Climate Dialogues 2020

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Multilateral Assessment

A compilation of questions to - and answers by -
Norway
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Question by United States of America at Monday, 07 September 2020
Category: All emissions and removals related to its quantified economy-wide emission reduction target
Type: Before 07 September
Title: CO2 Tax Act on Petroleum Activities and the Greenhouse Gas Emissions Trading Act

Norway notes that GHG emissions from petroleum activities are regulated through the CO_2 Tax Act on Petroleum Activities and the Greenhouse Gas Emissions Trading Act. Do these acts cover CH_4 emissions? If so, how?

Answer by Norway

The Greenhouse Gas Emissions Trading Act does not cover CH_4 emissions. The CO_2 Tax Act on Petroleum Activities covers CH_4 emissions through the taxation of natural gas released into the air. Natural gas mostly consists of CH_4. The CO_2 tax on natural gas released into the air is NOK 7.93 per Sm^3 in 2020. The tax is calculated based on company measurement or estimates of natural gas emissions.

Question by European Union at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Domestic contribution to achievement of the target

Norway communicated a quantitative economy-wide emission reduction target for 2020 which is (expressed in a percentage reduction) more ambitious than the targets communicated by most other Parties. Norway will make use of market-based mechanisms to achieve this target, but the possible scale of contributions from these mechanisms (as communicated in CTF Table 2(e)) is lower than the possible scale estimated by Norway earlier. In other words, Norway now expects to achieve a larger contribution to the target domestically than it had expected earlier. Are there any lessons that Norway can share with regards to the setting of ambitious emission reduction targets?

Answer by Norway

Some parts of the technological development have been faster than anticipated and made it possible to reduce more than projected at the time Norway set the target. Notably this is the case for battery technology (for vehicles) and unconventional renewables (solar, wind and small hydro) in the last one-two decades. Long term efforts through pricing and developing alternatives for consumers/operators has also made it possible to use regulations to ban biodegradable waste in landfills (2009) and mineral oil for heating of buildings (2020). Creating incentives ia. through the EU ETS has also triggered better emissions control in the industry.

There has been a strong political focus on domestic action. However, the availability of market based mechanisms, which is cooperative arrangements with other countries in implementation, was indeed a condition for setting and implementing the 2020 target as well as the other targets put forward under the Kyoto Protocol and later the Paris Agreement, and has functioned as a safeguard given that we could and cannot know how far policies and technology would bring us domestically. We also want to emphasize the contribution activities under cooperative mechanisms can have to foster greener development in other countries.

Question by European Union at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Conditions affecting emissions in the target year 2020

In Norway's Fourth Biennial Report, Box 5.1 provides an overview of key assumptions used for the projections. In the year 2020, the activities in many sectors of the economy were affected by the Covid-19 pandemic. Hence, it can be expected that actual emissions in the target year 2020 may be different from those projected. Which conditions or key assumptions made in the preparation of the Fourth Biennial Report are expected to have changed, and how may they affect total emissions in the target year?

Answer by Norway

The white paper on the National Budget 2021 presented in October this year, includes new projections of emissions. Here the impact of the pandemic on the emissions is assessed. The Norwegian economy remains negatively affected by the coronavirus pandemic and the strict infection control measures that were introduced in Norway and the rest of the world. The activity level is likely to remain lower than normal for a considerable period of time and the emission levels is also affected. In the projections it is assumed a temporary downturn in the emissions as a result of the pandemic. The downturn primarily relates to reduced transport, but also lower industrial production. For air transport the activity reduction has been particularly large, and it is expected that it takes longer time for the emissions to reach the same levels as before the pandemic, if they are to return to the same level. There has also been a significant downturn for other forms of transport, for instance lower sales of petrol and diesel in the spring.

The long-term effects of the coronavirus crisis are uncertain, and it is too early to make highly specific predictions. It is possible that the pandemic will have long term, structural consequences, that will impact emissions in the long run. Travel activity, both work related and recreational purposes, might be permanently reduced, for example as a consequence of increased use of digital communication tools and home offices. On the other hand, increased use of private cars may replace public transport. Which effects that will prevail and dominate in the long run is uncertain.

Question by European Union at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Drivers for road traffic emission reduction

According to Norway's Fourth Biennial Report, projected emissions from road traffic in 2020 are considerably lower than according to its previous Biennial Report. In Box 5.2 of the current report, a number of policies is listed which were tightened between 2017 and 2019. Which of those policies are the main drivers for the projected emission reduction from road traffic?

Answer by Norway

Increase in the road traffic biofuel quota obligation is one main driver for the projected emission reduction from road traffic. As explained in box 5.2 the road traffic biofuel quota obligation was increased from 8.0 percent in 2017 to 10 percent in 2018. Advanced biofuel is double counted towards the general target. The quota obligation has further been increased to 12 percent (2.25 percent advanced) in 2019 and 20 percent (4 percent advanced) from 1 January 2020. In real terms the obligation is 16 percent from 2020 (12 percent conventional biofuels and 4 percent advanced biofuels counted twice).

Furthermore, in the projections, sale of electric vehicles (EV) is projected to increase to 75 per cent of new total car sales in 2030. Of the measures listed in box 5.2 the following are expected to contribute to this development: Increase in the general rate of CO_2 tax on mineral products (petrol, mineral oil, natural gas and LPG), restructuring of motor vehicle registration tax, with higher tax on emissions and lower tax on weight as well as exemptions from 1 January 2018 for zero emission vehicles from motor insurance tax (formerly the low rate of annual road tax) and re-registration tax. However, the most important measures to promote zero emission vehicles has been in place for a long period of time, in particular the exemptions for zero-emission cars from motor vehicle registration tax and value added tax as well as and other user incentives. An important reason for the increase in the projected sale of electric vehicles compared to previous projections, is faster technological development than expected.

