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International climate change target frameworks

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Summary

This document summarises domestic greenhouse gas (GHG) emissions target frameworks for countries with legislated targets (Sweden, Mexico, Denmark), a sub-state actor with legislated targets (Catalonia) and countries without (Norway, France, Germany, New Zealand, Ireland). The countries and sub-state actor covered were selected because they are known to have statutory and/or highly ambitious targets.

Key findings

- Internationally, a wide range of approaches have been adopted to deal with climate change legislation and targets
- Approaches adopted are unique to a country's own context and circumstances
- All the countries we looked use their Nationally Determined Contribution (NDC) as the basis of target-setting and progress monitoring
- We found no evidence of statutory annual emissions reduction targets from any of the countries we reviewed

Reflecting on our findings, we suggest that Scotland is in rather a unique position. The fact that Scotland is not required to submit an NDC, and is neither a party to the United Nations Framework Convention on Climate Change (UNFCCC) nor a member state with commitments under the European Union (EU) sharing agreement, means that Scotland does not have a 'ready made' framework for its targets. This presents an opportunity for Scotland to devise something specifically tailored to Scotland's needs, but it also means that Scotland may not readily find comparable frameworks in other countries.

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Sweden

In June 2017, the Riksdag agreed to the introduction of a climate policy framework for Sweden which contains three pillars: a Climate Act, climate goals and a climate policy council.

The Climate Act establishes that the Government's climate policy must be based on the climate goals and specifies how work is to be carried out. The Government is required to present an annual climate report to parliament in its Budget Bill. The Government is also required to develop a climate policy action plan for how the climate goals are to be achieved every four years.

The new Climate Act, which will enter into force on 1 January 2018, requires a target of net-zero GHGs to be met by 2045. These emissions reductions must be met by at least an 85% reduction in domestic GHGs by 2045 compared with a 1990 baseline.

Flexibility measures - such as afforestation, overseas climate projects, bioenergy with carbon capture and storage (BECCS) - can be used to achieve the net-zero target.

The Act includes intermediate targets for non-EU Emissions Trading System (ETS) emissions - 63% reduction by 2030; and 75% reduction by 2040 (compared with the 1990 baseline). As with the long-term goal, these interim goals may be achieved through supplementary measures, but only by a maximum of 8% for the 2030 goal and 2% for the 2040 goal.

The Act also includes a target for transport emissions (excluding aviation) of 70% reduction by 2030 when compared with 2010.

Sources:

http://www.lse.ac.uk/GranthamInstitute/country-profiles/sweden/

http://www.government.se/articles/2017/06/the-climate-policy-framework/

Mexico

Mexico's overarching, 2050 goal is a 50% reduction below 2000 levels. This is set out in the *General Law on Climate Change,* 2012. Mexico's 2020 target is defined in its NDC as a 22% reduction by 2030 (against a 2013 baseline). The General Law defines the 2020 target as a 30% reduction against a "business-as-usual" scenario, subject to the availability of financial resources and technology transfer.

However, Mexico has not yet defined the pathway to get to 30% and 50%. The Mexican government has used a *Massachusetts Institute of Technology* model to evaluate two policy scenarios. The first scenario relates to Mexico's NDC goal of 22% by 2030, and 50% by 2050. The second scenario explores a more ambitious policy of a 36% reduction by 2030 (against a 2013 baseline), assuming additional policies are agreed at the regional level with the USA and Canada.

Mexico's General Law mandates a long-term climate policy. The *Energy Transition Law* runs in parallel, with targets for transforming Mexico's energy sector. In 2013, Mexico issued its first 'National Strategy for Climate Change 10-20-40', which sets out milestones for sectoral/policy-related ambitions[1] against ten, twenty and forty year timeframes.

[1] These ambitions must cover: society and population, ecosystems, energy, emissions, productive systems, private sector, and mobility.

The General Law requires mitigation strategies to be updated at least every ten years (and, interestingly, every six years for adaptation strategies). Beyond that, the Law sets out the planning and policy instruments, institutional arrangements, and general guidance for the implementation of climate policy. It also requires a long-term, decentralised, participatory and integrated approach to setting mitigation actions, with a principle of sectoral programmes underpinning the National Strategy. The respective roles of the Federal and Subnational governments are set out, with the latter required to publish their own climate change programmes.

