy-making.

Table 13 Coverage of the good practice policy menu in Iran

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target (1)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		**Highly efficiency power plants (1)**	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (3)**		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.11 Iraq

No existing mitigation-related policies were identified for Iraq, but the country made a major step forward in November 2015 when it submitted its INDC. The Integrated National Energy Strategy (2014) also proposed a renewable electricity capacity target of 2GW for 2030 and gives a set of additional recommendations for the electricity and heat sector. However, it is unclear whether these recommendations were implemented, and therefore, the strategy was not included in the good practice policy table. Developing a comprehensive climate strategy that follows up the INDC could help the country initiate policy development for climate mitigation.

Table 14 Coverage of the good practice policy menu in Iraq

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.12 Japan

Climate policies in Japan show a balanced coverage of all sectors, with the exception of agriculture. One noteworthy example from the buildings sector is the Low-carbon City Promotion Act (Eco-city Law, 2014), providing codes and standards, as well as fiscal/financial incentives for low-carbon choices. The absence of fossil fuel subsidies, the implementation of carbon and (decades-long) energy taxes and the implementation of a feed-in tariff scheme for renewable electricity are the most important aspect of Japan's climate action. Future climate mitigation measures in Japan could consider policy areas with a limited number of implemented policies, such as the support schemes for renewable energy use in non-electricity sectors.

Table 15 Coverage of the good practice policy menu in Japan

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants (7)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (7)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (7)	Support for renewables (2)	CCS support scheme (1)	Landfill methane
		Energy reporting and audits (3)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (2)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (7)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Buildings	Urban planning (2)	MEPS or fiscal/financial incentives (9)	Support for heating and cooling (1)		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes (3)				
	No fossil fuel subsidies				
Transport	Urban planning and investment (5)	MEPS or support for energy efficient light duty vehicles (3)	Biofuel target	Modal share shift (2)	
		MEPS or support for energy efficient heavy duty vehicles (2)	Support for biofuels (2)	E-mobility (1)	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (4)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (2)				

5.13 Kazakhstan

Kazakhstan is the second largest oil producer among the former Soviet Union countries.[9] Kazakhstan's climate policies mainly address the electricity and heat sector. The policy areas of action are energy efficiency and renewables, tackled for instance through the Concept for Kazakhstan's Transition to Green Economy (2013) and the Law about Support for the Use of Renewable Sources of Energy (2009), respectively. Perhaps most importantly, Kazakhstan has an implemented economy-wide emissions trading scheme since 2013. However, strong action across all sectors is still needed.

Table 16 Coverage of the good practice policy menu in Kazakhstan

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (1)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (1)	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

[9] https://www.eia.gov/beta/international/analysis.cfm?iso=KAZ

5.14 South Korea

Overall, South Korea has a balanced coverage of policies across all sector, with no clearly defined focus on a specific policy area. An example of a policy from the transport sector is the Act on the Promotion of Development and Distribution of Environmentally Friendly Automobiles (2004), providing fiscal/financial incentives for low- and zero-carbon vehicles. South Korea recently implemented a national emissions trading scheme (2015) and currently has a long-term strategy (2010-2050) that sets the roadmap for low-carbon development, Framework Act on Low-carbon, Green Growth. Future climate action in South Korea may consider the exclusion of fossil fuel subsidies from the industry sector, implementing a national efficiency target, and addressing policy areas that currently lack climate mitigation measures, such as building codes and standards.

Table 17 Coverage of the good practice policy menu in South Korea

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (2)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target (1)	CCS support scheme (1)	
		Reduction obligation schemes	Support scheme for renewables (8)		
			Grid infrastructure development (2)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process (1)	Industrial production efficiency (5)	Support for renewables (3)	CCS support scheme (1)	Landfill methane (3)
		Energy reporting and audits (3)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (3)	Support for heating and cooling (1)		
		MEPS for appliances (1)	Support for hot water and cooking (1)		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment (2)	MEPS or support for energy efficient light duty vehicles (2)	Biofuel target	Modal share shift (2)	
		MEPS or support for energy efficient heavy duty vehicles (2)	Support for biofuels (1)	E-mobility (1)	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture (1)				
	Incentives to reduce N2O emissions from agriculture (1)				
	Incentives to reduce deforestation (1)				

5.15 Kuwait

Climate policies in Kuwait, a major oil producing country, only cover buildings and electricity and heat production from the good practice policies package. For instance, the Energy Conservation Code of Practice (1983), introduces energy efficiency building codes and standards. Furthermore, existing renewable energy targets are an encouraging signal for the electricity and heat sector. Strong future mitigation action is required in all sectors.