Question by Republic of Korea at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Mitigation actions

1. Both CO2 tax and EU ETS are applied in petroleum and domestic aviation sector in Norway. Both two emission prices are charged to one sector simultaneously? In this case, are there any benefits for them, such as cut of corporate tax?

2. How much electricity charge are compensated in ‘CO2 compensation scheme’? Please elaborate the CO2 compensation scheme. And please let us know the other policies and measures related to avoidance of carbon leakage.

Answer by Norway

1. Yes, both measures (EU ETS and CO_2 -tax) apply to CO_2 emissions from petroleum activities and domestic aviation. In addition, the CO_2 tax covers methane emissions for the petroleum activities. There are no benefits for companies covered by double CO_2 pricing compared to other companies.

2. The Norwegian CO_2 compensation scheme was established through "regulation on CO_2 compensation for the industry". The domestic regulation is based on EUs "Guidelines on certain State aid measures in the context of the greenhouse gas emission allowance trading scheme post-2012" which prescribes which sectors that can receive compensation and sets upper limits to how much state aid can be handed out. Today, 46 Norwegian companies receive compensation, mainly in sectors such as aluminium, silicon and ferrosilicon, wood processing and chemical industry.

The current CO_2 compensation scheme is applicable for the period 2013-2020. The EU Commission recently adopted new state aid guidelines for the period 2021-2030. The CO_2 compensation scheme is voluntary, meaning the EU and EFTA states may choose to implement the guidelines at a national level as long as the domestic scheme falls within the scope of the EU state aid guidelines. The Norwegian government is currently considering how the CO_2 compensation scheme can be implemented domestically post 2020.

Under the current Norwegian CO_2 compensation scheme, eligible companies are compensated for 75 per cent of the increase in the electricity prices due to EUs emission trading system. The aid intensity has been degressive over the period, from 85 per cent at the beginning of the period to 75 per cent at the end of the period. In the EUs new guidelines, the aid intensity will be maintained at 75 per cent throughout the next period.

Under the EU emission trading system, there are two main policies which have the objective of preventing carbon leakage:

1. **The CO_2 compensation scheme** , the purpose of which is to compensate for indirect CO_2 costs, i.e. the increase in electricity prices due to the EU emission trading system.

2. **The allocation of free allowances** , the purpose of which is to compensate for direct CO_2 costs, i.e. costs relating to direct emissions. Installations and aircraft operators covered by the EU emission trading system (EU ETS) must surrender allowances for their emissions – one allowance per tonne of CO_2 -equivalents. As a main rule, emissions allowances are made available through auctioning (about 57 % of the total cap). However, sectors and subsectors that are deemed to be at risk of carbon leakage receive free allowances to support their competitiveness.

Various R&D and technology dissemination efforts aiming at reducing or eliminating emissions from heavy industries and cutting electricity use will, if successful, make these industries more resilient to carbon leakage.

Question by Australia at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Carbon capture and storage mitigation

Carbon Capture and Storage (CCS) is named as one of the five priority areas for enhanced national climate action in Norway. What has been the total mitigation impacts of CCS in Norway in progress towards its 2020 target?

Answer by Norway

Since 1996, about 1 million tonnes of CO_2 annually have been separated from the natural gas stream and stored at the Sleipner Field in the North Sea. The natural gas streams from Gudrun (2014-2019) and Utgard (from 2019) have been processed, and CO_2 has been separated and stored at Sleipner.

From 2007 the Snøhvit CCS project came into operation and up to 0.7 million tonnes of CO_2 have been separated at the LNG plant on Melkøya annually and stored in a geological formation in the Barent's Sea.

The Technology Centre Mongstad is important for developing CCS technologies, but it has in itself no direct effect on Norwegian emissions.

Question by Australia at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Livestock emissions

Methane from livestock and manure are highlighted as a key emission source in Norwegian agriculture. The report notes that emissions from livestock have slightly reduced over the last few decades, can you please note how this has been achieved?

Answer by Norway

The main driver behind the emission trend for methane from agriculture is the development in the number of animals for the significant animal groups cattle and sheep. Important reasons for the decreasing trend in methane emissions are use of more concentrated and more effective milk production which led to a reduction of the number of dairy cows since 1990.

Question by Australia at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Emissions from residential heating purposes

In the Fourth Biennial Report Norway has cited that emissions from heating purposes in households and industrial buildings have declined by 40 per cent since 1990. What incentives have been in place for residential customers in choosing their heating systems?

Answer by Norway

Buildings is the sector that uses the most energy in mainland Norway. Direct emissions from buildings are very low in Norway since the use of hydro power based electricity and biomass for heating historically has been high, but there is still a potential for conversion to renewable energy in the existing building portfolio. Reduced energy consumption in buildings can reduce the need for new power generation and transmission capacity that would otherwise be needed to electrify sectors such as transportation and industry. Households and consumers are important sectors for creating broad-based involvement and a focus on implementation of energy and climate measures. It is also important in an energy system perspective to develop the interplay between energy system, transport and buildings.

The main instrument to cut emissions is the CO_2 tax scheme (se section 4.2.1.1). The tax covers emissions from the use of fossil fuels, including the use of mineral oil and natural gas for heating purposes in residential housing.

The building code is the main legal instrument for improving energy efficiency (see section 4.2.6.2). It was revised in 2015. The new and stricter energy requirements (passive house level) entered into force on 1 January 2016 (Byggteknisk forskrift - TEK17). The 2016 requirements were tightened such that dwellings became 26 per cent more energy efficient and office buildings 38 per cent more energy efficient compared to previous requirements. The new energy requirements specify that installation of (new) fossil fuel heating installations are not permitted and that larger buildings (more than 1000m2 heated usable floor space) must have flexible heating solutions.

