



All aboard for the transitions

Summary of the Netherlands Scientific Climate Council Advisory Report on the National Climate Plan 2025-2035

Why this advisory report?

Climate change is caused by human activities that lead to greenhouse gas emissions. Science is unequivocal about this. Changes in the climate are increasingly visible: the ocean and atmosphere are rapidly warming, and extreme weather events are occurring more frequently. The past few summers have shown the severe consequences of climate change on humans, animals, and nature, both in the Netherlands and worldwide.

Limiting climate change is a global challenge. This is why almost all countries signed the Paris Climate Agreement of 2015, in which they agreed to limit the global temperature increase to well below 2 degrees Celsius and pursue efforts to limit it to 1.5 degrees, as compared to the pre-industrial era. Currently, the average global temperature increase is already at 1.2 degrees.

To prevent further climate change, the Netherlands aims to be climate neutral by 2050 at the latest. As a European Union member state, and aligned with the European Climate Law, the Netherlands has adopted goals to reduce greenhouse gas emissions in its national Climate Act: at least 55% reduction by 2030 as compared to 1990, climate neutrality in 2050, and net negative greenhouse gas emissions after 2050.

The Netherlands is especially vulnerable for the consequences of rising sea levels, extreme rains, and drought. The Netherlands is a highly populated delta with a complex water management system. Rising sea levels and changes in river discharge and precipitation can therefore have a major impact. The Caribbean parts of the Kingdom are also particularly vulnerable to climate change. It is therefore important that the Netherlands does not only commit and contribute to the worldwide reduction of greenhouse gas emissions, but that it also adapts itself adequately to the consequences of climate change. In other words, the Netherlands must become climate resilient. Climate policy is thus closely related to other societal challenges, for instance in the areas of biodiversity, health, strategic autonomy, social security and fighting poverty.

Against this backdrop, the Netherlands Scientific Climate Council (WKR) was founded as a new governmental advisory body in April 2023. The Netherlands Scientific Climate Council (hereafter: 'the Council') is tasked with advising the government, the Senate and the House of Representatives on climate policy. The Council is interdisciplinary and independent, and its recommendations are based on scientific insights. In accordance with the decree establishing the Council, it has been asked by the government to advise on the Climate Plan for 2025-2035. This Climate Plan will be published by government in 2024 as mandated by the Dutch Climate Act. The government has asked the Council the following question:

What critical decisions will the Netherlands have to make in the transition towards climate neutrality in Europe by 2050? What strategic dilemmas are involved in those decisions, considering related challenges such as climate adaptation and restoration of biodiversity? What are the key considerations of the various policy pathways (technically, economically, socially)? And what are the opportunities and risks of the transition to climate neutrality?

In this advisory report, the Council addresses these questions where possible. The Council does so from an interdisciplinary scientific perspective, considering societal developments and other challenges related to well-being in a broad sense. As the Council was still being set up and time for this advisory report was limited, the Council was not able to provide recommendations across the full breadth and depth of climate policy. In the future, the Council will publish more separate reports on specific topics included in this report.

Where does the Netherlands currently stand on the way to climate neutrality and climate resilience?

Greenhouse gas emissions are decreasing, but the Netherlands is not yet on course to achieve its climate targets. Since the first Climate Plan in 2019, many new policies have been developed and implemented. This has led to some good results, including the sharp increase in renewable energy production and the decrease of the energy intensity of the Dutch economy. In 2022, greenhouse gas emissions were almost 31% lower than in 1990. The statutory target of 55% greenhouse gas emission reduction by 2030 as compared to 1990 is achievable, given that no substantial setbacks will occur. National climate policy mainly focuses on generating more renewable energy, energy efficiency and reduction of greenhouse gas emissions through technical measures, mostly geared towards short-term goals. Meanwhile, attention in (draft) policy plans for the long term policy target of climate neutrality in 2050 is also increasing.

