Session SBI60 (2024)

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Multilateral Assessment

A compilation of questions to – and answers by – **Denmark**

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Question by New Zealand at Thursday, 04 April 2024

Category: All emissions and removals related to its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Impacts of individual policies and measures

New Zealand noted that Denmark did not quantify the projected impacts of individual policies and measures in its NC8 and BR5 and the expected contribution to emissions reductions and removals. New Zealand is interested to know what progress has been made in developing mitigation estimates for individual policies and measures?

Answer by Denmark

For the purpose of adopting additional policies and measures (PaMs) in the parliament, the government's proposals have – at least since 2020 - been accompanied by ex-ante mitigation estimates.

However, as the government's proposal often covers more than one individual PaM, the mitigation estimate provided also covers more than one individual PaM. Furthermore, these estimates for the groups of PaMs proposed are often not reflecting the final group of PaMs adopted, as the proposals often change during negotiations in the parliament.

As updated information on the effects of all individual PaMs reported (i.e. existing PaMs either adopted or implemented) was not available for NC8/BR5, information on the estimated impacts of the groups of PaMs included in agreements made and decisions taken since 2020, was included in Denmark's NC8/BR5 in chapter 4.4.4 on pages 200-202 (https://unfccc.int/documents/631165).

After the submission of Denmark's NC8/BR5 in August 2023, the government published its annual statement on expected total effects of political agreements made since 2020 in December 2023 (available in Danish here: https://www.kefm.dk/Media/638435855892254929/Redeg%C3%B8relse%20om%20klimaeffekter%202023.pdf)

For domestic purposes, and before the government decides, which PaMs or groups of PaMs it will include in the proposals to be presented in the parliament, results from analyses of possible additional individual PaMs are published in the government's annual Climate Programme. However, as these PaMs are just potential additional PaMs, neither adopted nor possible to label as "PaMs with a realistic chance of being adopted", they do not qualify for being reported in NCs or BRs cf. the NC- and BR-reporting guidelines. The results from these analyses are avail-able in the annual climate programmes (in Danish), where the latest is Klimaprogram 2023 (Table 7.1 on pages 64-66, https://kefm.dk/Media/638315764817167867/Klimaprogram%202023.pdf).

Question by New Zealand at Thursday, 04 April 2024

Category: All emissions and removals related to its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Impact of temporary reduction in logging

One of the policies and measures Denmark describes for its LULUCF sector is 8-LU-14, temporary reduction in logging, which aims to achieve reduced harvesting in state owned forest during 2026 to 2031. Could Denmark provide more details on this policy and the likely impacts on emissions, including post-2031 when the measure ends?

Answer by Denmark

As part of the Agreement on the green transformation of Danish agriculture, it was decided to reduce felling in the Nature Agency's forests, which are not designated as untouched forest, by 20% in the period 2026-2031. The reduced felling is expected to lead to a temporary increase in the wood mass level on the Nature Agency's areas during continued forest management. From 2032 onwards, felling will resume at the same level as before 2026, but from a higher stock of wood. This means that there will be a higher carbon stock due to the reduced harvesting in the years before 2032 and that annual net emissions/removals in relation to forests will return to approximately the same level as before 2026. It should be noted that the forest projections shown in NC8/BR5 are from 2022 (CSO22). After CSO22, the forest projections have been updated significantly. The latest WEM projection was published on 30 April 2024 (https://www.kefm.dk/aktuelt/nyheder/2024/apr/kf24-klimamaalet-for-2030-er-rykket-taettere-paa - in Danish, a summary in English will be published later this year).

Question by United States of America at Friday, 29 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Danish Climate Act goal

Is Denmark on track to achieve the goal in the Danish Climate Act of reducing Danish greenhouse gas emissions by 70 per cent in 2030 compared to the 1990 level? This is significantly more than the EU requirement of 55% reduction by 2030.

Answer by Denmark

Yes, Denmark is on track to achieve the 2030 target in the Danish Climate Act. If no additional PaMs are adopted, Denmark's greenhouse gas emissions are projected to be reduced by 68 per cent in 2030 according to the latest WEM projection from April 2024. As stated in the government platform, the government will make the necessary decisions that bring Denmark fully on target with the reduction target for 2025 and 2030. The 70 per cent target will, among other things, be achieved by realizing the agricultural and forestry sector's reduction target corresponding to that agreed in the agricultural agreement from 2021.

Question by United States of America at Friday, 29 March 2024

Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: CCS

CCS is expected to reach 1.4 million tons of a reduction effect by about 2030. Currently the projections of CCS is not broken down by sectors, is there any further information on policies or projections around use of CCS?

