

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		<p>to Reducing GHGs by at least 40% (1990 baseline)</p> <p>Paris Agreement The EU bloc is a Paris agreement signatory. Its '2030 targets' formed the basis for the 2015 binding NDC submission i.e. 'a minimum 40% domestic GHG reductions by 2030 (1990 baseline)'</p> <p>Effort Sharing Regulation A EC proposal for the period 2021–2030 has been made (2016) for non-ETS sectors representing c. 60% of emissions</p>	<p>2030 EU climate package Share of <i>renewable energy</i> to minimum 27% Total energy use reductions by minimum 27%</p> <p>International <i>aviation emissions</i> are included in the NDC target (and the need to include <i>maritime emissions</i> is 'recognised').</p>		<p>It does recognise the need for trading under Article 6 of the Paris Agreement.</p>		

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		including transport and buildings. 2050 GHG emissions reduction target of 80-95% (1990 baseline) - non-legislated					
The following country targets are partially driven by EU bloc targets, enacted through national policies							
Denmark	6.8 tCO ₂ (2013) 53 MTCO ₂ eq. In 2012 (excl. LULUCF)	Target: National GHG reduction of 40% by 2020 (1990 baseline) (2011, and endorsed in 2014 by a majority in Parliament) ^{vi} Note that this is more ambitious than the EU targets, underlining	Energy Aim to increase renewable energy to 30% by 2020 An aspiration to convert the energy and transportation sector to run on 100% renewable energy by 2050 and strongly improve energy efficiency.	2012 Energy Agreement 2013 Climate Policy Plan 2014 Climate Change Act Energy Renovation Strategy of Buildings (2014) with 21 initiatives to reduce heating energy in existing	EU ETS was implemented in 2005. Energy taxes date back to the 1970s. Carbon taxes have been enforced since 1992 for gas/diesel oil, fuel oil, electricity, lignite, natural/ town gas and	-	Danish politics and governance are characterised by a common striving for broad consensus on important issues, due to a long tradition of minority governments. The Climate Act further enabled the pathway to establish an independent Climate Council to promote an academically coherent approach to national climate policy, mandated the Minister in charge to publish a report on climate policy and present proposals for new national climate targets to Parliament at least every fifth year with a 10-year perspective. Energy production and supply accounted for

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		Denmark's leadership approach on climate change. 2030 target: A target of 39% saving by 2030 against a 2005 baseline as part of the EU Effort Sharing Regulation ^{vii}	LULUCF: actively manages forests based on the strategy for sustainable forest management (1994) and the national forest programme (2002) LULUCF-effects from forests and cropland are included in meeting the Kyoto target. A 4% flexibility for LULUCF is included as part of the EU Effort Sharing Regulation	buildings by 35% by 2050. Paris Agreement signed and ratified on 22 April 2016	petrol. Denmark provides funds for LULUCF REDD+ projects in developing countries. 2030 target: 2% one off flexibility from ETS under the EU Effort Sharing Regulation		approximately 46% of GHG emissions in 2013. With a focus on wind, biomass and solar, Denmark is expected to meet its 30% renewable energy aim by 2020. Other sources included 40% oil, natural gas 18% and coal 18% in 2013. Buildings: 30-40% of total energy consumption is used for heating, ventilation and lighting. Regulations on energy labelling of buildings and regular revisions of building regulations for new builds and renovations are driving efficiency. Transport: European Renewable Energy Directive includes a target of 10% of renewable energy in transportation and is primarily met by first generation biofuels.
France	5.05 tCO ₂ (2013)	Legislated GHG emissions reduction target	Renewable energy: An increase in the	The Plan Climat aims to deliver a carbon neutral	One of the key mechanisms adopted by the	The Plan Climat is not yet enacted in law. It is expected	The Plan Climat lays out the climate policy for the next five years of presidency. It includes 23 'axes' which vary in scope including a 2050