The close connection between national climate policy and European guidelines is resulting in effective climate policy. European collaboration on climate and energy policy remains very important, in conjunction with national policy. The European Union sets targets for the reduction of emissions, but also for other elements of climate neutrality, such as for renewable power and for energy efficiency. Many policy instruments have been developed on a European level. Examples include successful instruments that set standards, sometimes combined with pricing, such as the Ecodesign Directive and the Emissions Trading System (ETS).

The Netherlands is an international frontrunner when it comes to water adaptation policy, but is not yet climate resilient in the long term and with respect to other consequences of climate change, and takes other societal challenges into account only to a limited extent. The Delta Programme aims to make the Netherlands climate resilient by 2050 and is preparing the country for the consequences of climate change in the long term, including sea level rise. In the short term, challenges we face include drought, salinisation and flooding because of extreme precipitation. Little attention is being devoted to heat in adaptation policy. The implementation of climate adaptation policy needs acceleration, and more attention must be paid to the relationship with other challenges and policy areas, such as spatial planning, climate mitigation, public health, and the protection of nature.

What does the Council recommend?

Climate neutrality and resilience present us with great societal challenges. More of the same is not enough: a transition is required. It is essential for climate policy to jointly envision what living in a climate neutral and climate resilient country would look like for the Dutch. The national government can then offer a direction and perspective to people, companies, and other government departments. In doing so, it is important that the government has a clear, broadly supported vision for a climate-neutral and climate resilient country. This will help everyone that needs to adapt, but also new companies that wish to take advantage of new economic opportunities.

The Council adopts a systems perspective to identify areas of tension and uses a systems approach to assess how this transition may take shape. The Council has looked at how climate change relates to other challenges, for instance in the areas of biodiversity, health and social security. In addition to efficiency and effectiveness of policy, the Council considers climate justice an important point of departure. This involves, for example, minimising any negative externalities of the transition to climate neutrality on nature, people in other countries and future generations. A systems perspective provides insight into possible dilemmas and critical decisions. A systems approach consists of several enabling conditions to accelerate the transition: innovation, behaviour, governance, finance, policy instruments and capacity at government departments and institutions.

Based on the latest scientific knowledge, the Council gives recommendations in three important areas. How quickly must the Netherlands realise emission reduction and climate adaptation? How can a systems perspective and a systems approach contribute to achieving climate neutrality? And how can the transition to a climate neutral country become more inclusive?

1

Speeding up the process towards climate neutrality and climate resilience

An emission reduction target of 90–95% by 2040 increases the likelihood of achieving climate neutrality in 2050 and makes for a fairer contribution to international reduction efforts. A high emission reduction target for 2040 will minimise cumulative emissions on the way to 2050 and provides flexibility for the toughest phase of emission reduction– the one lasting from 2040 to 2050. In 2024, the European Union will decide on a new EU-wide emission reduction target for 2040. The Council recommends the Dutch government to support the advice of the European Scientific Advisory Board on Climate Change (ESABCC) and to set a net greenhouse gas emission reduction target for 2040 of 90–95% as compared to 1990. If the EU adopts this target for 2040, the Council recommends also adopting it in the Dutch Climate Act. This reduction should be realised within the Netherlands to the extent possible, but with the option to compensate part of the emissions outside national borders but within the European Union.

The Council recommends tailoring the implementation of the Dutch climate policy and the future perspective for Dutch society on the higher emissions reduction target for 2040. It is necessary and urgent that the implementation and implementation capacity of all relevant actors contribute to achieving a more ambitious target for 2040. This also applies to the interconnected infrastructure of districts and homes, mobility, industry, electricity and other energy carriers. In addition to reaching climate neutrality, the Netherlands must also become climate resilient. It is therefore recommended to have the Climate Plan devote specific attention to the difficulties and limitations of combining measures for climate adaptation and climate mitigation.