Table 18 Coverage of the good practice policy menu in Kuwait

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants	**Renewable energy target (2)**	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	**Urban planning (1)**	**MEPS or fiscal/financial incentives (1)**	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.16 Malaysia

Policies identified in Malaysia address all sectors except industry. Electricity and heat production from renewable sources is supported by a number or strategic plans and schemes, such as The Green Technology Financing Scheme (2015) and the Renewable Energy Act (2011). Malaysia still has broad policy areas to cover, especially in the industry, transport, buildings, and agriculture sectors. The country climate strategy and designated coordinating body for climate change may help set the roadmap for required future climate action.

Table 19 Coverage of the good practice policy menu in Malaysia

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	**Climate strategy (1)**				
	GHG reduction target				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target	**Renewable energy target (1)**		
Electricity and heat		**Highly efficiency power plants (1)**	**Renewable energy target (2)**	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (3)**		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	**Support for biofuels (1)**	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

5.17 Mexico

Climate policies in Mexico cover all sectors in the good practice policies package. The Energy Reform Package (2013) regulates both industry and electricity and heat sectors. Furthermore, the existence of a carbon tax, as well as other energy taxes have a high potential for GHG mitigation in the sectors of implementation. Buildings and agriculture and forestry sectors currently have the lowest number of implemented policies. Further climate action may focus on the least addressed sectors and policy areas.

Table 20 Coverage of the good practice policy menu in Mexico

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (4)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (3)		
			Grid infrastructure development (3)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process (1)	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas (1)
		MEPS for equipment (1)			N2O from industry (1)
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit (2)				
	Energy and other taxes (1)				
	No fossil fuel subsidies				
Buildings	Urban planning (1)	MEPS or fiscal/financial incentives (2)	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment (1)	MEPS or support for energy efficient light duty vehicles (2)	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (2)	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

5.18 Nigeria

Nigeria is the largest oil producer in Africa.[10] Except for the general policies, renewable energy is the only area covered by policies in Nigeria. The Nigerian Biofuel Policy and Incentives (2007), for instance, applies both in transport and electricity and heat production. It is also important to note Nigeria's National Policy on Climate Change implemented in 2013 and the existence of a coordinating body for climate action. Future action could give priority to the industry, buildings and agriculture and forestry sectors.

Table 21 Coverage of the good practice policy menu in Nigeria

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	**Climate strategy (1)**				
	GHG reduction target				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants	**Renewable energy target (3)**	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (3)**		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	**Biofuel target (1)**	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	**Support for biofuels (1)**	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

[10] http://www.eia.gov/beta/international/analysis.cfm?iso=NGA

5.19 Pakistan

Pakistan shows a strong preference for renewables in electricity and heat production. Examples of policies in this category are the Alternative and Renewable Energy Policy (2011) and the Net Metering Policy for Solar PV and Wind Projects (2015). Pakistan's climate action is currently guided by the National Climate Change Policy (2012). Future action should focus on sectors and areas of no coverage in the present, such as the buildings sector.

Table 22 Coverage of the good practice policy menu in Pakistan

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	**Climate strategy (1)**				
	GHG reduction target				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (5)**		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	**Material/process (1)**	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	**Support for biofuels (1)**	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

5.20 Russian Federation

Policies in the Russian Federation mostly target energy efficiency across all sectors and renewables in the electricity and heat production sector. Note-worthy policies in these areas are the Energy Efficiency Legislation (Federal Law 261-FZ), are Decree No. 449 on the Mechanism for the Promotion of Renewable Energy on the Wholesale Electricity and Market (2013). Action to reduce CH_4 emissions from oil and gas production is also highly relevant for the Russian Federation. Further climate action could address currently missing areas (e.g. renewables) in the transport, buildings and industry sector.