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
	496 MTCO ₂ eq. In 2012 (excl. LULUCF)	of 75% (1990 baseline) by 2050 ^{viii} Plan Climat: Launched in July 2017, the plan ambitiously aims for carbon neutrality by 2050. Energy transition law: reduce GHG emissions by 40% by 2030 (base year 1990) and to 25% of 1990 levels by 2050 2030 target: A target of 37% saving by 2030 against a 2005 baseline as part of the EU Effort Sharing Regulation	renewable energy target to 23% by 2020, beyond the official EU target of 20%. Energy transition law: reduce fossil fuels consumption by 30% by 2030 reduce the share of nuclear energy in the energy mix from 75% to 50% by 2025 reach a minimum share of 32% of renewable energy in energy consumption (around 40% of electricity produced, 38% of heat consumed and 15% of transport fuels) reduce final energy	France by 2050 through 6 pillars ^{ix} : 1. Make implementing the Paris Agreement politically irreversible 2. Improving the daily lives of all French 3. End fossil fuel use and engage with carbon neutral 4. Making France a green economy leader 5. Mobilising ecosystems and agriculture in climate action 6. Strengthening international diplomatic action Historic: A National Programme for	Grenelle I and II laws (2009/2010) was a carbon tax, set up by the Finance Law 2014 and implemented since April 2014 (EUR7 per ton), with incremental increase of the rate at: 2015 (EUR14.5 per ton) and 2016 (EUR22 per ton). ^x 2030 target: Flexibility is <u>not</u> included as part of the EU Effort Sharing Regulation The Plan Climat aims to put a cost of at least €100 / tCO ₂ on GHGs emitted by 'industries' in 2030, and cover	to be passed in autumn 2017.	carbon neutral strategy, renewable energy, diesel-petrol tax alignment, domestic energy independence incentives, the circular economy, ending coal for generation by 2022 and carbon pricing. Energy transition law Fiscal tools such as tax incentives for renewable energies or feed-in tariffs are used. LULUCF All forests (public and private) are regulated by the Forest Code.

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
			<p>consumption by 50% by 2050 (intermediate target of 20% reduction by 2030).</p> <p>Transport: End sales of fossil fuel-powered cars by 2040 (Plan Climat, 2017)</p> <p>LULUCF 1.5% one off flexibility from ETS under the EU Effort Sharing Regulation</p>	<p>Tackling Climate Change was enacted in 2000. The Climate Plan must be refreshed every two years according to the 2005 Energy Policy Framework Law. Measures are either inscribed in laws or regulations on energy, finance, agriculture, urban planning, or abandoned.</p> <p>Renewable energy: The Energy Policy Framework Law 2005; The Grenelle I law (2009)</p> <p>Energy Transition Law (adopted in 2015). A five year journey to enactment.</p> <p>Paris Agreement</p>	<p>50% of all GHG emissions, up from 25% in 2020. This includes HFCs.</p>		

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
				signed and ratified on 22 April 2016			
Germany	9.2 tCO ₂ (2013) 939 MTCO ₂ eq. In 2012 (excl. LULUCF)	Target to cut greenhouse gas emissions (GHG) by 40% by 2020 and 80–95% by 2050 (from 1990 baseline). Note that this is more ambitious than the EU targets ^{xi} . 2030 target: A target of 38% saving by 2030 against a 2005 baseline as part of the EU Effort Sharing Regulation	Renewable energy target of 60% by 2050 (switch off all nuclear power stations by 2022) Buildings: make the entire building stock 'climate neutral' by 2050. Reduce primary non-renewable energy demand in the building sector by 80% in 2050 relative to average 2005-08 levels. Non-statutory. Absolute target (i.e. not relative to size of the building stock)	The key policy document for Energiewende was published in 2010 ^{xii} . Targets are subject to an annual monitoring process ^{xiii} . Buildings: policies and programmes include: <ul style="list-style-type: none"> grants and subsidised loans for energy efficiency (National Energy Efficiency Action Plan, NAPE, 2014) building standards regulating both thermal performance and heat supply for 	The DEHSt department ^{xiv} oversees trading. It includes information on allocations under the Kyoto Protocol (third trading period). The NAPE plan includes a reform of ETS trading as one of its nine key elements ^{xv} 2030 target: ETS flexibility is <u>not</u> included as part of the EU Effort Sharing Regulation	Following the fall of the Berlin Wall and reunification, the decline of the East German industrial and power sectors meant automatic CO ₂ reductions – with a further drop in 2009 due to the financial crash. However, this was not sustained and there is a well recognised 'climate gap' to meet 2020 targets. Further measures were proposed in 2014.	Energiewende is the government's overarching name to drive an energy transition to a low carbon, environmentally sound, reliable and affordable energy supply. It encompasses electricity and heat, buildings and transport. It re-orientates policy from demand to supply, with a shift from centralized to distributed generation. The Berlin-based policy institute Agora Energiewende commented: "the speed and scope of the Energiewende are exceptional" Energy: responsible for about 40% of GHG emissions. Emissions fell by around 21% between 1990 and 2015 ^{xvi} Households reduced emissions by 35% in the same period, industry reduced emissions by 36%, transport reduced emissions by only 2%, agriculture by 16% and waste , 71%. However, the Energiewende Monitoring Report ^{xvii} of December 2016 warned that the country would probably miss its 2020 emission targets and other crucial Energiewende goals. In early 2017, it lowered emissions by only 27.6% ^{xviii} , leaving a requirement to reduce