From 2020 there is a ban on the use of mineral oil for heating of buildings (see section 4.2.6.2). In June 2018, the government adopted a regulation banning the use of mineral oil (fossil oil) for heating of buildings from 2020. The ban covers the use of mineral oil for both main heating (base load) and additional heating (peak load), in residential buildings, public buildings and commercial buildings. The use of mineral oil for heating of agricultural buildings and hospital buildings with 24-hour continuous patient care are exempt from the ban until January 1, 2025. The purpose of the ban is to reduce greenhouse gas emissions from heating of buildings.

Enova (see section 4.2.2.2) is a state enterprise, owned by the Ministry of Climate and Environment. The purpose of Enova is to contribute to reduced greenhouse gas emissions and strengthened energy security of supply, as well as technology development that also contributes to reduced greenhouse gas emissions in the longer run.

Enova provides funding and advice for energy and climate projects, and support both companies and individual households, as well as local and regional governments. The Enova Subsidy is a rights-based

grant scheme for homeowners. Grants from Enova incentivize and support homeowners to choose energy efficient and climate friendly heating solutions such as heat pumps, bio heating and connecting to district heating systems. Enova also has grants for local energy production such as solar PV.

Results indicate that grants from Enova have created an increase in demand for alternative heat sources. Between 2017 and 2018, total sales of heat pumps in Norway were up 25 per cent to about 100 000 units sold. Air-to-water and liquid-to-water heat pumps, which usually replace oil boilers, increased the most, by a factor of 50 and 40 per cent, respectively.

In 2019 Enova gave a total of about 21 000 grants to home owners, a 44 per cent increase in grants from the previous year. Disbursements have increased from NOK 275 to 334 million. A fully-digital application process makes it easy for homeowners to register measures and receive grants.

Question by Singapore at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Lessons learned from Klimasats scheme

Norway's Klimasats scheme has supported several hundred projects since its introduction in 2016 and Norway has noted the benefits of this scheme in identifying and realising local emissions reductions projects. Are there other insights from the external evaluation of the Klimasats scheme, as well as lessons learned from its implementation, including the design of the application criteria, data collection and stakeholder management?

Answer by Norway

The external evaluation of Klimasats looked at the first three years of the support scheme. Most of the recipients of support as well as the quite large share of the ones who did not get support took part in a survey. The survey showed that planning and implementing the projects increased the competency in the municipality and led to cooperation between different levels of the local authorities and across units. It also led to higher priority of climate-related issues in local politics. Increased competency and higher priority contributed to the generation of more emission reduction projects in the municipality after receiving support for one project. 60 to 70% of recipients of support report that they contributed to sharing experiences and results from their projects to others.

From 2016 to 2020, around 1300 projects have received support from the scheme. There are a few absolute requirements, but in general the support scheme is open to projects where the municipality has an important or at least some role in reducing emissions. It has been possible to apply for support for a wide range of emission reduction projects in different sectors. The

administration-team of the scheme has also followed up many applicants when needed. This flexibility and follow-up have been appreciated by the municipalities. The municipalities are all different, some are small and rural with agriculture or fishery are major industries to large cities. They can initiate projects that are most effective for that particular municipality, whether it is reducing emissions from agriculture, managing urban planning or map the possibility to produce biogas from waste. On the other hand, the wide range of project types can make the handling of applications more challenging.

We have experienced that the quantification of the emission reductions from the project portfolio can be very challenging due to the wide range of different projects and the different time-frames of the projects. The project periods span from some months to 4-5 years. For some of the project types, for example urban planning projects, or municipalities working in capacity building networks, it has shown difficult or not possible to quantify emission reductions. For these projects, we are working on developing indicators to show qualitative effects.

Our experience during the five years of administering the support scheme is that the applications have become better each year, and the ambitions slightly higher. For some of the project types, there has been a positive development in the municipalities, and therefore it has been possible to increase the ambitions for some of the project types. For instance, the requirements for receiving support for projects within the building sector are more ambitious now than a couple of years back.

Question by Japan at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Outreach on policies and measures progress on Climate Change

Japan recognizes that the dissemination of information on the progress of each policy and measure towards achieving the 2020 and 2030 emission reduction targets, as reported in the BR, is very important from the perspective of raising awareness about climate change. Please share any outreach measures you are implementing to publish and communicate the progress of main policies and measures towards the target in 2020 and 2030. Also, if you publish the information online, please provide the URLs of them.

Answer by Norway

The Norwegian Climate Change Act introduces an annual reporting mechanism. The Government shall each year submit to the Parliament updated information on status and progress in achieving the climate targets under the law, and how Norway prepares for and adapts to climate change. Information on the expected effects of the proposed budget on greenhouse gas emissions and projections of emissions and removals are also compulsory elements of the annual reporting mechanism. This report gives an overarching picture of Norwegian climate policies and measures

towards the 2030 and 2050 target. The report is presented in the Ministry of Climate and Environments budget documents, and is only available in Norwegian.

Link: https://www.regjeringen.no/no/dokumenter/prop.-1-s-20202021/id2767932/?ch=5

Question by Japan at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: The popularization period and monitoring methods of fertilization of forests

Was the fertilization of forests as a mitigation measure popular in Norway before the start of the grant scheme in 2016, or was it newly implemented with the start of the grant scheme? And how is the amount of fertilizer applied to forests and the area of fertilized forests monitored?

Answer by Norway

Fertilization of forests was done to a minor extent before the grant scheme was launched in 2016. Before 2016 fertilization of forests was only done as an investment to increase final growth before harvesting. The fertilizer is applied from helicopters that keep GPS-tracks of the areas where fertilizers are spread. The spread-logs of treated areas are reported to the Norwegian Agriculture Agency together with applications for the grant scheme.