Table 23 Coverage of the good practice policy menu in the Russian Federation

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target (1)	Renewable energy target		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (3)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (1)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (3)	Sustainability standards for biomass		CH4 – oil and gas (2)
		MEPS for equipment (2)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (4)	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles (1)	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (1)	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

5.21 Saudi Arabia

Mitigation-related policies in Saudi Arabia, the largest oil exporter in the world,[11] only cover buildings and electricity and heat sectors, with the National Energy Efficiency Programme (2008) appearing as the most important policy in this area. A comprehensive climate change strategy encompassing all sectors may help guide future climate mitigation action in the country. This could build on the new INDC that has just been submitted, which includes a planned relative GHG emission reduction, but no baseline.

Table 24 Coverage of the good practice policy menu in Saudi Arabia

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		**Highly efficiency power plants (1)**	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	**Support scheme for renewables (1)**		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

[11] http://www.eia.gov/beta/international/analysis.cfm?iso=SAU

5.22 South Africa

Policies identified in South Africa, which has a large energy-intensive coal mining sector, cover all sectors although policies targeting transport and electricity and heat sectors are more numerous. The National Energy Act has guided regulations in the electricity and heat sector since 2008, while the National Climate Change Response Policy (2011) gives the country a more general action plan. Future action should cover neglected policy areas across all sectors and ensure the removal of fossil fuel subsidies.

Table 25 Coverage of the good practice policy menu in South Africa

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (2)				
	GHG reduction target (2)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D				
Electricity and heat		National energy efficiency target	Renewable energy target		
		Highly efficiency power plants (2)	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (6)		
			Grid infrastructure development (4)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit (1)				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (1)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (2)	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment (1)	MEPS or support for energy efficient light duty vehicles (1)	Biofuel target (1)	Modal share shift (1)	
		MEPS or support for energy efficient heavy duty vehicles (1)	Support for biofuels (2)	E-mobility	
			Sustainability standards for biomass (1)		
	Tax on fuel and/or emissions (1)				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (1)				

5.23 Thailand

Thailand's policies mainly focus on the electricity and heat sector and the area of renewables. For instance, a Biodiesel Blending Mandate regulates the use of biofuels in the transport sector, while feed-in tariffs are set in place for electricity production from renewables with further support provided through the Renewable Energy Development Plan 2008-2022. However, many policy areas in each sector (such as energy efficiency in transport) are not covered by the country climate policies.

Table 26 Coverage of the good practice policy menu in Thailand

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (4)		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (1)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (1)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking (1)		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels (1)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (2)				

5.24 Turkey

Policies in Turkey cover most sectors and policy areas. For instance, a number of acts and laws, such as the Renewable Energy Law (2011), as well as a set target, support electricity production from renewables. The implementation status of these measures is however unclear. Furthermore, the implementation of the Climate Change Action Plan 2011-2023 and a designated coordinating body act as guidance in Turkey's climate action. However, more ambitious actions on climate change mitigation could be achieved through the removal of fossil fuel subsidies, the introduction of carbon pricing and a higher focus on the currently neglected sector of agriculture and forestry.

Table 27 Coverage of the good practice policy menu in Turkey

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (2)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (1)				
		National energy efficiency target (2)	Renewable energy target		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target (2)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (4)		
			Grid infrastructure development (2)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (2)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (2)	Sustainability standards for biomass		CH4 – oil and gas (1)
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (6)	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles (1)	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (1)	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.25 Ukraine

Ukraine's strongest climate action is centred on the sector of electricity and heat production. Two note-worthy policies in this sector are the National Renewable Energy Action Plan (NREAP) and the Energy Strategy to 2030. The fact that Ukraine has set targets for renewables, for national efficiency and for emissions reduction is of great value. However, the lack of policies in agriculture and forestry sector, and the low coverage in the industry, buildings and transport sectors make these targets to appear challenging to reach. Further diversification and intensification of policies coverage are needed for future action on climate change mitigation.