The Law requires the development of the National GHG Emissions Inventory, which is termed "an essential input for *domestic policy design* and for *international reporting*" [our emphasis].

Sources:

https://unfccc.int/files/focus/long-term_strategies/application/pdf/mexico_mcs_final_cop22nov16_red.pdf
https://ec.europa.eu/jrc/en/publication/pathways-mexico-s-climate-change-mitigation-targets-multi-model-analysis
http://www.lse.ac.uk/GranthamInstitute/law/general-law-on-climate-change/

Denmark

In 2014 the Danish parliament enshrined ambitious climate targets in law, committing to reduce the country's greenhouse gas emissions by 40% below 1990 levels by 2020.

The Act contains a goal for Denmark to become a low-emission society by 2050; i.e. be resource efficient, with energy supply from renewable energy and considerably lower GHG emissions.

The Act also obliges the Danish government to set national GHG reduction targets every five years.

The legally binding targets were accompanied by the creation of a Climate Council, an independent body which will advise on best practice re: fossil fuel reduction and achieve the low-carbon society goal. The Council will also monitor the implementation of climate policy by the government to ensure targets are being met.

Each year a Climate Policy Report including an overview of introduced measures together with the Climate Council's recommendations should be presented to the Danish Parliament. In addition, the Act obliges the Minister for Climate, Energy and Building to set targets for national greenhouse gas reduction with a ten-year perspective, at least once every five years.

Sources:

http://www.lse.ac.uk/GranthamInstitute/countries/

https://ec.europa.eu/clima/sites/clima/files/strategies/progress/reporting/docs/country_report_denmark_final.pdf

Catalonia

In July 2017, the parliament of Catalonia passed a new Climate Change Bill with support from all political parties, with the exception of an abstention from the PCC conservatives. The new law, which is based on European legislation, aims to reduce emissions by: 40% by 2030; 65% by 2040; and 100% by 2050 and has five main goals:

1. *Getting Catalonia to reduce GHG emissions and favouring the transition towards a low carbon economy.*
2. *Reinforcing and broadening the strategies and the plans that have been elaborated during the last years.*

3. *Promoting and guaranteeing the coordination of all the Catalan public administrations, and fostering the participation of the economic citizenship and social agents.*
4. *Becoming a leading country in the research and application of new technologies, and reducing the energetic dependence from Catalonia of external energetic resources.*
5. *Making Catalonia visible in the world, in the projects of cooperation as well as in the participation in the global forums of debate about the climate change.*

Under the new law, businesses - such as oil and gas refineries, cement factories, and glass and paper factories - will be taxed about €10 per tonne of CO_2 emitted, a number that will increase every two years to €30 in 2025. In addition, large ships will be taxed about €1,000 per tonne of nitrogen oxide emissions, and the existing carbon tax on polluting cars has been reinforced. The tax revenue raised will go into a Climate Change Fund, the fund for Natural Heritage, and the Fund for the Protection of the Atmospheric Environment.

Note: *When the Bill was passed, the Catalan government aimed to approve plans for implementing the two new taxes before the 1 December 2017, with the new law to come into force in 2019.*

When speaking about the elections called for the Catalan region in December 2017, after the government was dissolved in October 2017, a Spanish government spokesman said that at a recent cabinet meeting, the Spanish government had agreed to appeal to the Constitutional Court against three laws approved by the former government, among them, the new climate change law.

Sources:

https://www.theclimategroup.org/news/catalonia-passes-climate-change-law-reduce-emissions-100-2050

http://www.catalannews.com/politics/item/catalan-parliament-passes-climate-change-law

http://canviclimatic.gencat.cat/en/politiques/politiques_catalanes/Avantprojecte_llei_cc/

http://news.xinhuanet.com/english/2017-11/04/c_136726864.htm

Germany

Traditionally, all political parties support action on climate change, and the non-legally binding short-term national emission reduction target of at least 40% reduction in GHG emissions by 2020 compared to 1990 levels was reiterated in the 2013 coalition agreement.