Fertilized areas are marked in digital maps available for the public.
https://kilden.nibio.no/?lang=nb&X=6716489.83&Y=349996.37&zoom=8.473512217976651&topic=skogportal&bgLayer=graatone_cache&layers_opacity=0.75,0.75,0.75,0.75&layers=gjodselsfelt_2017,gjodselsfelt_2018,gjodselsfelt_2019,gjodselsfelt_2020

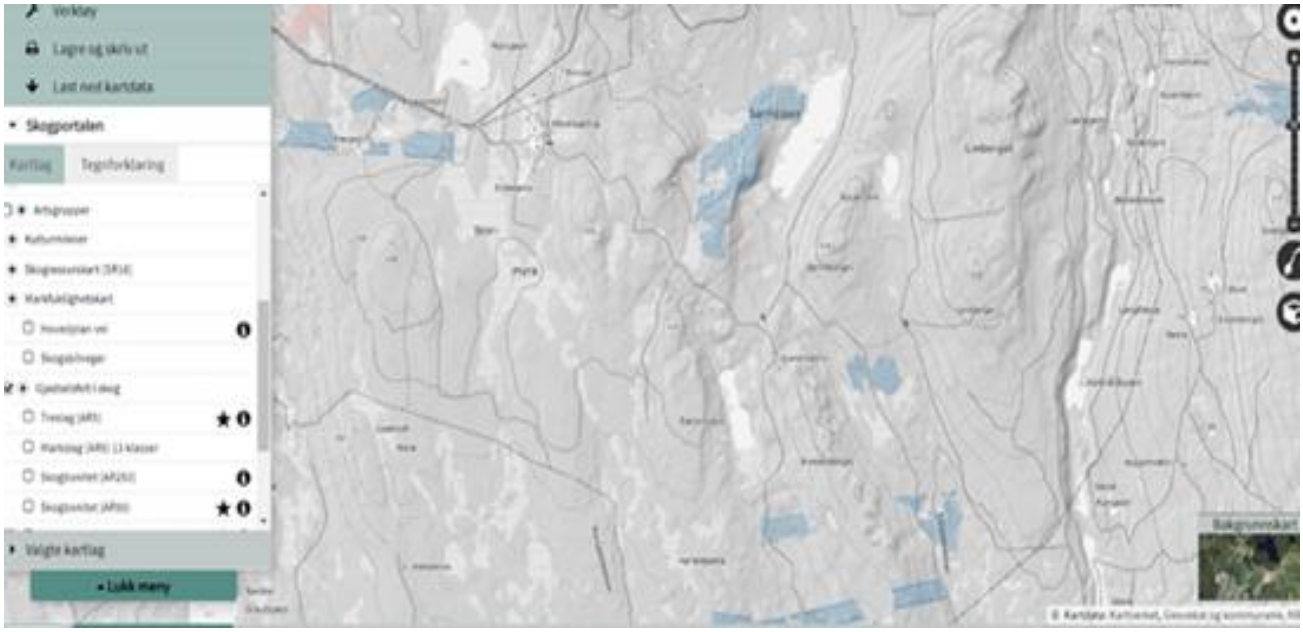

Figure XX. Plot of fertilized areas in forestry in map available for the public.

The amount of fertilizer is monitored by control buckets placed at the ground to ensure that the right amount of fertilizer is applied per area unit.

Question by Japan at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Tax and reimbursement scheme of HFC

According to CTF Table 3 shown on page 69 of the BR4, the mitigation impact of tax and reimbursement scheme of HFC are estimated 700 kt CO2eq. in 2020 and 500 kt CO2eq. in 2030. Why are the reductions by the implementation of the measure in 2030 smaller than those in 2020? Also, how does Norway avoid double counting of the mitigation impacts between this measure and "F-gas regulation and the Kigali Amendment to the Montreal Protocol which is reported separately?

Answer by Norway

The tax and reimbursement scheme of HFC was compared against a national projection that reflected a ban on the gas R-134a in air-condition in new cars from 2011. As a result, the projected emissions in 2030 were lower than in 2020. Therefore, the effect of the tax and reimbursement scheme of HFC is lower in 2030 than in 2020.

The impact of the measure "F-gas regulation and the Kigali Amendment to the Montreal Protocol" was assessed against the national projection that already reflected the impact of the tax and reimbursement scheme. In this way, double counting is avoided.

Question by Japan at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Climate neutrality by 2030

Norway's carbon neutrality target of balancing domestic emissions with emission reduction abroad by 2030 is introduced on page.13 of the BR4. Could Norway tell us what methodology or mechanism will be used for monitoring the emission reduction in other countries?

Answer by Norway

In connection with its consent to ratification of the Paris Agreement, the Parliament asked the Government to work on the basis that Norway is to achieve climate neutrality from 2030. This means that from 2030, remaining Norwegian greenhouse gas emissions must be offset by climate action in other countries through the EU ETS and international cooperation on emissions reductions, emissions trading and project-based cooperation. Thus, the fulfilment of the climate neutrality goal is dependent on international or bilateral mechanisms. Even though the details on the use of methodologies and mechanism are not yet decided, the Parliament's Standing committee on energy and environment, in connection with the adoption of the climate neutrality goal, underlined the importance that the fulfillment of the carbon neutrality goal follows standards that guarantees real and permanent emission reductions and environmental integrity.

Question by Canada at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Indigenous engagement

How is your national government engaging with Indigenous peoples in the development and implementation of your climate change policies?

Answer by Norway

As an indigenous people, the Sami People have the right to be consulted in matters that concern them. This right is enshrined in the ILO Convention No. 169 on the rights of indigenous peoples and tribal peoples article 6. In 2005 the central government and the Sámediggi (the Sami Parliament) entered into an agreement regarding procedures for consultations between the State Authorities and the Sami Parliament. This agreement ensure the Sami rights to participate in work on matters that may affect them, including matters regarding the climate and the environment.