Table 28 Coverage of the good practice policy menu in Ukraine

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants (2)	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (4)		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (1)	Support for renewables (1)	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives (2)	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target (1)	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels (2)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.26 United Arab Emirates

Perhaps the most important policy developments in the United Arab Emirates in recent years is the announcement in July 2015 to end fossil fuel subsidies.[12] Besides this, the main focus of the UAE climate policies has been on energy efficiency in buildings. An example of climate measure from this category is the Green Building Codes, implemented in 2006. An important policy is the CCS-EOR project supporting carbon capture and storage. Furthermore, the existence of a renewable target is a promising element for future emissions reductions from the electricity sector. However, no other policies exist for the industry and agriculture and forestry sectors, while measures concerning buildings only account for efficiency of appliances. An ambitious national climate strategy and a coordinating body for climate strategy could guide the United Arab Emirates in developing and implementing policies across all sectors and policy areas.

Table 29 Coverage of the good practice policy menu in the United Arab Emirates

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	**Renewable energy target (1)**		
Electricity and heat		Highly efficiency power plants	Renewable energy target	**CCS support scheme (1)**	
		Reduction obligation schemes	Support scheme for renewables		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	**CCS support scheme (1)**	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	**MEPS or fiscal/financial incentives (2)**	Support for heating and cooling		
		MEPS for appliances (1)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

[12] http://www.thenational.ae/uae/government/uae-petrol-prices-to-rise-from-august

5.27 United States

The United States (US) has numerous policies spreading across all sectors and policy areas, with a higher focus on energy efficiency. For instance, the Energy Independence and Security Act (2007) sets minimum energy performance standards in the industry, transport, and electricity and heat sectors. In the buildings sector there are energy efficiency codes and standards for appliances and well as heating and cooling. There are still a few areas not well covered by policies in the US, such as renewables in the buildings sector. The lack of an overarching CO_2, energy or other taxes across any of the sectors may be the most important area to addressed in the future. Furthermore, a designated coordinating body is necessary to further guide climate action.

Table 30 Coverage of the good practice policy menu in the United States

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (2)				
	Coordinating body for climate strategy				
	Support for low-emission RD&D (2)				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants (14)	Renewable energy target (1)	CCS support scheme (4)	
		Reduction obligation schemes (2)	Support scheme for renewables (19)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process (5)	Industrial production efficiency (9)	Support for renewables (4)	CCS support scheme (4)	Landfill methane (5)
		Energy reporting and audits (2)	Sustainability standards for biomass (1)		CH4 – oil and gas (3)
		MEPS for equipment (8)			N2O from industry (3)
					Fluorinated gases (7)
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning (1)	MEPS or fiscal/financial incentives (2)	Support for heating and cooling		
		MEPS for appliances (2)	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment (2)	MEPS or support for energy efficient light duty vehicles (5)	Biofuel target	Modal share shift (3)	
		MEPS or support for energy efficient heavy duty vehicles (6)	Support for biofuels (9)	E-mobility (1)	
			Sustainability standards for biomass (1)		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products (7)				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture (1)				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (3)				

5.28 Uzbekistan

Policies implemented in Uzbekistan cover only one policy type of the good practice policies menu - energy efficiency. The most important policy, Resolution of the Cabinet of Ministers no. 245 validating the Use of Electric and Thermal Energy in Uzbekistan, addresses energy efficiency through a regulated and monitored collaboration between the industry and electricity and heat sectors. Further improvements in climate action across all sectors and policy areas are needed.