In December 2014, the cabinet adopted the Action Programme on Climate Protection 2020 which aims to reduce GHG emissions by 62-78 million tonnes CO_2-equivalent by 2020 (as compared to current projections). It comprises nine main components, including the 2014 National Energy Efficiency Action Plan (NAPE), as well as transport-specific measures, climate-friendly building and housing, and a reform of emissions trading.

The German Climate Action Plan 2050 (not to be confused with the Climate Action Programme 2020 which only covers the period until 2020) was approved by the German government on 14 November 2016 and outlines measures to meet its various national GHG reduction goals through to 2050, and service its international commitments under the 2015 Paris Climate Agreement. The plan is to be supplemented by a programme of policy measures, developed by the German parliament, with the first such programme due to be in place in 2018. Annual reporting will track progress and should facilitate specific policy adjustments where needed.

In 2010, Germany announced (in its Energy Concept document) the following GHG emissions targets (compared to 1990 levels): 40% reduction by 2020; 55% reduction by 2030[2]; 70% reduction by 2040; 80-95% reduction by 2050. The 2016 Action Plan reaffirms the targets set in 2010, and Germany's Paris Agreement commitment.

The 2016 Action Plan also specifies sector targets for the first time (see Table 1). The initial sector targets will be subject to a comprehensive impact assessment and consultation, and may well be adjusted as a result in 2018.

Table 1. 2016 Action Plan sector targets (Units: million tonnes CO2eq. 1990 and 2014 values are actual.)

Sector	**1990**	**2014**	**2030**	**Reduction (2030 relative to 1990)**
Energy	466	358	175–183	61–62%
Buildings	209	119	70–72	66–67%
Transport	163	160	95–98	40–42%
Industry	283	181	140–143	49–51%
Agriculture	88	72	58–61	31–34%
Other	39	12	5	87%
Total	**1248**	**902**	**543–562**	**55–56%**

Sources:

http://www.lse.ac.uk/GranthamInstitute/country-profiles/germany/

https://en.wikipedia.org/wiki/German_Climate_Action_Plan_2050#cite_note-bmub-2016e-20

http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/klimaschutzplan_2050_kurzf_en_bf.pdf

https://translate.google.co.uk/translate?hl=en&sl=de&u=https://www.bmub.bund.de/themen/klima-energie/klimaschutz/nationale-klimapolitik/klimaschutzplan-2050/&prev=search

Ireland

Ireland's National Policy Position on Climate Action and Low Carbon Development, published in 2014, includes two national targets for 2050: an 80% reduction, in CO_2 emissions only, by 2050 (compared to 1990 levels) across electricity generation, built environment and transport sectors; and a parallel target to achieve carbon neutrality in the agriculture and land-use sector, including forestry, which does not compromise capacity for sustainable food production. The statutory authority for meeting the plans outlined in this document is set out in the Climate Action and Low Carbon Development Act 2015.

[2] The 2030 target is also the 2016 Paris Agreement NDC for Germany.

The 2015 Act contains a 'national transition objective' to pursue and achieve the transition to a low carbon, climate resilient and environmentally sustainable economy[3] by the end of 2050.

In order to enable the State to meet this objective, the Minister for the Environment, Community and Local Government will submit to the government for approval – a national mitigation plan, and a national adaptation framework.

Plans or frameworks for meeting this objective will have regard to: the ultimate objective in Article 2 of the UNFCCC; any mitigation commitment entered into by the EU; the policy of government on climate change; climate justice; any existing obligation of the State under EU law or any international agreement; the most recent national greenhouse gas emissions inventory and projection of future GHG emissions prepared by the Environmental Protection Agency (EPA).

In this Act 'greenhouse gas' means – carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, Sulphur hexafluoride or nitrogen trifluoride. **The Act does not include specific targets for emissions reductions.**

Under the Act, the Minister for the Environment, Community and Local Government is responsible for producing and submitting for government approval both the national mitigation plan and the national adaptation framework, to be reviewed every five years; the first mitigation plan must be submitted not later than 10 June 2017, and the first adaptation framework must be submitted not later than 10 December 2017. Appropriate ministries will be requested to formulate and submit sectoral adaptation plans.