The consultations shall be undertaken in good faith and with the objective of achieving agreement – or consent – to the proposed measures. In Norway, a number of formalised consultations with Sámediggi take place every year. Agreement is often reached, although not always. The consultations have strengthened Sámediggi as a representative voice for the Sami people, and enhanced the awareness and knowledge of Sami issues in national administration.

The Government aims at presenting the Parliament with a proposition to the Storting (bill) on amendments to the Sami Act concerning consultations. If the Parliament adopts the proposition, the statutory rules will replace the current Procedures for consultations between State Authorities and Sámediggi. The draft bill will further strengthen and clarify the Sami people's right to consult in matters that may affect them directly.

Question by New Zealand at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Integration of external costs of emissions into tax rates

Can Norway please explain the methodology for integrating the external costs of GHG emissions into its CO_2 tax rates for different products?

Answer by Norway

The CO_2 tax rates are set in monetary unit per physical unit, for instance NOK per litre. The tax rates are set to reflect the carbon content of the fuel, based on their general emission factors. For instance for 2020, the tax rates are 1,26 NOK per litre petrol, 1,45 NOK per litre mineral oil, 1,08 NOK per Sm3 natural gas and 1,63 NOK per kg LPG, which are all equivalent to approximately 545 NOK per tonne of CO_2 .

Question by New Zealand at Monday, 07 September 2020
Category: All emissions and removals related to its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Biogas production

In its BR4, Norway notes two specific mitigation actions for supporting the production of biogas; delivery of manure for production of biogas and grants for biogas projects. Can Norway please elaborate on the role of domestic biogas production in meeting its 2020 emissions target and what are the key lessons learnt since implementing these mitigation actions?

Answer by Norway

Neither of the two mitigation actions have quantifiable effects on the 2020 emissions. The pilot program for grants for delivery of manure to biogas production was ended in 2020, converted to a permanent program, and strengthened. Also, in 2020 the agriculture industry developed and launched a climate accounting tool (a "climate calculator") aimed to assist every single farmer in assessing the farm's climate footprint in order to implement local and accurate mitigation actions. Hopefully, this tool will also assist in quantifying the reduction in emission from that sector, biogas included.

The main lessons learnt are 1) that the distances, and the costs related, in which manure and digestate are transported are key to success, and 2) it needs to be a long-term agreement between the production facilities and the farms. Innovation Norway published a user manual in 2017 for the planning of new biogas production facilities, including those using manure as substrate. The Norwegian Environment agency has developed a tool to calculate the positive climate effect of biogas production, including an extra module for the use of substrate published in October of 2020, however, this will not affect the 2020 emission targets.

The funds from the pilot scheme transferred to Innovation Norway, but the purpose is still to research and test technology and increase the knowledge base, and to increase the potential for future emission reductions from the agriculture sector.

Question by New Zealand at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Carbon capture and storage

In its BR4, Norway notes that it has had a lot of experience in carbon capture and storage (CCS) and has implemented a number of policies and measures to support the development of CCS technology.

Can Norway please elaborate on the impact that the use of CCS technology has had on meeting its 2020 emissions target, and what the future plan is for the use of CCS technology within Norway?

Answer by Norway

Since 1996, 1 million tonnes of CO_2 annually have been separated from the natural gas stream and stored at the Sleipner Field in the North Sea. The natural gas streams from Gudrun (2014-2019) and Utgard (from 2019) have been processed, and CO_2 has been separated and stored at Sleipner. From 2007 the Snøhvit CCS project came into operation and up to 0.7 million tonnes of CO_2 have been separated at the LNG plant on Melkøya annually and stored in a geological formation in the Barent's Sea.

In the national budget for 2021 the Norwegian Government proposes that the Parliament provide funding for the implementation of "Longship", a demonstration project for carbon capture, transport and storage in Norway. The Longship project comprises three distinct parts: carbon capture, transport and storage. Norcem will capture CO_2 from its cement factory in Brevik. Two thirds of Norcem's CO_2 emissions result from the process of turning limestone into cement. Carbon capture and storage is currently the only method we have to reduce these emissions. Around 400,000 tonnes of CO_2 will be captured each year from flue gas emitted from Norcem. The captured CO_2 will be converted into liquid form and placed in temporary storage at Grenland port. The CO_2 will then be transported from Brevik by ship to a new reception terminal in Øygarden municipality in Vestland county. From here, the CO_2 is pumped through a pipeline and injected into a geological formation in the North Sea around 2,600 metres beneath the seabed for permanent storage.

The Government will also enable for Fortum Oslo Varme (FOV) to become a part of the Longship project. This is on the condition that the project receives sufficient own funding and funding from the EU or other sources. Emissions from waste management make up around five per cent of global greenhouse gas emissions. FOV will capture CO_2 from flue gas from its waste incineration facility in Oslo. Around 400,000 tonnes of CO_2 will be captured each year and transported to Oslo port and on by ship to Northern Lights. The Government is prepared to provide NOK 3 billion to Fortum Oslo Varme, NOK 2 billion of which will be earmarked for investments and NOK 1 billion for operation.

The transport and storage part of the project has been given the name Northern Lights, and is a collaboration between Equinor, Shell and Total. The plan is for Northern Lights to be developed in two phases. The first phase is part of the Longship project and has an estimated capacity of 1.5 million tonnes of CO_2 per year, over an operational period of 25 years. A potential second phase has been planned, with an estimated capacity of 5 million tonnes of CO_2 per year.

Question by New Zealand at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Institutional arrangements for urban centers with urban growth agreements

Could Norway provide more detail on the institutional arrangements for the urban centers that have urban growth agreements (to achieve a net zero growth in vehicle passenger travel). How will the policy impact be measured toward the 2020 target and beyond?