Table 31 Coverage of the good practice policy menu in Uzbekistan

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D (1)				
		National energy efficiency target	Renewable energy target		
Electricity and heat		**Highly efficiency power plants (2)**	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (1)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment (1)			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	**MEPS or support for energy efficient light duty vehicles (1)**	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles (1)	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

5.29 Venezuela

Venezuela is one of the world's largest oil producers.[13] Although climate change is briefly addressed in some of Venezuela's general policies (concerning environmental, social and economic issues), there are no policies specifically designed to tackle climate change and there are no policies corresponding to the good practice policy package table implemented.

Table 32 Coverage of the good practice policy menu in Venezuela

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy				
	GHG reduction target				
	Coordinating body for climate strategy				
	Support for low-emission RD&D				
		National energy efficiency target	Renewable energy target		
Electricity and heat		Highly efficiency power plants	Renewable energy target	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables		
			Grid infrastructure development		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation				

[13] https://www.eia.gov/beta/international/analysis.cfm?iso=VEN

5.30 Vietnam

Climate policies were identified across all sectors and policy areas in Vietnam, except for buildings. The country shows higher preference for renewables in the electricity and heat sector. For instance, one policy from this category is Decision No. 37/2011: Providing the Mechanism to Support the Development of Wind Power Projects in Vietnam implemented in 2011. Although there are policies implemented for most sectors in Vietnam, these are not numerous and do not cover all policy areas in every sector. The National Climate Change Strategy (2011) and the National Climate Change Committee (NCCC), in addition to the recently announced INDC GHG emissions reduction target, can act as pillars of support for further climate action.

Table 33 Coverage of the good practice policy menu in Vietnam

	Changing activity	Energy efficiency	Renewables	Nuclear or CCS or fuel switch	Non-energy
General	Climate strategy (1)				
	GHG reduction target (1)				
	Coordinating body for climate strategy (1)				
	Support for low-emission RD&D (3)				
		National energy efficiency target (1)	Renewable energy target (1)		
Electricity and heat		Highly efficiency power plants (1)	Renewable energy target (1)	CCS support scheme	
		Reduction obligation schemes	Support scheme for renewables (5)		
			Grid infrastructure development (1)		
			Sustainability standards for biomass use		
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Industry	Material/process	Industrial production efficiency (1)	Support for renewables	CCS support scheme	Landfill methane
		Energy reporting and audits (1)	Sustainability standards for biomass		CH4 – oil and gas
		MEPS for equipment			N2O from industry
					Fluorinated gases
	Overarching carbon pricing scheme or emissions limit				
	Energy and other taxes				
	No fossil fuel subsidies				
Buildings	Urban planning	MEPS or fiscal/financial incentives	Support for heating and cooling		
		MEPS for appliances	Support for hot water and cooking		
			Sustainability standards for biomass		
	Energy and other taxes				
	No fossil fuel subsidies				
Transport	Urban planning and investment	MEPS or support for energy efficient light duty vehicles	Biofuel target	Modal share shift	
		MEPS or support for energy efficient heavy duty vehicles	Support for biofuels (1)	E-mobility	
			Sustainability standards for biomass		
	Tax on fuel and/or emissions				
	No fossil fuel subsidies				
Agriculture and forestry	Standards and support for sustainable agricultural practices and use of agricultural products (2)				
	Incentives to reduce CO2 emissions from agriculture				
	Incentives to reduce CH4 emissions from agriculture				
	Incentives to reduce N2O emissions from agriculture				
	Incentives to reduce deforestation (2)				

6 Annex – Database structure

The analyses in this study were based on climate policy data compiled by NewClimate Institute from various public sources (see Table 34). Regarding the policy data, the long-term goal is to establish an open, collaborative platform to gather all climate-related policies, with full geographical and sectoral coverage. This database and its supporting platform are currently under development at www.climatepolicydatabase.org. The platform of the database is programmed with Semantic Media Wiki[14], an open-source, database driven extension of MediaWiki.

The next sections of this annex will present some aspects of the current draft version of the online database. Future development of the database platform will include new analysis options applicable to the global as well as country data. Furthermore, additional data will be added from new data sources by NewClimate Institute as well as other contributors, once the website becomes public.