When formulating the national adaptation framework and sectoral plans, the government is required to take account of a number of factors, including: promoting sustainable development; achieving the objectives of a national adaptation framework at the least cost to the national economy; any recommendations or advice of the Expert Advisory Council.

The independent Climate Change Advisory Council on climate change includes the heads of the EPA, the Sustainable Energy Authority of Ireland, Teagasc (the Agriculture and Food Development Authority) and the Economic and Social Research Institute as ex officio members. The Council is tasked with conducting an annual review of the progress made in achieving planned GHG emissions reductions, and furthering the transition to a "low carbon, climate resilient and environmentally sustainable economy".

The Act also states that the Minister of the Environment must produce annual statements on national transition, sectoral mitigation transition, and sectoral adaptation transition.

Sources:

http://www.lse.ac.uk/GranthamInstitute/law/climate-action-and-low-carbon-development-act-2015/

https://www.dccae.gov.ie/en-ie/climate-action/publications/Pages/National-Policy-Position.aspx

http://www.irishstatutebook.ie/eli/2015/act/46/enacted/en/html

New Zealand

New Zealand has three national targets: to reduce greenhouse gas emissions by 5% below 1990 levels by 2020; by 30% below 2005 levels by 2030[4;] and by 50% below 1990 levels by 2050. The 2030 target is equivalent to 11% below 1990 levels by 2030. The target is expressed against 2005 emission levels because this is "similar to some of New Zealand's trading partners". New Zealand provides the 1990 equivalent for ease of comparison with previous targets.

[3] There is no definition of 'low carbon economy' in the legislation

[4] The 2030 target is also the 2016 Paris Agreement NDC for New Zealand

New Zealand will meet this responsibility target through a mix of domestic emission reductions, the removal of carbon dioxide by forests and participation in international carbon markets.

Sources:

https://www.mfe.govt.nz/climate-change/reducing-greenhouse-gas-emissions/emissions-reduction-targets

http://www4.unfccc.int/ndcregistry/PublishedDocuments/New%20Zealand%20First/New%20Zealand%20first%20NDC.pdf

France

France's 'Plan Climat' (July 2017) sets six ambitions: make the achievement of the Paris Agreement ambition irreversible; improve daily life for citizens across France; end use of fossil fuels and achieve carbon neutrality; make France the world's number one green economy; support contribution from ecosystems and agriculture; and, mobilise climate action internationally. The Plan is a strategy rather than a targets framework. E.g. it commits to roadmaps in various sectors and collective responsibility for action across Cabinet. Coal plants will be closed by 2022 and the carbon price increased through taxation. The French Government is currently revising its Low-Carbon and Energy strategies, setting a target (by means of the former) of carbon neutrality by 2050.

In effect, therefore, the 'Plan Climat' itself does not (yet) set new policy or targets. These will come forward in new National Low-Carbon and Energy strategies. These strategies (the former in particular) are the mechanisms for achieving the overarching targets set out in legislation, and the legislative basis for them remains the Energy Transition for Green Growth Act (Law No. 2015-992 of 17 August 2015). This Act sets targets to: cut GHG emissions by 40% by 2030 (from 1990 baseline) and by 75% by 2050; cut energy use by at least 50% by 2050; and, reduce the share of fossil fuels in energy production by 30% compared to 2012. The National Low-Carbon Strategy is the place where detail is provided on the roadmap for emissions reductions. The current (pre-Macron) National Low-Carbon Strategy sets out how the GHG targets will be met, with carbon budgets set for the periods 2015-2018, 2019-2023 and 2024-2028.

The following is taken from the Low-Carbon Strategy, and is instructive on a number of issues, which we have bolded in the text:

*To achieve its long-term targets, France has adopted '**carbon budgets**' at the national level, which are broken down into the major activity sectors for information purposes. These are caps on greenhouse gas emissions established to systematically ensure over ten years' visibility with regard to progress in reducing emissions. They cover five-year periods (four years for the first budget) so that analysis of compliance or non-compliance with them cannot be overly influenced by situational phenomena (a particularly mild or harsh winter, upwards or downwards fluctuations in the price of fossil fuels, etc.).*