Answer by Norway

Challenges in urban area mobility are both local, regional and national. They cannot be solved by a single actor alone. The government has decided that transport and land use policy in urban areas shall be coordinated through urban growth agreements. The main objectives of these agreements are to: reduce greenhouse gas emissions, traffic congestion, air and noise pollution in urban areas through efficient land use and to facilitate passenger growth being absorbed by public transport, cycling and walking.

In the largest urban areas in Norway, urban packages have been developed over a long period of time based on road toll collection. Each urban package includes a portfolio of transport projects financed by road tolls, as well as state and local contributions.

The urban growth agreements apply to finance, transport and land use measures. The government contributes financially to major public transport investments in the four largest urban areas, operation of public transport, walking and cycling measures and smaller railway measures. The road toll collection in the urban packages are included in the urban growth agreements as part of the financing.

A model has been decided for the organization of these agreements in both the negotiation and follow-up phase. The negotiations are organized with a political governance group and an administrative negotiating group. The political governance group is also responsible for the follow-up of the agreements. Ongoing follow-up takes place in an administrative coordination group.

The urban growth agreements contribute to a number of societal objectives, where reduced greenhouse gas emissions are one of the goals. Coordinated land use and transport planning that ensures efficient land use and environmentally friendly modes of transport supports emission reductions.

Question by New Zealand at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Urban growth agreements

Norway uses urban growth agreements between the government, the municipality and the county council in urban areas to promote emissions reductions. How effective has this been at reducing emissions? Have there been any governance challenges to implementing change, or other barriers that have meant this system has not been effective at reducing emissions?

Answer by Norway

Urban growth agreements and reward schemes for public transport have zero growth for passenger transport by car as the overriding goal. The number of trips in urban areas are increasing. To prevent growth in passenger transport by car, that lead to greenhouse gas emissions, traffic congestion and air and noise pollution, the government wants to facilitate walking, cycling and public transportation. Efficient land use can reduce emissions by reducing distances between target points. To ensure that the climate goals for the transport sector are achieved, a rapid phasing-in of zero-emission vehicles is important throughout the urban area.

Projects and measures in the urban growth agreements, such as investments in, and operation of the public transport systems, investment in walking and cycling paths and land use measures will contribute to reduce emissions in a long term perspective, together with both national and local policy measures for phasing-in of zero-emission vehicles.

In order to achieve zero growth in passenger car traffic, restrictive measures for passenger cars such as road tolls and restrictive parking policies are necessary. Such measures can be met with resistance from the local population, but contributes positively to reduce growth in passenger car traffic.

Urban growth agreements are a new policy instrument. First-generation agreements were established in the four largest urban areas in 2016/2017. The results so far indicate reduction and in one case slight increase in passenger transport by car, and greenhouse gas emissions from passenger cars are reduced in all the urban areas.

Question by New Zealand at Monday, 07 September 2020
Category: All emissions and removals related to its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Reduction in emissions from building sector

The BR4 mentions the *Klimasats* scheme provides financial support for emissions reduction projects in Norwegian municipalities and counties. Some examples of supported projects are the use of climate friendly building materials in public buildings and zero emissions construction sites. How effective has Norway found innovations in the building sector to be at reducing emissions? Has this scheme encouraged working with developers, to ensure sustainability is considered, rather than just building material cost?

Answer by Norway

The Klimasats support scheme has granted financial support for more than 200 projects aiming at reducing emissions from buildings (mainly building materials). More than half of these are projects which aim to map the potential for emission reductions and identify the best solutions for reducing emissions at an early stage in the building projects. Our experience is that the additional cost for low emission solutions are lower if they are identified as early as possible in the planning of the building project. Support to municipalities who are responsible for public building projects such as schools, nurseries, care homes has increased the demand for building materials with lower emissions such as wood (replacing steel and concrete), and low carbon concrete. In order to report on the results, all building projects are required to quantify the emission reductions for the building compared to a reference building. Many of the buildings are also certified using different standards for low emission buildings such as BREEAM or other standards.

As some of the building materials are produced outside Norway, not all the emission reductions will be accounted for in Norway's greenhouse gas inventory. The increased demand for building materials with lower emissions may contribute to reducing emissions in Norway, but also outside Norway. When local governments require more climate-friendly buildings, the local and regional building industry increase their knowledge on sustainable materials and solutions. In our experience, the building industry is adapting to the increased demand for more sustainable building and construction sites.

Another area where there has been progress during the last five years is within low or zero emission construction sites. Here, the municipalities have taken the lead in Norway on setting very ambitious criteria for public building projects, asking for low or zero emission construction sites. Norway's capital, Oslo, has renovated a large area in the middle of the city, using zero emission machines. The local government claims it is the world's first zero emissions construction site. This has led to the development of electric machines and vehicles, as well as low emission heating on building sites. In Norway it is important to keep buildings under construction dry for the concrete to dry and to avoid rot and fungus problems, particularly in the winter. For this, building companies use industrial outdoor heaters/aggregates running on fossil fuel. Municipalities are now requiring non-fossil heating and drying of their buildings under construction.

A good dialogue with the building industry has been important for the municipalities, particularly to know where to put the level of ambitions in their building and construction contracts. For the industry it is important to know what low emissions or zero emission solutions that will be required by the municipalities in the years to come and which machines they should invest in.

Question by New Zealand at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Plant breeding and genetics

Could Norway provide more detail on how removals attributable to improved genetics have been quantified and provide more detail on how annual financial support promotes improved plant breeding and genetic improvements?

Answer by Norway

Approx. 75% of the traded timber volume in Norway is spruce, 24% pine and 2% broadleaved species. Spruce is regenerated mainly with planting, pine and broadleaved trees with natural regeneration. Currently, 94 % of the trees planted originate from improved seeds. This proportion will increase to 100% in some years. Improved seeds delivered today come mainly from 1st generation seed orchards which give 10-15% increased volume growth. They will be gradually replaced by 1.5- and 2nd-generation seed orchards, which in 15-40 years will give a 15-25% increase in volume, compared with seeds from natural forest stands. The increase in volume growth will give a corresponding increase in CO_2 removals since density is to a small extent affected by breeding.