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
			<p>Climate Action Programme: specific GHG reduction targets for building sector of 67%, by 2030 relative to 1990 levels</p> <p>LULUCF 0.5% one off flexibility from ETS under the EU Effort Sharing Regulation</p>	<p>new buildings (Act on Energy Saving, EnEG, 1976)</p> <ul style="list-style-type: none"> grant funding for renewable heat installations (Market Incentive Programme, MAP, 1999). <p>Paris Agreement signed and ratified on 22 April 2016</p>			<p>emissions by 40m tCO₂e per year.</p> <p>Surveys show a high degree of concern about climate change and high levels of support for the Energiewende.</p>
The Netherlands	<p>10.1 tCO₂ (2013)</p> <p>192 MTCO₂ eq. in 2012 (excl. LULUCF)</p>	<p>Share of 20-20-20 goals: Non- Emissions Trading System GHG reduction: 16% (binding)^{xix}</p> <p>2030 target: A target of 36% saving by 2030 against a 2005 baseline as part of the EU Effort</p>	<p>Share of 20-20-20 goals: Non- Emissions Trading System GHG reduction 16% (binding); 14% renewable energy production (binding); 1.5% energy savings per year</p>	<p>Most climate policies and programmes have their legal basis in the Environmental Management Act.</p> <p>An Environmental Act has been proposed to simplify existing complex and fragmented</p>	<p>Participates as an EU Member State and Annex-1 party to the Kyoto Protocol both in the EU ETS and the Clean Development Mechanism (CDM) as well as the Joint Implementation (JI) mechanism</p>	-	<p>Power: The energy mix is dominated by fossil fuels. Natural gas supplies 47% of energy needs and oil 38%, up from 35% in 1990. The country has invested heavily in fossil power generation, particularly gas- and coal-fired capacity.</p> <p>Other priority sectors for climate policy are energy efficiency in new and existing buildings and reducing emissions from agriculture and industry.</p> <p>Heat: a succession of policies for heat including</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		Sharing Regulation	<p>Renewables goals: 40% (2030) 80-95% (2050)</p> <p>Transport: implements the European Renewable Energy Directive target of 10% renewable energy in transport in 2020 (road vehicles and mobile machines) and sets future targets.</p> <p>LULUCF: development of a nature network called the National Ecological Network (also known as Nature Network Netherlands) has</p>	<p>legislation, integrating 26 different laws and regulations.</p> <p>Political uncertainty campaigning in the run up to the March 2017 general election saw parties stating they would support the new Climate Act setting out legally binding targets to 2050. However, a breakdown in the talks to form a coalition, in May 2017, saw political differences in parties including on climate change. At the time of writing there is currently a political impasse.</p> <p>Paris Agreement</p>	<p>under the Kyoto Protocol.^{xx}</p> <p>Expected to raise own contribution to climate finance from EUR 200m (USD 310.5m) in 2013 to EUR 1.2bn (USD 1.86bn) by 2020.</p> <p>Also contributes to climate funds that finance climate adaptation and mitigation in developing countries</p> <p>It is assumed The Netherlands will follow the EU position on trading under the Paris Agreement.</p> <p>2030 target:</p>		<p>an Energy Agenda^{xxi} in 2016 sets out a long-term perspective for energy and climate policy. A collaborative agreement between 47 stakeholder groups (government, industry, third sector and trade unions), it sets out a vision for the energy system to 2050 – although implementation mechanisms are incomplete.</p> <p>Discussions during the 2017 Dutch election campaign have revealed support from industrial stakeholders, including energy companies such as Shell, for a new Climate Change Act.</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
			<p>been a central theme of the nature and forest policy</p> <p>2030 - LULUCF 1.1% one off flexibility from ETS under the EU Effort Sharing Regulation</p>	signed and ratified on 22 April 2016	2% one off flexibility from ETS under the EU Effort Sharing Regulation		
Sweden	<p>4.6 tCO₂ (2013)</p> <p>58 MTCO₂ eq. In 2012 (excl. LULUCF)</p>	<p>Committed to net zero carbon emissions by 2045, passed in June 2017^{xxii}.</p> <p>Share of 2030 goals: Reduction of GHG emissions by 40% by 2020 (1990 baseline). Far greater than the 17% required under the EU burden sharing</p>	<p>Renewables: increase to 50% share by 2020</p> <p>Vehicles: fossil fuel free by 2030</p> <p>Efficiency: 20% energy reduction by 2020 (baseline 2008)</p> <p>2030 - LULUCF 1.1% one off flexibility from ETS under the EU</p>	<p>A climate policy framework was drawn up by a cross-party committee, passed by overwhelming majority.</p> <p>Taking effect from 1st January 2018, it establishes an independent Climate Policy Council and requires an action plan to be updated</p>	<p>International offsets may be used to meet shortfalls – to a ceiling of 15%</p> <p>2030 target: 2% one off flexibility from ETS under the EU Effort Sharing Regulation</p>	<p>The major (non energy and industry) sectors to which the specific Swedish target (40% by 2020) applies include: transportation, agriculture, residential housing, services, waste disposal, forestry, and aquaculture.</p>	<p>Sweden's main approach is to use market-based initiatives that cut across different sectors, integrating climate mitigation via price signals across industries.^{xxiv}</p> <p>Renewables: With 52 per cent of renewables in its energy portfolio (2014), largely hydropower and biofuels, Sweden has the highest percentage of renewable energy in the EU.</p> <p>Nuclear power makes up about 40% of electricity generation – its future is uncertain</p> <p>Public support is strong for environmental policy. The climate goal was initially proposed by the socialist and green parties and backed by a</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		<p>agreement (non ETS sector)</p> <p>85% reduction in domestic GHGs by 2045</p> <p>No net GHG emissions by 2050^{xxiii}</p> <p>2030 target: A target of 40% saving by 2030 against a 2005 baseline as part of the EU Effort Sharing Regulation</p>	Effort Sharing Regulation	<p>every four years.</p> <p>A carbon excise tax was first introduced in 1995 on fuels such as oil and gas.</p> <p>GHG targets: Binding law obliging future governments to set tougher goals to cut fossil fuel use every four years (from January 2018)</p> <p>Tax reliefs to power-intensive <i>industries</i> in exchange for their drawing up energy plans and taking steps to reduce energy use.</p> <p>Paris Agreement signed and ratified on 22 April 2016</p>			<p>coalition of 7/8 parties across the political spectrum.</p> <p>Taxation of CO2 and fossil fuel (a key driver of heating decarbonisation) has been stable despite changing governments.</p> <p>Expenditure on R&D (research and development) represented 3.3 per cent of GDP in 2013, the fourth highest percentage in the OECD.</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
Non-EU countries							
Norway	11.7 tCO ₂ (2013) 52 MtCO ₂ -eq in 2014 (excl. LULUCF)	Target of reducing GHG emissions by “at least 40%” below 1990 levels in 2030 (in line with EU) A conditional goal of carbon neutrality by 2030 (if other developed nations have similar commitments) ^{xxv}	Emissions and removals from LULUCF are dependent on the EU’s approach ^{xxvi} The European Commission has proposed a preliminary target for Norway for emissions reductions in sectors outside the EU Emissions Trading System of 40% by 2030 in comparison to 2005 levels.	The 2012 Climate Settlement builds on the goals adopted under the ambitious 2008 White Paper on Climate Efforts. It is not legislation <i>per se</i> , but guides and sets the framework for political discussions and contains a number of political, non-binding goals. Paris Agreement signed and ratified on 20 June 2016	Norway has a history of trading National policy is to reduce two thirds of GHG emissions domestically and to purchase emission units for the rest, up to 30 million credits during the Kyoto Protocol second commitment period. 2030 CN goal to be achieved through ‘the EU emissions trading market, international cooperation on emissions reductions, emissions trading and project-based cooperation’	Baseline (1990) year did not include LULUCF hence target is expected on similar basis LULUCF sink expected to grow from 10.1 MtCO ₂ e in 1990 to 21.2 MtCO ₂ e in 2030. Only the difference between the two expected as credits towards target	Under current policy projections, GHGs will stabilise (at ~52 Mt) up to 2030 and target will be missed. Hydropower facilities cover roughly 95% of domestic electricity generation (almost CN). World leader in electric cars per capita. Policy to electrify transport sector inc. incentives and investment widely praised. Purchased 21.5 million carbon credits to offset its Kyoto target surplus ^{xxvii} . Forest carbon sink net uptake projected to decrease from 24 Mt/yr to around 20 Mt/yr towards 2030. Development: invests heavily in climate commitments as part of its co-operative schemes with developing countries – focusing on clean, renewable energy resources, climate change adaptation and food security. However, home to the biggest hydrocarbon reserves in Europe - 5th largest exporter of crude oil in the world. The oil and gas sector constitutes around 22% of Norwegian GDP and