Answer by Denmark

In Denmark's NC8/BR5, the results from the WEM projection from 2022 (CSO22) was shown, where CCS was expected to reach 1.4 million tons of a reduction effect by 2030. According to the draft WEM projection from 2024 (after the public hearing 30 April – 21 May, the final CSO24 is expected to be published in Danish in June, an English translation is expected to be published in the autumn), Denmark now expects to achieve a CO_2 reduction of 2.9 million tons annually by 2030 through CCS initiatives.

In CSO24, following the winning bids for the CCUS (Carbon Capture Utilization and storage)-tender and the NECCS (Negative Emission Carbon Capture Storage)-tender, approximately 0.59 mio. ton captured CO_2 in 2026 has been broken down by capture-source – and for 0.43 also by CRF-sector in 2026. The discrepancy stems from uncertainty as to in which sector and when, it will be possible to report negative emissions from bio-CCS (from biogas upgrading plants). The 0.43 is expected to stem from BECCS-projects within the energy sector.

Regarding policies, the inaugural step was marked by the *Climate Agreement for Energy and Industry* in 2020, which established the CCUS (Carbon Capture, Utilization, and Storage) funding scheme. In May 2023, funding was awarded a project lead by the energy company Ørsted, which aims to capture and store 0.43 million tons of CO_2 annually starting from 2026. Subsequently, there have been 10 additional political agreements that set out the roadmaps and framework conditions for CCS in Denmark. The most recent is the *Agreement on Long-term Framework Conditions for CO_2 Capture in the Supply Sector* from February 2024 (available in Danish here: https://www.kefm.dk/Media/638429086843948317/Aftale%20om%20langsigtede%20rammevilk%C3%A5r%20for%20CO2-fangst%20i%20forsyningssektoren%20(002).pdf).

These agreements lay the foundation for Denmark's first main law on pipeline CO_2 and the decision to hold a 20% state ownership of CO_2 storage permits. With the *Green Tax Reform Agreement for Industry* from June 2022, an additional DKK 18 billion was allocated to CCS, bringing the total to approximately DKK 38 billion for CCS funds. Upcoming support tenders will allocate over DKK 26 billion of these funds to CCS projects.

Question by United States of America at Friday, 29 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Transportation sector emissions

Emissions from the transport sector are expected to decrease by almost 35% by 2035 compared to 2019. However, in 2035 transportation emissions are projected to be still a significant source of emissions. The projected renewables share in transportation fuels is projected to only be 8% in 2035. Are there any plans to include policies to increase the share of renewables in transportation fuel?

Answer by Denmark

In the latest draft WEM-projection, Climate Status and Outlook published for public hearing in April 2024, CO_2 e-emissions in the transport sector are estimated to be reduced by 7.5 million tonnes of CO_2 e equivalent or about 60 percent from 2019 to 2035. In addition, fuels from renewable sources like electricity, biofuels and hydrogen are estimated to make up approximately 35 percent of the energy consumption in the transport sector in 2035. This is primarily due to the expected rise in the number of electric cars and phase out of fossil-fuelled cars in the transport sector.

In terms of new policies, the Danish government has entered into an agreement on the Green Aviation in Denmark Deal in December 2023, which aims to achieve full green domestic aviation in Denmark by 2030 by subsidizing the additional cost of sustainable aviation fuel compared to conventional jet fuel.

In addition, Denmark will be subject to a number of new regulations for the transport sector with the EU's fit-for-55 package. From 2025, a blending mandate is introduced in the aviation sector and a requirement for reducing the GHG intensity of fuels is introduced in the maritime sector.

Finally, under the new renewable energy directive Denmark must ensure that either the share of renewable energy in the transport sector is 29 percent in 2030 or reduce the CO_2 intensity by 14.5 percent in 2030. In addition, there is a sub-requirement for advanced biofuels and renewable fuels of non-biological origin (RFNBOs) of 1 percent in 2025 and 5.5 percent in 2030 of which a minimum of 1 percentage point must be RFNBOs.

Thus, Denmark is currently implementing a number of both national and EU-polices in order to support and increase the share of renewables in transportation fuel.

Question by Japan at Friday, 29 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Treatment of Bio-CCS, BECCS, and DACCS in the GHG inventory

Denmark has adopted a funding scheme of 2.5 billion DKK for 2025-2032 to achieve negative emissions. Has Denmark considered a methodology for how CO2 captured by Bio-CCS, BECCS, and DACCS will be accounted for in the GHG inventory? If so, could Denmark share the views?