Today, annual cut of Norway spruce is approx. 8 million m3, and this is expected to increase to 11 million m3. It is annually planted approx. 22,500 ha of spruce on land with a site-index giving an average production of approx. 6 m3 per hectare and year. With 90 years rotation for spruce, the effects of breeding will be long-term. Based on the average production level for the planted area, we will, using seed from 1st generation orchards, get a gradual increase in production of approx. 2 million m3 biomass per. year in the year 2100. This gives an increased CO_2 removal of approx. 1.4 million ton per year. As 2nd generation material is phased in, the increase will be even bigger. Substitution effects that affect other sectors are not included in this, but must be considered for an overall picture of the forest's contribution in the climate context.

The operational breeding in Norway is carried out by the private foundation "Det norske Skogfrøverk", managed by different organizations in the forestry business and the Ministry of Agriculture and Food. The breeding is financed partly through public support schemes and partly through a price surcharge on improved seeds paid for by the nurseries. This financing ensures that it is possible to carry out the traditional breeding work, and in the last 5 years extra grants have been given to intensify this work. This provides extra capacity for faster progress in breeding work and opportunities to develop new methods, among others establishment of breeding centres for indoor flowering induction and crossing, test environment and production of cuttings and genetic selection-methods to increase the possibilities of implementing timber quality and pest-resistance in processing. Extra funding also provide an opportunity to start a breeding program for pine.

Question by New Zealand at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Environmental criteria to avoid impacts on biodiversity

In regards to the fertilisation of forest as a climate mitigation measure, what are the environmental criteria used to avoid unacceptable effects on biodiversity and the environment?

Answer by Norway

The environmental criteria are:

· Limestone (Ca) should be added to the fertilizer to avoid acidification.

· The application must not affect valuable biotopes for biodiversity. There must be an untreated zone of at least 10-15 meters to such biotopes, and an untreated zone of 25 meters to lakes, rivers and creeks.

· Application with nitrogen must be done after the snow has melted.

· Application must be done in a manner that reduce the risk of nutrient leakage

· Normally, a restricted amount of 150 kg N per should be applied.

· The fertilization will increase growth for a period of 6-10 years, and timber harvest should not be done until 10 years after application.

· To reduce the chance of nitrogen leakage to the Skagerrak, a maximum (CAP) of 2500 hectares can be treated within 5 years in southern part of Norway (the colored area in figure below). This restriction partly explains why fertilization has been reduced the last 2-3 years. The restriction CAP will be evaluated in 2021.

Question by New Zealand at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Policy for higher seedling densities

Regarding the policy for higher seedling densities in existing areas of forest land, could Norway comment on whether and/or how rates of natural mortality and commercial thinning have been taken into account when estimating the policies' effect on national emissions?

Answer by Norway

Natural mortality has been taken into account. Density-dependent mortality, measured as a reduction in number of trees, start earlier with denser spacings. Commercial thinning is not included, since commercial thinning is only done to a very small extent in Norway.

Question by New Zealand at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Targets for road transportation

What are the implementation details of the requirement for there to be 12 per cent biofuels in fuel consumption for road transportation? What is the expected time frame for achievement of this target? And how will its progress be monitored towards the 2020 target and beyond?

Answer by Norway

The requirement is in the Norwegian Product Regulation and administered by the Norwegian Environment Agency (NEA). Economic operators (fuel distributers) are required to sell biofuels as a share of the total yearly amount of fuel sold for road transport, by volume. The quota must be met within the calendar year, and the economic operators must report to NEA by March 31st the following year with documentation that the requirement has been fulfilled. The report and documentation provided to NEA must be verified by an independent auditor. The Norwegian Environment Agency's supervision is based on the provisions and regulations laid down in the Product Control Act. Non-compliance entails follow-up supervision, fines, or that the case is reported to the police.

Question by New Zealand at Monday, 07 September 2020
Category: All emissions and removals related to its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Price-based policy interventions for agricultural emissions

Taxation and emissions trading are identified as a common approach to achieve emissions reductions across various sectors in Norway. Can Norway provide additional information on the rationale for taking an alternative approach to the agricultural sector, or on any development of price-based policy interventions to reduce agricultural emissions in future?

Answer by Norway

As described in BR4, CO_2 from the use of fossil fuel in agriculture meets CO_2 -taxation similar to other sectors, and the general ban on mineral oil for heating buildings is imposed for agriculture from 2025. For other agricultural emissions, specifically of nitrous oxides and methane from

biological processes in agriculture, we take other approaches. Such approach can be explained both from a political and more technical perspective.

Our most recent white paper on agricultural policies in December 2016; Change and development - A future-oriented agricultural production (Meld. St. 11 (2016–2017)), was presented by the government in December 2016. Upon the Parliament's adoption of this white paper, the Parliament addressed the question of taxation stating that "biological processes in agriculture" should not be taxed similar to fossil CO_2 .

From a more technical perspective, various requirements/criteria can be of importance for taxation to succeed, and which are not satisfied for emissions from agriculture. For instance, for emissions from fossil fuels, there is a quantitative relationship between the volume of fuel and the volume of emissions. Therefore, fuel volumes are a relevant proxy for applying a tax on this source. For emissions of methane and nitrous oxides in agriculture, there is no appropriate measurement or proxy on which to base and justify a tax. Taxation will typically rely on reports and calculations from a multitude of sources, which will be controversial and be a cause for high and undue transaction costs.