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
					It is not stated whether this is GHG or CO2 neutral (but interpreted as the former)		<p>67% of Norwegian exports. Carbon tax levied on drilling activities since 1991. Amended to 200 NOK (~22 €) per tCO2-eq in 2013.</p> <p>More policy change recognised as required (Climate and Energy Minister Vidar Helgesn, 2016) including decreasing dependence on oil and gas.</p> <p>Environmental policies have been presented to the public as not inherently conflicting with economic growth, which ensured that they were met with broad approval. For example, to encourage public acceptance of battery electric vehicles (BEVs), the government-funded agency Enova sponsored communication campaigns, statistics on electric vehicles registrations and information on charging points.</p>
Mexico	3.9 tCO2 (2013) 641 MTCO2 excl. LULUCF (2006)	A target to reduce emissions by 30% by 2020 compared to business-as-usual A target to reduce GHG emissions by 22% below 2013	Clean energy target: 25% of electricity generation by 2018, 30% by 2021, and 35% by 2024. NDC includes all sources and	The General Law on Climate Change (April 2012 - first climate law in a developing country) – backed up by The National Strategy on Climate Change (NSCC) (June 2013).	Cap and trade A 12-month pilot scheme was launched in Nov. 2016, voluntary for 60 power companies - ahead of an expected full rollout of a	Reference level emissions only reported including LULUCF, and no separate LULUCF data reported BAU is a scenario of emissions projections based	Co-generation included in definition of clean energy – likely to be natural gas. Cogen. share of the electricity mix could be 9% by 2030—up from 0% in 2014. Emissions would be 58 MtCO2e—or 6% higher—in 2030, and could reduce the share of renewables in the 2024 clean energy target to 29%. Currently implemented policies are projected to result in emissions levels above its 2020 and