To achieve climate neutrality, carbon dioxide removal is required and the first steps towards this must be taken urgently. Carbon dioxide removal (CDR) is necessary to compensate for remaining emissions and to realise net negative greenhouse emissions after 2050. CDR is the net reduction of CO₂ concentrations in the air, for example by means of reforestation, biomass conversion through CO₂ capture and storage in the deep underground, and

direct capture of CO₂ from the air combined with underground storage. However, the potential for CDR in the Netherlands is uncertain and CDR options involve risks and disadvantages. Therefore, CDR must not come at the expense of actual emission reduction. To be able to deploy carbon removal in a timely manner, the Council recommends acquiring experience in CDR technology as soon as possible and at a meaningful scale.

2 A systems perspective and a systems approach to facilitate acceleration and long-term feasibility

By using a systems perspective, climate policy can consider multiple societal challenges. This can reinforce the effectiveness and efficiency of measures and prevent counterproductive investments. A framework that incorporates different societal challenges provides insight into the transfer of consequences and synergy. It can be used to draft policy that reduces this transfer and to clarify necessary decisions.

To accelerate and facilitate the transition to climate neutrality, a systems approach is required. The interconnectedness of enabling conditions, such as governance and policy instruments, can make the transition easier because they reinforce each other's effectiveness. The Council advises drafting the 2024 Climate Plan based on a systems approach, paying specific attention to long-term governance, encouraging demand side policies and behaviour change, and the use of a broad mix of policy instruments and their interaction.

Working towards climate neutrality and climate resilience demands a long-term perspective, with broadly supported visions of the future. This perspective can be developed based on several alternative visions of the future for a climate neutral and climate resilient country in 2050 and beyond. In those visions, the Netherlands is climate neutral and climate resilient in the context of a habitable planet. Attractive perspectives that appeal to all levels of Dutch society, and future visions for sub-transitions in areas such as food, energy and the circular economy are needed. The Council recommends the government drafts such broadly supported future visions, with the involvement of societal actors and citizens in particular. The future visions help to give government departments, citizens, and companies a sense of direction. Alongside future visions, transition pathways are also a necessary feature of those possible 'futures'. These pathways help provide an insight into measures for the short and long term, critical decision-making points and (possibly unwanted) path dependencies.

Some activities are not a (good) fit for a climate neutral and climate resilient country. The Netherlands houses a lot of activities that make a large direct or indirect contribution to high greenhouse gas emissions, or that are vulnerable to climate change. This may include investments and subsidies promoting or preserving activities that do not go with a climate neutral future. Such activities and investments can make it more difficult (or even impossible) to meet the challenge of creating a climate neutral and climate resilient economy. The Council therefore recommends including a strategy in the Climate Plan for a fair and efficient conversion or, where necessary, phase-out of activities that are inconsistent with reaching climate neutrality and climate resilience for the Netherlands.

A proper implementation of climate policy requires clear frameworks, realistic agreements, and enhanced implementation capacity. In addition to vision and critical decisions, transition governance requires the government to set frameworks, including clear and realistic implementation agreements between government and societal parties. That implementation requires enhanced capacity of government at all levels, citizens and companies. It is important to keep investing in this. Furthermore, adaptive management is required. This involves management using an adjustable plan with multiple alternative solutions and pathways, experimenting, monitoring and cyclical revision of policy based on lessons learnt and new insights.

Facilitating sustainable choices and behaviour should be given more emphasis in climate policy. It should be emphasised that making consumption patterns more sustainable is not a challenge for consumers alone, but also for companies and the government. The latter can facilitate choosing sustainable alternatives and make them more appealing. With its policies, the government can remove barriers, do a better job of playing into the intrinsic motivation of citizens and companies, reward sustainable behaviour and discourage non-sustainable behaviour. The Council recommends devoting specific attention in the Climate Plan to choices and behaviour with a large climate impact (carbon footprint), as these will be key in achieving the climate targets.