*Carbon budgets are tools for monitoring progress in reducing emissions. They should make it possible to measure progress and check/identify whether France is on the right track towards achieving its targets. In particular, the **indicative breakdown by activity sector** (resulting from the forward studies set out in the following section) should not be regarded as a rigid compartmentalisation of targets, but as a primary sectoral breakdown to guide overall management. This break-down is an integral component of the **set of indicators** for this strategy, providing indications about the risk of deviating from the global target and any need for corrective measures, without anticipating the sector in which these additional reductions must take place.*

The drafting of sectoral scenarios, translated into advisory carbon budgets, is the first step towards constructing a national low-carbon strategy. This allows us to identify constraints and stakes, plan ahead for structural transformations in lifestyles and production methods, and identify potential routes to success.

*At the conclusion of each carbon budget period, the **extent to which the budget has been respected will be assessed** with reference to the most recent annual inventories submitted to the European Commission or the UN Framework Convention, with the exception of the last year in the budget period, for which we will use the provisional inventories submitted to the European Commission. [See Reporting, below]*

*Designed to "steer policy," the National Low-Carbon Strategy is aimed primarily at public-sector decision-makers, particularly at national, regional and inter-municipal levels, including public institutions. For this priority target group, the L-C Strategy and its carbon **budgets are legally binding** and must be respected.*

*The [French legal] obligation to take something into consideration requires those concerned "not to deviate from these fundamental principles except, subject to approval by the courts, for reasons derived from the best interests of the operation and justified by these interests." (cf. Council of State 9 June 2004, 28 July 2004, 17 March 2010). The principal consequence of this requirement is that the Low-Carbon Strategy cannot be ignored and **any deviations** (points on which strategy documents are not compatible with the L-C Strategy) **must be explained and justified**.*

*Analysis of the implementation of the low-carbon strategy and our adherence to carbon budgets must **take the political context into account**, as well as the actual capacity of the actions put in place to deliver the results expected of each sector. Managing the impact of these measures on the public finances is a key priority. A posteriori analysis should allow us to identify cost-efficiency and acceptability issues which were not accurately quantified when drawing up the original strategy.*

Monitoring

*These **indicators must be monitored annually or twice annually**. They will be more effective within the framework of a cross-cutting analysis, taking the general and sector-specific context into account. It may also be useful to look at the European context and establish comparisons with other Member States. Guideline trajectories (with a few years' perspective, and as far as 2028) may also be of use. This is a draft version, which may be reorganised and restructured with the help of the Committee of Experts for the Energy Transition.*

*These **indicators will be made public**. They will be aimed primarily at the stakeholders involved in drawing up this strategy, who will also be involved in monitoring its progress. They will also be designed to reinforce cooperation with partners and regional and territorial level. The committee of experts for the energy transition will be involved with the annual implementation review, and bi-annual updates will be provided to the CNTE [the National Council on the Ecological Transition], at which point the monitoring indicators will be published.*

Reviewing the Low-Carbon Strategy

*The Low-Carbon Strategy will be subjected to a comprehensive **review cycle** every five years. At that point, the boundary of the next two budget cycles may be adjusted if necessary (particularly in light of France's commitments at European level regarding net carbon emissions connected to land usage and related changes). This process includes:*

- *the opinion from the Committee of Experts (Article L. 145-1 of the Energy Code) regarding the success of the carbon budgets already in place (the balance of the one now reaching its conclusion, projections for the next two budgets) and how to implement the current low-carbon strategy. These findings will be passed on to the standing committees of the National Assembly and the Senate responsible for energy and the environment.*
- *a government report covering the review of the low-carbon strategy, a draft for the forthcoming third carbon budget and any adjustments made to the first and second budget cycles. This report will clearly demonstrate how the draft carbon budget and the low-carbon strategy incorporate the objectives set out in Article L. 100-4 of the Energy Code, as well as France's European and international commitments. The report will assess the environmental, social and economic impact of the carbon budget for the coming periods and of the new low-*

carbon strategy, particularly with regard to the competitiveness of economic activities subject to international competition, the development of new, local activities, and overall growth. This report will be made public.