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
		<p>baseline in 2030 (yet equivalent to an increase of emissions by 56% above 1990 levels)^{xxviii}.</p> <p>A target to reduce GHGs 36% conditionally by 2030 from the 2013 baseline.</p> <p>Further aim to reduce GHG emissions 50% from 2000 levels by 2050 (equivalent to a 31% reduction below 1990 levels, excluding LULUCF^{xxix})</p>	<p>gases, including LULUCF – albeit not a significant component of emissions in 2030</p> <p>LULUCF: Ensure that: 58.7% of forest resources are harvested sustainably by 2018; 94% of forest areas certified under “good forest management practice” by 2018; at least 10.2% of forest area is included in the ‘payment for ecosystem services’ scheme</p>	<p>The 2nd Special Programme on Climate Change (2014) includes mitigation measures to 2018.</p> <p>These confirmed the 30% 2020 target and 2050 50% target and made them binding at the national level - <i>subject to international support</i></p> <p>Energy Transition Law (2015) includes clean energy targets for 2018 (25% of generation), 2021 (30%) and 2024 (35%).</p> <p>General Law for Sustainable Forest Development,</p>	<p>national carbon market in 2018^{xxx}</p> <p>It is not clear how this will link to International markets.</p>	<p>on economic growth in the absence of climate change policies, from 2013</p> <p>Conditions for higher targets are ‘a global agreement addressing international carbon pricing, carbon border adjustments, technical cooperation, access to low cost financial resources and technology transfer’</p>	<p>2030 targets indicating more action is required to meet goals^l.</p> <p>Current policies will lead to emissions of between 724 and 736 MtCO₂e excluding LULUCF in 2020. In 2030, the emissions level is projected to be between 835 and 893 MtCO₂e in 2030, excluding LULUCF.</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
				(2003) Paris Agreement ratified on 21st September 2016.			
US States							
<i>Note: these commitments and targets have been upheld despite President Trump's June 2017 commitment to pull out of the Paris Agreement</i>							
California	9.2 tCO ₂ (2016) ^{xxx} 359 MT CO ₂	2030 vision Reducing GHG emissions by 40% below 1990 levels by 2030. ^{xxxii}	2030 goals: 50% renewable energy use 50% reduction in petroleum use in vehicles Double energy efficiency savings in buildings Carbon sequestration in the land base including farm and rangelands, forests and wetlands Update 'double adaptation strategy	Global Warming Solutions Act (assembly bill 32) ^{xxxiii}	Cap and trade A well established programme is established ^{xxxiv} which periodically auctions allowances and raises money through the GHG Reduction Fund to support California Climate Investments, supporting projects on natural and working lands	-	Energy efficiency: Building and Appliance Energy Efficiency Standards have been put in place over the last four decades. Ratepayers have invested consistently in energy efficiency programs. Research and development investments are fostering new technologies. Renewables: Existing policies will increase renewable-based electricity use to 33 percent by 2020 More than doubled renewable capacity installed in the last four years (over 11,000 MW) with over 21,000 MW online. A further 11,400 MW have received development permits. Costs – even without subsidies – are approaching