Answer by Denmark

Under the Paris Agreement, Denmark expect that the reporting of GHG inventories in accordance with decision 18/CMA.1 and decision 5/CMA.3 will start in December 2024. This includes the use of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Biogenic CO_2 captured and stored for the long term falls under the general guidelines as specified in Chapter 8 of the 2019 Refinement.

According to these guidelines, CO_2 emissions from biomass combustion for energy purposes without CCS will be reported separately from national totals in the so-called memo item to avoid double counting as these emissions are in the Land-Use, Land-Use Change and Forestry sector of Denmark or other countries as part of the estimated net change in carbon stocks. The capture and permanent storage of biogenic CO_2 emissions from biomass combustion or other processes should be treated consistently with CO_2 capture from fossil fuel combustion and reported in the energy and/or industry sectors. Both captured biogenic and fossil CO_2 should not be added to the total emissions – as stated in Chapter 8.

This is the case both for BECCS (biogenic CO_2 from combustion), which is explicitly mentioned, and BioCCS (biogenic CO_2 from other processes, such as biomethanization), which is implicitly included under "or other processes". Regarding DACCS, the IPCC guidelines do not currently address this technology. As the effects of DACCS in Denmark are expected to be rather limited until 2040, we believe that the IPCC will be able to develop the necessary guidance well before.

Question by Japan at Friday, 29 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Comparison of the latest reported GHG inventory with the “with measures” projections

The comparison of the latest reported greenhouse gas inventory with the “with measures” projections in Denmark’s first to eighth NCs is quite interesting. Could Denmark elaborate a bit more on how Denmark normalize the data as in NC8 Figure C.3.2 and take into account the inter-annual variations in temperature and electricity trade as in Figure C.3.3? Also, does this comparative analysis help to improve projecting methods?

Answer by Denmark

Of the three charts in Figure C.3.2, the chart in the top shows the “raw data” from the different national communications. To make the data from the different national

communications more comparable – taking into account improvements in activity data, emission factors and estimation methodologies over time, it has – as a proxy – been assumed that the changes in emission level for all years in the time series are the same as in 1990. These so-called “normalized data” are shown in the chart in the middle.”. In the chart in the bottom, the historical normalized data have also been adjusted for inter-annual variations in temperature (i.e. adjusted to the normal average of degree days) and electricity import/export (to reflect the level of emissions if no import or export of electricity would have taken place). The adjustments are made in the energy statistics used for the estimations of greenhouse gas emissions. The methodologies used are described in the annual energy statistics:

The Danish Energy Agency’s climate variation adjustment method

The purpose of adjusting for climate variations is to show figures for energy consumption, which are independent of climate fluctuations in individual years. Climate adjustment takes place by adjusting -for each of the areas of consumption included in the statistics -the share of the energy consumption that consists of space heating and depends on the climate.

The adjustment takes place by comparing annual degree-day figures to the degree-day figure in a normal weather year. A high number of degree days relative to a normal year indicates a relatively cold year and the annual observed energy consumption is therefore adjusted downward to indicate what the energy consumption would have been had it been a normal weather year. In contrast, a low number of degree-days lead to an upward adjustment of the observed energy consumption.

Ideally, the degree-days for the various years should distribute fairly evenly around the normal year. Previously, a fixed normal year was used. However, due to an increasingly milder climate, for a considerable number of years with only few exceptions, the degree-day figure was lower than “normal”. In order to arrive at an adjustment that takes into account an ever warmer climate, the Danish Energy Agency has decided to use a normal year derived by taking a moving average of the degree-day figures for the last 20 years.

The degree-day figure is calculated by the Danish Meteorological Institute.

Adjustments for trade in electricity

In the case of net imports of electricity, fuel consumption is added corresponding to the average consumption of Danish thermal plants (as if the electricity had been produced in Denmark). For net exports, consumption will be deducted correspondingly. The calculation is made on the basis of an average of the thermal electricity production on five fuel types that are used in Danish plants and which are normally traded on a larger market, i.e. coal, oil, natural gas, wood pellets and wood chips. On the other hand, it is not assumed that plants fired with e.g. waste are regulated depending on the electricity market, why these are not taken into account in the calculation. Previously (before 2015), the calculation was made on the basis of a condensing plant with a fixed degree of efficiency (40.5%) and a fixed fuel mix (88.3% coal, 7.7% natural gas and 4.0% oil).

Question by United Kingdom of Great Britain and Northern Ireland at Thursday, 28 March 2024

Category: All emissions and removals related to its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Question to Denmark on their taxation system of cars

Thank you, Denmark for the opportunity to comment on your 5 th Biennial Report and 8 th National Communication. In your report, you refer to the reorganisation of the current taxation system of cars which has incentivised users to choose electric over fossil fuel vehicles. Can you share your successes and challenges of this transition?