- *the opinion of the National Committee for the Ecological Transition and its Committee of Experts.*
- *a decree setting out the low-carbon strategy and corresponding carbon budgets.*
- *these decisions will be presented in Parliament, along with a quantitative summary of the most recent carbon budget and an analysis of the results achieved in this cycle.*

Exceptionally, the first cycle will last for four years, while subsequent cycles will then last five years. The results of the first review process should be published by decree no later than 1 July 2019. This will ensure that the review (and all subsequent reviews) are conducted relatively early on in the parliamentary term.

Reporting

Every two years, a report to the European Commission will provide details of measures taken to reduce greenhouse gas emissions, assessing their effectiveness and identifying medium-term prospects for further reducing emissions, including a scenario which takes account of those measures already put in place. This report will be made public.

***Every year, reports will be submitted to Parliament** covering:*

- *government spending on climate policy;*
- *financial backing for the energy transition, quantifying and analysing the public funding and evaluating the private funding allocated to the energy transition, with reference to the levels of funding required to meet the targets and rate of transition prescribed by the law. This report will focus particularly on actions to control energy demand and measures to promote renewable energies, as well as the impact of energy consumption on trends in greenhouse gas emissions and, more generally, on the environment.*

Via these reports, and within the monitoring framework put in place for the sector-specific policies, the indicators detailed in this strategy document will be analysed and updated regularly.

Source:

http://unfccc.int/files/focus/long-term_strategies/application/pdf/national_low_carbon_strategy_en.pdf

Norway

The quasi-legal 'Climate Settlement' (agreed by all parliamentary parties other than the far-right Progress Party) from 2012 states:

- Norway plans to become carbon neutral by 2050. If other industrialised countries commit to undertake large emissions reductions, Norway will bring forward this target to 2030
- Norway plans to reduce GHG emissions to an equivalent of 30% of 1990 levels by 2020 (and up to 40% contingent on global action). Two-thirds of the effort will come from domestic action.

Since 2012, the Norwegian government has increased this ambition to at least 40% below 1990 levels by 2030 (in line with the EU's commitment).

Norway's NDC (i.e. its Paris Agreement commitment) includes a conditional carbon neutral goal for 2030 "as part of an ambitious global climate agreement where other developed nations also undertake ambitious commitments." This goal

to be achieved through "the EU emissions trading market, international cooperation on emissions reductions, emissions trading and project-based cooperation [overseas]". ("Komiteens tilråding," 2016).

50 per cent of Norwegian emissions are regulated through Norway's participation in the EU Emission Trading System (ETS). A total of 80% of Norwegian emissions are subject to emissions trading, a CO2 tax, or both.

Through the UNFCCC's Clean Development Mechanism, Norway is procuring 60 million Certified Emission Reductions (CERs) generated in the second commitment period of the Kyoto Protocol (2013-2020). "The access to finance emission reductions in other countries has enabled Norway to take on a more ambitious emission reduction target than if all the reductions were to be taken domestically."

Source:

https://www.regjeringen.no/en/topics/climate-and-environment/climate/innsiktsartikler-klima/norwegian-carbon-credit-procurement-program/id2415405/)

Reporting complexity

Norway intends to use the land-use, land-use change and forestry (LULUCF) sector to help achieve its emissions reductions, in spite of the fact that the 1990 base year for Norway's NDC excludes LULUCF. Norway's NDC submission states that the 40% reduction commitment includes additional measures in the land sector, but the "final choice of land sector accounting shall not affect the ambition level for 2030." It is not clear exactly what this might mean.

According to Norway's NDC, the LULUCF sink will grow from 10.1 $MtCO_2e$ in 1990 to 21.2 $MtCO_2e$ in 2030. The NDC submission text suggests that only reductions in addition to those in the base year and those already projected can be counted as credits toward meeting the 2030 target. However, the supporting text is not completely clear as to how the LULUCF sector will be incorporated into the final target, and the conditions described in the NDC submission make it difficult to evaluate the assumed contribution of this sector. The submission states that if the projected increase in the sink between 1990 and 2030 (11.1 $MtCO_2e$) were credited, the 2030 target would be recalculated so that the ambition level does not change. We estimate that this would mean that a target of about a 60% emissions reduction (including. LULUCF) below 1990 levels would be needed to produce the same outcome of 40% emissions reduction without LULUCF.

Source: Climate Action Tracker