Table 34 Preliminary list of climate policies sources compiled in the database

Name	Sectors covered	Countries	Type	Website
Database of State Incentives for Renewables & Efficiency	Renewables; Energy Efficiency	US - Federal & States	Database	http://www.dsireusa.org/
IEA Addressing Climate Change	All	50 countries including all IEA countries	Database	http://www.iea.org/policiesandmeasures/climatechange/
IEA Global Renewable Energy	Renewables	126 countries including all IEA countries	Database	http://www.iea.org/policiesandmeasures/renewableenergy/
IEA Energy Efficiency	Energy Efficiency – All sectors	66 countries including all IEA countries	Database	http://www.iea.org/policiesandmeasures/energyefficiency/
IEA Building Energy Efficiency	Energy Efficiency in Buildings	34 countries including all IEA countries	Database	http://www.iea.org/beep/
IEA Clean Coal Database	Emissions standards	46 countries including all IEA countries	Database	http://www.iea-coal.org.uk/site/2010/database-section/emission-standards?
Transport Policy Database	Transport	Worldwide – 8 countries	Country Profiles	http://transportpolicy.net/
Climate Action Tracker	All	30 countries	Country Profiles	http://climateactiontracker.org/countries.html
UNFCCC National Communications	All	Worldwide	Country Profiles	http://unfccc.int/national_reports/items/1408.php
LSE Global Climate Legislation DB	All	Worldwide	Database	http://www.lse.ac.uk/GranthamInstitute/legislation/the-global-climate-legislation-database/
OECD Fossil Fuel Support	All	OECD countries	Database	http://stats.oecd.org/Index.aspx?DataSetCode=FFS_AUS
Columbia Law School Database	All	Worldwide	Country Profiles	http://web.law.columbia.edu/climate-change/resources/climate-change-laws-world#http://web.law.columbia.edu/climate-cha
ICAP ETS Map	Industry	Worldwide	Country Profiles	https://icapcarbonaction.com/ets-map
Wageningen University MSc Thesis	Overarching	Selected countries	Report	Bulder (2013)

[14] http://semantic-mediawiki.org

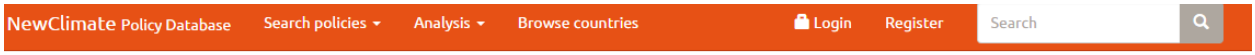
Database structure

The database includes a comprehensive record for each policy, covering a set of fields, as shown in the example in Figure 5. With the help of an online form in a similar format, users can easily add policies and edit the information. The sector and policy type categories for each policy are those that appear in the country factsheets of this study, to which additional subsectors were added as follows:

- *Electricity and heat:* Nuclear, Coal, Oil, Gas, Renewables, CCS
- *Industry*[15]: Industrial energy related, Fluorinated gases, Industrial N_2O, Industrial process CO_2, Waste (CH_4), Oil and gas production (CH_4)
- *Buildings*: Heating and cooling, Hot water and cooking, Appliances
- *Transport*: Light duty vehicles, Heavy duty vehicles, Electro-mobility, Air, Rail, Shipping
- *Agriculture and forestry*: Agricultural CO_2, Agricultural N_2O, Agricultural CH_4, Forestry

The policy instruments typology was developed based on the IEA policies and measures database (http://www.iea.org/policiesandmeasures/), to which a set of new categories were added. The complete list of policy instrument options is provided in Table 35.

Figure 5 Record fields of policies and measures in the database



Sample policy 5

Name of policy	Sample policy 5
Jurisdiction	Country
Supranational region	Test2
Country	China
Region	—
Subnational region or state	Test2
City or local	Test3
Type of policy instrument	• Net metering
Sector name	General
Policy description	Test5
Policy type	Other
Policy stringency	3
Implementation state	Planned
Date of decision	2014
Start date of implementation	2015
End date of implementation	2020
Highlight	Yes
Source or references	Test5
Comments (background and assessment)	Test6

[15] Including fossil fuel extraction sector as well as energy transformation sectors other than electricity and heat such as oil refineries.