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
							<p>levels competitive with new natural gas plants.</p> <p>Reducing Petroleum use: Existing policies will reduce petroleum use in cars and trucks by more than 20% in 2030</p> <p>LULUCF: A Forest Carbon Plan^{xxxv}, currently under consultation, is to be the detailed implementation plan for the forest carbon goals</p>
New York State	8.6 tCO ₂ (2016) 170 MT CO ₂	2030 goal 40% reduction in GHG emissions from 1990 levels ^{xxxvi} Proposed legislation for net zero by 2050	2030 goals 50% of energy generation from renewable energy sources 23% decrease in energy consumption in buildings from 2012 levels	New York's State Energy Plan ^{xxxvii} , along with private sector innovation and investment fuelled by Governor Cuomo's Reforming the Energy Vision (REV) policy	Regional Greenhouse Gas Initiative (RGGI) is the first mandatory market-based emissions trading program in the U.S. to reduce carbon dioxide (CO ₂) emissions, and the first anywhere to use the cap-and-invest model for reducing pollution	-	<p>Renewables: The state promotes renewable energy through its Large Scale Renewables Program, NY-Sun Initiative, shared renewables and community net metering projects, and the Offshore Wind Blueprint.</p> <p>Transportation: The source of 34% of New York's GHGs, and growing. The state is tackling transportation sector emissions by focusing on using clean fuels, expanding public transportation systems, and increasing availability of clean fuel infrastructure in support of low- and zero-emission vehicles (ZEV). Working through the Transportation and Climate Initiative (TCI), a regional collaboration of 12 Northeast and Mid-Atlantic jurisdictions,</p>

A review of greenhouse gas reduction aspirations and their legislation across selected countries and regions

Country / State	GHG emissions per capita ⁱ and total ⁱⁱ (unless stated)	Overall GHG reduction target	Sectoral GHG reduction targets	Legislation / strength in law	Trading / offsetting	Notes on targets	Commentary on sectors, technology, achievability of targets
							<p>on developing programs and policies that support regional clean transportation goals. New York is also a member of the Multi-State ZEV Task Force, and the Charge NY initiative seeks to create a statewide network of up to 3,000 public and workplace charging stations, and put 40,000 plug-in vehicles on the road, by 2020.</p> <p>Buildings: Consume roughly 60% of total energy used. Key programs in achieving these goals include New York Power Authority's BuildSmart NY program, NYSERDA's home and commercial energy efficiency programs, and multi-agency efforts to promote combined heat and power (CHP), also known as cogeneration.</p> <p>LULUCF: Climate Resilient Farming Program through the Department of Agriculture and Markets is working with New York's farming community to reduce emissions.</p>