A mix of policy instruments is required for the transition, with pricing and standardisation as important elements. A lot of effective policies are already in place or underway. The Council advises to strengthen these with a broad mix of policy instruments, geared more towards transitions, in the 2024 Climate Plan. Where carbon pricing is not already in place (or not done sufficiently), such as in agriculture, uniform pricing of all greenhouse gas emissions that provides certainty for the long term is an important part of the overall mix of policy instruments. To ensure the ETS functions properly, the emission allowance ceiling in the ETS should be scaled down to zero. The Council suggests that the Netherlands actively removes rights from the ETS upon creating supplementary national policy. Companies and citizens with the highest emissions are responsible for making the largest

contribution to emission reduction. The basic principle is that as much reduction as possible is achieved at as little cost for society as possible. Disadvantaged households should receive government support if stringent standards or high carbon prices cause the cost of living to increase. This may take the form of an obligation for landlords to insulate homes and limit heat stress, and direct, tailor-made support in realising energy savings and renewable energy use by households.

3 All aboard for the transitions

Steering on system transitions makes phase-in, conversion, and phase-out possible. This implies a shift from sectoral policy to more transition-driven policy. The Council advises to base the section on system transitions in the 2024 Climate Plan on the interrelatedness between different sectors. The transitions of the energy system, the food system and the circular economy will be dealt with here, as these involve the greatest possible energy reduction.

The transition of the energy system is already underway but can be reinforced through increased efforts to promote energy efficiency, facilitate citizens' initiatives, and develop transition plans for industry. In the past few years, the government took the reins when it came to the energy transition and the effects have been noticeable. Yet, more action is needed. The Council recommends drafting concrete, measurable transition plans for industry, leading to carbon free business operations by 2040. At the company level this contributes to the development of strategies to be able to meet the requirements of the ETS emission ceiling going down to zero in this period. Furthermore, the Council recommends removing obstacles to organising and financing sustainability projects, in particular for energy (and other) collectives and homeowners' associations. There is also more potential for energy savings. Standardisation is an effective instrument that can be used more, for example for vehicles and the built environment.

The transition of the food system can be strengthened by vision-based governance and a greater emphasis on standardisation and pricing. In the Netherlands, greenhouse gas emissions from agriculture and land use have hardly decreased over the past years. We are not on track to achieve the targets for 2030 for emissions from agriculture and land use. Beyond 2030 there are no concrete targets set. Agriculture and food production in the Netherlands are currently lacking a sustainable perspective on the future. More so than other areas, food and agriculture require a systems perspective with attention for potential negative externalities. The Council recommends the urgent development of a 'food vision', with long-term targets for the climate, health, and nature, and covering the entire food system chain. The Council also recommends the adoption of some form of standardisation and pricing in the mix of policy instruments. Policy measures will also have to be geared towards patterns of food consumption and the reduction of food waste.

Policy on value chain emissions can be used to work towards a circular economy and reduction of greenhouse gas emissions caused by Dutch consumption, also outside national borders. Many greenhouse gas emissions go hand in hand with the use of raw materials. The opportunities for synergy between the circular economy and climate policy could be better utilized. These opportunities exist for raw materials, but also for future scarceness of sustainable carbon. The limited availability of sustainable carbon limits the reduction of greenhouse gas emissions linked to the chemical industry. As of yet, there are few policy measures – on top of important European policy – that encourage the sustainable reuse of products or carbon or that increase the availability of circular products and sustainable carbon. A concrete target for emissions in the entire value chain can contribute to achieving both climate and circularity goals, providing it is backed up by policy instruments and policy on sustainable choices.

Climate change and climate policy have significant impact. Although the impact of climate policy can be drastic, the consequences of inaction are even more profound. This means that the Netherlands must keep moving. The size of the challenge ahead demands a great deal of care in shaping policies. It is important to keep involving society in the widest sense of the word, so everyone feels involved and can contribute. This requires great care from the government in bringing about a just transition, with the challenge being divided up in a fair manner, broad inclusiveness and with attention to restoring injustices. A just transition also means going the extra mile to involve citizens that have shown limited engagement so far. Now and in the future, everyone involved should be able to meaningfully discuss and co-decide matters that affect their living environments, jobs, homes, or lifestyles. If the government does all of this in a careful manner, climate neutrality and climate resilience with a future-proof economy is in reach for the Netherlands.