Table 35. Policy instruments in the database

Instrument category	Sub-category	Policy instrument
Economic instruments	Direct investment	Funds to sub-national governments
		Infrastructure investments
		Procurement rules
		RD&D funding
	Fiscal or financial incentives	CO_2 taxes
		Energy and other taxes
		Feed-in tariffs or premiums
		Grants and subsidies
		Loans
		Tax relief
		User changes
		Tendering schemes
		Retirement premium
	Market-based instruments	GHG emissions allowances
		GHG emission reduction crediting and offsetting mechanism
		Green certificates
		White certificates
Regulatory instruments	Codes and standards	Building codes and standards
		Product Standards
		Sectoral Standards
		Vehicle fuel-economy and emissions standards
		Auditing
		Monitoring
		Obligation schemes
		Other mandatory requirements
Information and Education	Performance label	Comparison label
		Endorsement label
		Advice and aid in implementation
		Information provision
		Professional training and qualification
Policy support		Institutional creation
		Strategic planning
RD&D	Research programme	Technology deployment and diffusion
		Technology development
		Demonstration project
Voluntary approaches		Negotiated agreements (public/private sector)
		Public voluntary schemes
		Unilateral commitments (private sector)
Barrier removal		Net metering
		Removal of fossil-fuel subsidies
		Removal of split incentives
		Grid access and priority for renewables
Climate Strategy		Formal & legally binding climate strategy
		Political & non-binding climate strategy
		Coordinating body for climate strategy
Target		Energy efficiency target
		GHG reduction target
		Renewable energy target

Country page

The country page summarises policy information for any particular country. The page includes a full list of the registered policies, sorted to display the most recent policies first, along with a list of available options to filter the table for specific policy types (see Figure 6). In the database, the European Union is treated as one country, having a dedicated page, as well as the individual member states.

Furthermore, the country page includes a sector and policy type matrix illustrating the policies of the country against a good practice policy menu, as shown in the country factsheets in this study (see Chapter 4). This matrix only includes implemented policies at a national level.

Figure 6 Country page information additional to the coverage of a good practice policy menu

Policies

Policy type

Changing activity | Energy efficiency | Non-energy | Nuclear or CCS or fuel switch | Renewables

Name of policy	Policy type	Sector name	Date of decision	Country
Fluorinated greenhouse gases (Regulation No. 517/2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006)	Non-energy	Industry, Fluorinated gases	2014	European Union
2030 framework for climate and energy policies (strategic document)	Changing activity, Energy efficiency, Renewables, Nuclear or CCS or fuel switch, Non-energy	General	2014	European Union
European Energy Security Strategy	Changing activity, Energy efficiency, Renewables, Nuclear or CCS or fuel switch	Electricity and heat	2014	European Union
Land Use, Land Use Change and Forestry (LULUCF) (Decision No. 529/2013/EU)	Changing activity, Non-energy	Agriculture and forestry	2013	European Union
Common Agricultural Policy	Changing activity, Non-energy	Agriculture and forestry, Agricultural	2013	European Union

European Union	
Coordinating body for climate policy	Unsure
Fossil fuel subsidies (transport)	Unknown
Fossil fuel subsidies (electricity and heat)	Unknown
Fossil fuel subsidies (industry)	Unknown
Fossil fuel subsidies (buildings)	Unknown
Comments	
No comments yet.	

Global overview page

The global overview is the start page of the policy database (Figure 7). From here, users can see an overview of some basic statistics, and can find relevant tools to access required information from the database. In addition to links to browse the data or search for policies, a map of all countries is displayed. This map is interactive, so that users can hover over the countries to see the number of climate policies and an indication of the areas of policy making.

Search page

An advanced search function is available to users, in order to lookup policies based on filters covering various policy specific criteria. The advanced search option allows for searching policies based on all of its characteristics.

Figure 7. Home page of the climate policies database website (climatepolicydatabase.org)

Analysis menu

Several pages will be developed in the future to enable specific analysis for selected topics. Currently, the analysis menu contains an overview of the coverage of good practice policies by 30 selected countries. The result of this analysis is presented in Chapter 3.

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