Answer by Denmark

The first impact report regarding green bonds issued by the Kingdom of Denmark, published by the Danish Ministry of Finance in 2023 in the Green Bond Impact Report 2021 (available in English here: https://fm.dk/media/26809/green-bond-impact-report.pdf), includes a chapter on the climate impact (effect on CO_2 emissions) of the reduced registration tax for zero- and low-emission vehicles.

Although sale of zero- and low-emission vehicles cannot be fully attributed to the tax advantages, it is estimated that without the tax advantages the sale of these vehicles in 2021 would have been close to zero. The sale of zero- and low-emission vehicles contributes to reduce the CO_2 -emissions from the road transport sector to the extent that it represses the sale of conventional vehicles. Based on the Ministry of Taxation's so-called car-model that models the changes in the sale of cars based on changes in the taxation of cars, the expected reduction in CO_2 attributed to the tax advantages is estimated at 1.4 million ton CO_2 calculated as the accumulated effect over the life expectancy of 15 years of the sold zero- and low-emission vehicles in 2021.

Further information is available in Green Bond Impact Report – including information on tax expenditures in achieving the above mentioned effect, cf. Table 2.1.

Question by Australia at Wednesday, 27 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Q2

Australia recognises Denmark's significant work to decarbonise its energy sector. **Can Denmark share which policies and measures are expected to be the most effective at increasing the share of renewables in the power system?**

Answer by Denmark

It should be noted that technologies and markets are constantly evolving. Therefore, potentials and costs are also constantly evolving. It is therefore difficult to predict which policies and measures that would be the most effective at increasing the share of renewables in the power system the long run.

In the near future, increasing the share of renewables in the power system in Denmark will predominantly take place through tenders for the establishment of additional off-shore wind farms. Political agreements have been made that will lead to the tendering of offshore wind of 9 GW, with the possibility of over-planting, which enables potentially 14 GW or more in 2030. The tenders are being implemented, with tender contracts expected to be concluded in 2024-2025. The expansion in off-shore wind is expected to, together with a steady increase in land wind and photovoltaic installations, to triple the electricity production from RE from 2020 to 2030.

The government has also set up the national energy crisis staff (NEKST), which, among other things, must identify solutions to challenges, and contribute to creating the smoothest path from agreements to the establishment of renewable energy installations, faster conversion to green heat and expansion of the electricity grid with various green fast track work tracks. The next step is that the government will follow up on energy parks on land and the ambition to secure framework conditions that can enable a fourfold increase in the total electricity production from solar energy and onshore wind by 2030. In addition, the government will continue to have focus on security of supply, green electricity and heat, faster expansion and better utilization of the electricity grid.

Question by Australia at Wednesday, 27 March 2024

Category: Progress towards the achievement of its quantified economy-wide emission reduction target

Type: Before 04 April

Title: Q1

Denmark's NC8 indicated the government would present a proposal for a climate tax on agriculture once the Expert Group for a Green tax reform had presented its conclusions (pg. 151). **Can Denmark provide an update on this proposal for a climate tax on agriculture, and describe its key features?**

Answer by Denmark

In February 2024, the expert group submitted its report with recommendations on CO_2e regulation of the non-energy-related emissions in agriculture (available in Danish here: https://skm.dk/media/tngh1b4r/green-tax-reform-final-report.pdf). The models presented by the expert group in different ways meet the climate act's guiding principles on e.g. cost-effectiveness in climate action, counteract greenhouse leakage and take into account the social balance and public finances. The government has set up a Green Tripartite, which, in addition to the government, consists of relevant stakeholders and actors with special interests in regulation of greenhouse gas emissions from agriculture (Danish Agriculture & Food Council - representing the farming and food industry of Denmark, The Danish Society for Nature Conservation, The Trade Union NNF - representing employees within slaughtering and meat industry, bakeries, dairies, chocolate and sweets, and tobacco industry, Danish Metal Workers' Union, Danish Industry - the private business and employers' organisation, KL - Local Government Denmark (KL) - representing the 98 Danish municipalities and Concito, the latter a think-tank contributing with special knowledge). The Green Tripartite is expected to find broad-based and long-term solutions to the agricultural sector's climate and nature challenges and come up with recommendations on how to best manage land, nature and drinking water resources in Denmark. The Green Tripartite is expected to report on their terms of reference before July 2024. Subsequently the government is then expected to start discussions with the parties in the Danish parliament with a view to reach an agreement concerning CO_2e regulation of the non-energy-related emissions in agriculture.

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