Glossary:

CDM: Clean Development Mechanism under Kyoto Protocol
CN: Carbon Neutral
GHG: Greenhouse Gas
JI: Joint Implementation mechanism under Kyoto Protocol
LULUCF: Land Use, Land Use Change and Forestry
MT: Megatonne (million tonnes)
NDC: Nationally Determined Contribution – commitment to the Paris Agreement

References:

-
- i <http://data.worldbank.org/>
ii <http://www.lse.ac.uk/GranthamInstitute/legislation/countries/>
iii <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdgp410&plugin=1>
iv European Commission, 2016
v <http://climateactiontracker.org/countries/eu.html>
vi <https://www.theclimategroup.org/news/denmark-pledges-40-carbon-reduction-2020-creates-climate-council>
vii http://europa.eu/rapid/press-release_MEMO-16-2499_en.htm
viii French Environment Ministry (2016) Loi de transition énergétique pour la croissance verte, available at: www.developpement-durable.gouv.fr
ix <https://www.ecologique-solidaire.gouv.fr/sites/default/files/2017.07.06%20-%20Plan%20Climat.pdf>
x http://www.measures-odyssee-mure.eu/public/mure_pdf/transport/FRA28.PDF
xi <https://www.cleanenergywire.org/factsheets/germanys-greenhouse-gas-emissions-and-climate-targets>
xii Federal Ministry of Economics and Technology (BMWi); Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (28 September 2010). Energy concept for an environmentally sound, reliable and affordable energy supply (PDF). Berlin, Germany: Federal Ministry of Economics and Technology (BMWi).
xiii <http://www.bmwi.de/Redaktion/DE/Dossier/energiewende.html>
xiv https://www.dehst.de/EN/Home/home_node.html
xv <http://www.lse.ac.uk/GranthamInstitute/legislation/countries/germany/>
xvi <https://www.umweltbundesamt.de/presse/pressemitteilungen/treibhausgasemissionen-2015-im-zweiten-jahr-in>
xvii www.bmwi.de/Redaktion/DE/Publikationen/Energie/fuenfter-monitoring-bericht-energie-der-zukunft.html
xviii <https://www.ft.com/content/7f2f199a-0a5f-11e7-97d1-5e720a26771b>
xix <https://www.government.nl/topics/climate-change/contents/eu-policy>
xx <http://www.lse.ac.uk/GranthamInstitute/legislation/countries/netherlands/>
xxi Ministerie van Economische Zaken (2016) Energieagenda <https://www.rijksoverheid.nl/documenten/rapporten/2016/12/07/ea> (in Dutch)
xxii <http://www.government.se/articles/2017/06/the-climate-policy-framework/>
xxiii <https://sweden.se/nature/sweden-tackles-climate-change/>
xxiv <http://www.lse.ac.uk/GranthamInstitute/legislation/countries/sweden/>
xxv <http://climateactiontracker.org/countries/norway.html>
xxvi Norwegian Ministry of Climate and Environment, 2014

xxvii IETA 2013

xxviii <http://climateactiontracker.org/countries/mexico.html>

xxix Advice on the new Scottish Climate Change Bill, Committee on Climate Change, March 2017

xxx <http://www.businessgreen.com/bg/news/2468027/reports-mexico-to-launch-carbon-cap-and-trade-market-pilot>

xxxi "State Energy CO₂ Emissions". US Environmental Protection Agency. Retrieved 14 September 2016.

xxxii <http://climatechange.ca.gov/>

xxxiii <https://www.arb.ca.gov/cc/ab32/ab32.htm>

xxxiv <https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>

xxxv http://www.fire.ca.gov/fcat/downloads/California%20Forest%20Carbon%20Plan%20Draft%20for%20Public%20Review_Jan17.pdf

xxxvi <http://www.dec.ny.gov/energy/99223.html>

xxxvii <https://energyplan.ny.gov/>