Furthermore, there is a general lesson that taxation on fossil fuels is successful because there are various technological alternatives available for decoupling the volume of emissions from the volume of activities. Transportation is also not so much exposed to carbon leakage. For agriculture the situation is different as decoupling emissions from activities is not straightforward. Risks of carbon leakage, which reduces the efficiency of taxation, is generally higher if taxes are imposed unilaterally in a small part of the world market, and if there are no technological alternatives available to decouple emission from production. Altogether, emissions from agriculture fail to meet criteria for taxation to be a success.

Solutions in agriculture is often a question of the right measure at the right place, which involves decisions at the field level, at the management level and for society at large. Such solutions can mostly materialize through cooperation with the farmers themselves. There is a need for agricultural policies to strike the right balance between a regulatory and enabling instrument. For climate mitigation in agriculture, we up to now have used regulatory instruments such as taxation where these are well founded, and other instruments where regulation falls short.

Question by New Zealand at Monday, 07 September 2020
Category: Assumptions, conditions and methodologies related to the attainment of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Learnings from developing policy with farmers and stakeholders

Can Norway comment on any learnings from their experience developing and implementing policy in co-operation with farmers and stakeholders, both in terms of process and level of success?

Answer by Norway

We want to highlight two important elements in the "co-operative" approach as requested. First, there is a need to incentivise best practices at the farm level. Such incentives, in Norway and elsewhere, include a combination of regulatory, economic and informatory measures. Legal requirements and minimum standards are mostly set by the authorities, however also based on public consultation. Economic incentives, on the other hand, are mostly prioritised and designed according to mutual understanding with the farmer unions in the annual agricultural agreement. This more "voluntary" approach, supported by economic incentives, reflects that improvements in agriculture is often a question of the right measure at the right place. We believe that cooperation with farmers is an advantage in these areas as compared to more "top-down" approaches. We think this approach has been instrumental for farmer unions to engage so much with mitigation of climate change, as demonstrated in the project "climate-smart agriculture" and by agreeing to the climate change agreement with the government.

Secondly, to reach climate goals for agriculture there is a need to provide farmers with know-how, technology and financial resources to support best practices. In Norway, farmer co-operatives have a stake in extension services, breeding programs and veterinary services that are key to succeed in these fields. Such services are also co-financed by public funds. For a country like Norway, at the margins of global agriculture, the continuation of national breeding programs etc. could be regarded as costly, however we regard this approach as a success and a prerequisite for "climate-smart" agriculture in Norway.

As a summary, we find that our approach and process of cooperation has been fruitful, while the level of success will still be open for judgement.

Question by New Zealand at Monday, 07 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: Targets under the climate agreement

The climate agreement between Norway's government and farmer organisations is stated to include specific targets for agricultural greenhouse gas emissions. Can Norway provide further information on the level and nature of these targets? Are any accountability measures in place to ensure that the agricultural sector achieves progress towards the targets under the climate agreement?

Answer by Norway

Emissions from agriculture are covered by the overall emission targets as specified in the BR4 (2020 target and its related commitment for 2013-2020 under the Kyoto Protocol) as well as in Norway's NDC under the Paris Agreement, as updated in February 2020.

The Government and farmer's organisations negotiated a climate agreement for agriculture in June 2019. The deal sets targets for abatement of greenhouse gas (GHG) emissions and removals from agriculture over 2021-2030. The target as specified in this agreement is that the sum of emissions, minus removals, in agriculture in the 10-year period 2021-2030 should be 5 mill tonnes CO2-equivalents lower than the baseline/reference level. This corresponds to a 10 % reduction for the period overall. Additional measures are needed to reach this target. As such measures require time to take effect, we expect that contributions must increase gradually over the period. If we expect a linear increase, we can indicate that emissions in the final year (2030) must be close to 20 % lower than the baseline. This sector-specific goal also fulfils requirements in the climate change act to establish sector-specific trajectories for emissions.

In April 2020, the farmers' unions presented a "climate plan for agriculture" to meet the target. This plan indicates strong engagement by farmers to reach the target, and it demonstrates that the target is within reach however it can only be met by strong and comprehensive work across agriculture.

Parties' to the agreement have established a so-called "accounting committee" to report on status, developments and progress towards the target. Such reports will be delivered to the annual agricultural agreement as a basis for further policy development in support of reduced emissions and increased uptake.

Question by China at Friday, 04 September 2020
Category: Progress towards the achievement of its quantified economy-wide emission reduction target
Type: Before 07 September
Title: QEWERT comparability

As stated in TRR, Norway applied a new calculation method for ammonia, nitrous oxide and nitrogen oxides from agriculture, which resulted in major changes in the sources of animal manure and agriculture. Could Norway explain how the comparability among the QEWERTs can been ensured?

Answer by Norway

There is a continuous process for improving and correcting the Norwegian greenhouse gas inventory to account for new knowledge on activity data and emission factors, and to correct for errors in the calculations. In chapter 10.2.3 of the 2019 NIR, we reported on the implementation of a new model for calculating the nitrogen emissions from animal manure. As the updated model is based on a nitrogen mass balance approach, it allows estimates to be made of all the main nitrogen species, namely NH3, N2O, NO and N2, in a single model. As a result of the implementation of the new model, the N2O emissions for 1990-2016 were recalculated in order to have a consistent time series.

The recalculation for N2O from manure management reduced the total GHG emissions in 1990 by 0.16 per cent and in 2016 by 0.1 per cent. Thus, effect relating to Norway's QEWERT will be minimal.

Norway's quantified economy-wide emission reduction target (QEWERT) for 2020 is expressed as 30 per cent below the 1990 base year level. Please note that Norway's 2020 target will be implemented through compliance with our commitment under the Kyoto Protocol for 2013-2020. The revisions of the inventory also apply to the inventory figures used to demonstrate compliance with the Kyoto target. However, in accordance with the KP rules the revisions subsequent to the submission of our Initial Report in 2016 will not affect Norway's Assigned Amount, which is derived from the data set available at the time of that submission.

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